

DEVELOPMENT AND VALIDATION OF THE SCALE OF CULTURAL CAPITAL

GIULIA BALBONI
UNIVERSITY OF PERUGIA

ELISA MENARDO
UNIVERSITY OF VERONA

ROBERTO CUBELLI
UNIVERSITY OF TRENTO

Cultural capital refers to the knowledge and use of cultural codes that are relevant in the community wherein people live. A valid scale to measure all the dimensions of cultural capital is not available. In this paper, exploratory, confirmatory, and multigroup confirmatory factor analyses were performed using independent samples of adults to select the best items and to investigate their factorial structure and invariance across sex and occupation prestige. We found three interrelated factors made up of 14 items: participating in groups and associations, consuming cultural events, and carrying out activities requiring expertise or creativity. This three-factor model exhibited partial factor mean invariance for sex and partial factor variance/covariance invariance for occupational prestige and convergent/divergent validity for measures of bonding and bridging social capital. The Scale of Cultural Capital is a useful tool for assessing the cultural capital in experimental and professional settings and for developing an evidence-based theoretical model.

Key words: Cultural capital; Factor analysis; Occupational prestige difference; Sex difference; Factor invariance.

Correspondence concerning this article should be addressed to Giulia Balboni, Department of Philosophy, Social and Human Sciences and Education, University of Perugia, Piazza G. Ermini 1, 06123 Perugia (PG), Italy. Email: giulia.balboni@unipg.it

The sociocultural level of an individual and his/her family affects academic achievement and school success (e.g., Dumais, 2015; Jæger & Møllegaard, 2017), mental and physical health (e.g., Igarashi & Saito, 2014; Pinxten & Lievens, 2014), and performance on most psychological tests (e.g., Rijnen et al., 2017). Thus, a valid measurement of sociocultural level is needed in both professional and experimental settings.

Sociocultural level designates the preferences, knowledge, and behaviors characterizing the way of life of an individual or the adults in a family, and depends on their cultural, social, and economic resources (Lamont & Lareau, 1988). To evaluate sociocultural level, educational level, occupational prestige, and income are usually measured. However, these indicators only describe socioeconomic status (SES) (Bornstein & Bradley, 2003). Sociocultural level is a multidimensional construct that in addition to SES includes social and cultural capital (e.g., Bourdieu, 1986; Coleman, 1988; Coscarelli, Balboni, & Cubelli, 2007).

Social capital refers to the resources associated with durable and trustworthy social network connections (Bourdieu, 1986; Coleman, 1988). It comprises bonding social capital (i.e., the relationships

among members of homogenous groups like family, neighbors, or friends) and bridging social capital (i.e., the relationships among members of heterogeneous groups like social, cultural, and recreational associations). Typically, the assessment of social capital focuses on both aspects, and a valid instrument is the Personal Social Capital Scale (Chen, Stanton, Gong, Fang, & Li, 2009).

Cultural capital, first defined by Bourdieu (1973), refers to the knowledge and use of cultural codes relevant in the community wherein people live (Lamont & Lareau, 1988). These codes are the activities, attitudes, predilections, formal knowledge, and goods considered as high-status cultural signals in that society. Examples are habitual behaviors such as reading books, attending concerts, and visiting museums coupled with occupational or livelihood activities, even if not necessary (Teachman, 1987). Cultural capital depends on education and socialization. It is not strictly determined by the socioeconomic status of the family. While owning rare books is an index of wealth, the use of books for academic, professional, or personal interests is a measure of cultural capital.

Bourdieu (1973, 1986), one of the most relevant authors in the field, distinguished three types of cultural capital: embodied, objectified, and institutionalized. Embodied cultural capital refers to “the form of long-lasting dispositions of the mind and body,” that is, social knowledge, behaviors, and values. Objectified cultural capital refers to cultural goods, that is, books, works of art, and equipment. Institutionalized cultural capital refers to the knowledge and competences acquired through formal education and training. Initially, Bourdieu developed the construct of cultural capital to explain differences in the school achievement of individuals with different sociocultural backgrounds. Following Bourdieu, several definitions of cultural capital were proposed based on the notions of high status and intellectual culture, strictly separated by technical skills and human capital (Lareau & Weininger, 2003). For example, DiMaggio (1982), Aschaffenburg and Maas (1997), De Graaf, De Graaf, and Kraaykamp (2000), and Dumais (2002) defined cultural capital in terms of the “prestigious” behaviors, attitudes, knowledge and skills, and “elite status culture” of members of the upper classes and rarely observed among the lower classes. These authors proposed as indicators of cultural capital attending theatrical performances and musical events, visiting museums and galleries, taking lessons in art or dance, reading books, and performing in concerts, plays, or ballets.

More recently, Lareau and Weininger (2003) developed an alternative interpretation of cultural capital, which is not limited to “elite status cultures” and includes “human capital” or “technical” skill. Other authors such as Gould (2001) and Jeannotte (2003) contended that cultural capital concerns not only the individual, but also the community. They underlined the mutual influence of cultural and social capital and relevance of both informal and formal ties in the development of cultural capital. Based on this definition, participating in associative or social activities can be considered an indicator of cultural capital.

Unlike for SES and social capital, very few cultural capital scales are available, and those that are mostly refer to specific domains such as food choices (Kamphuis, Jansen, Mackenbach, & van Lenthe, 2015) or geographic areas including Persia (Khodadady & Natanzi, 2012). Studies on cultural capital have been conducted in many areas of applied research for example, education, employment/career, volunteering, and health (for a review see Kamphuis et al., 2015). However, scales to measure cultural capital across different areas of knowledge and ethnic customs and traditions have not yet been developed. Consistent with the literature, a thorough assessment of cultural capital should evaluate three dimensions: (a) cultural activities — for example, attending cultural events (prose, music), visiting museums, watching movies, reading books and magazines) and goods (books and technology objects); (b) cultural technical knowledge and skills — for example, using foreign languages, using the Internet to stay informed, attending cultural classes (music, visual arts, dance), and courses that focus on cultural themes; and (c) social activities — for example, cultural, social, political, and recreational associations or groups.

The present investigation aimed to develop the Scale of Cultural Capital (SCC), a new scale for measuring the three cultural capital dimensions at the personal and familial levels. In the first study, we performed exploratory factor analyses (EFA) to select the best items from a large series we developed, and confirmatory factor analyses (CFA) to investigate the factorial structure of the selected items for an independent sample. Furthermore, we verified if the factorial structure found was invariant for adults' sex and occupation prestige. Based on previous literature, we predicted significant differences across occupational prestige (e.g., Katz-Gerro, 2006), but not across sex (e.g., Sullivan & Katz-Gerro, 2007). If confirmed, these findings may be considered as evidence of the construct validity of the factorial structure.

The second study allowed us to use the developed scale in a new different context. We investigated the convergent and divergent validity of the factorial structure of the SCC in relation to the two dimensions of bonding and bridging social capital. Bridging social capital depends on involvement in the activities of groups and associations more than bonding social capital. Therefore, it is expected that bonding and bridging social capital have different patterns of correlation with the three dimensions of cultural capital.¹

STUDY 1, STAGE 1: FACTORIAL STRUCTURE OF THE SCALE OF CULTURAL CAPITAL

The aim of the first stage was to perform exploratory and confirmatory factor analyses to select the best items and verify their factorial structure.

Materials and Methods

Instruments

Three scales were used: a preliminary version of the SCC comprising the items we developed, one scale of occupational prestige to measure participants' SES, and a social desirability scale to detect attempts of simulation.

Scale of Cultural Capital-Preliminary Version (SCC-PV). Based on the literature, we developed 20 multiple-choice items, each rated on a 5-point Likert scale, to cover the three cultural capital dimensions. For cultural activities and goods, the items evaluated the frequency of reading newspapers, magazines, and books (Aschaffenburg & Maas, 1997); number of books owned (Böröcz & Southworth, 1996); technology used to access information such as the Internet (Oates, 2009); frequency of attending theatrical performances or musical events, visiting exhibitions, museums, and galleries, and watching movies (Böröcz & Southworth, 1996). Cultural technical knowledge and skills included speaking foreign languages (Böröcz & Southworth, 1996); using the Internet; attending classes and courses on music/singing, visual arts, and dance (Aschaffenburg & Maas, 1997); creating art; performing; and teaching (DiMaggio, 1982). The social activities included participation or membership in cultural, social, political, and religious groups and associations (De Graaf et al., 2000; Khawaja & Mowafi, 2006). One psychologist, one anthropologist, and one sociologist independently evaluated each developed item, and a field test was conducted with 19 adults. Following this, the instructions were revised; further, the items were edited to ensure they were clear, concise, and exhaustive, examples were useful, and answer scales were applicable.

Italian Occupational Prestige Scale. The scale comprises 110 occupational categories ordered according to a prestige score (Meraviglia & Accornero, 2007). The classification of the occupation in one of

the 110 categories is based on job typology (e.g., self-employed or employees), employment contract (e.g., manager or manual worker), sector (private or public), and field (e.g., industry, commerce, public health). To assign each participant to the corresponding occupational category, a brief questionnaire was used (Scale of Employment). The occupational prestige of each participant was classified as low, medium, or high by considering the 33rd and 66th centile of the distribution of the scale.

Balanced Inventory of Desirable Responding-6 (BIDR-6) Short Form. The scale employs 16 items on a 6-point Likert scale to evaluate the unconscious tendency to provide honest but positively biased responses, as well as the habitual and conscious presentation of a favorable public image (Bobbio & Manganeli, 2011; Paulhus, 1991). Participants were considered simulators when their total score exceeded the 95th centile of the normative group. This scale has shown adequate Cronbach's alphas and good factorial structure (Bobbio & Manganeli, 2011).

Procedure

All participants filled out all the questionnaires by themselves. To avoid any effect of the order of presentation, questionnaires were given in different balanced order with the BIDR-6 Short Form always at the end.

Participants. The participants were 423 Italian adults (56% male) aged 30 to 70 years ($M = 45.9$, $SD = 6.5$) living in towns with a different population size in Northern and Central Italy. They were selected among participants of two previous studies on sociocultural level and adaptive behavior (Balboni, Belacchi, Bonichini, & Coscarelli, 2016), and on sociocultural level and personality (Menardo, Balboni, & Cubelli, 2017; Pellicci, Menardo, Balboni, & Cubelli, 2015). Of the 487 participants who agreed to participate in the study, 64 (13%) were excluded: 18 did not complete all the administered questionnaires, and 46 exceeded the cut-off for simulation on the BIDR-6 Short Form (Bobbio & Manganeli, 2011; Paulhus, 1991). Participants had no kinship ties. They provided their informed consent and did not receive any form of incentive.

Participants were randomly divided into two groups to conduct the EFA (EFA group, $n = 216$) and CFA (CFA group, $n = 207$). The two groups did not differ in terms of the SCC-PV total score, age, sex, educational level, occupational status, occupational prestige, and town size class (Table 1).

Data analysis. Preliminary analyses were performed for the EFA and CFA groups following the suggestions of Tabachnick and Fidell (2013). First, we checked for the presence of univariate outliers. Participants who obtained a SCC-PV total score of more than the 3.29 standard deviation over or under the corresponding group mean were excluded. Second, we normalized the SCC-PV total score (i.e., we run a score transformation) as a remedy for outliers and failures of normality, linearity, and homoscedasticity. Third, based on the Mahalanobis distance, we searched for the presence of multivariate outliers. Every time we excluded participants, we normalized the SCC-PV score distribution.

Exploratory factor analysis. First, we examined the score distribution, corrected item-total correlation, and discrimination ability of each item (i.e., on the basis of the 33rd and 66th percentile item score, we created three subgroups — with low, medium, and high item score — and ran independent t -tests to verify whether there were statistically significant differences in the scores obtained by the low and high subgroups). We also verified the statistical assumptions (KMO measure of sampling adequacy and Bartlett test of sphericity). Then, we carried out several EFAs with a progressively lower number of items using the

TABLE 1
 Characteristics of the total participants and EFA and CFA groups

	All participants (<i>n</i> = 423)	EFA group ^a (<i>n</i> = 214)	CFA group ^b (<i>n</i> = 191)
Sex (%)			
M – F	56 – 44	56 – 44	55 – 45
Age (Years)			
Range	30–70	30–68	30–70
<i>M</i> (<i>SD</i>)	45.90 (6.49)	46.51 (6.51)	45.16 (6.51)
Educational level (%)			
Third year secondary school (or lower)	26	24	29
Secondary school	49	52	48
Post-secondary school (or higher)	25	24	23
Occupational status (%)			
Employed	88	88	88
Unemployed/retired	12	12	12
Occupational prestige (%)			
Low	32	34	34
Medium	28	38	24
High	40	28	42
Town size class (%)			
< 5,000 people	40	41	38
5,000–20,000 people	31	31	30
> 20,000 people	29	38	32

Note. ^aTwo univariate outliers were removed. ^bSixteen influential cases (8%) were removed which did not differ from the 191 remaining participants in all variables except for the SCC-PV total score, which was statistically significantly higher (Mann-Whitney $U = 836.5, p < .01$).

principal axis method which is recommended when the assumption of multivariate normality is violated (Costello & Osborne, 2005; Fabrigar, Wegener, MacCallum, & Strahan, 1999). Each EFA was followed by a Promax rotation. For each EFA, a parallel analysis, scree test, incremental variance, and interpretability of the pattern of factor loadings were employed to choose the number of factors (Fabrigar et al., 1999). Communalities and factor loadings of each item, as well as item-total correlation coefficients and item discrimination ability, were inspected to remove the worst items. We repeated factor analysis until a factor structure was found in which all items had a communality higher than .20, a factor loading higher than .32 on only one factor, and an item-total correlation higher than .30 (Fabrigar et al., 1999; Tabachnick & Fidell, 2013; see also Balboni, Perrucci, Cacciamani, & Zumbo, 2018). Finally, as a measure of reliability, McDonald's omega (McDonald, 1999) was computed for each factor and for the developed total scale (Dunn, Baguley, & Brunnsden, 2014; Sočan, 2000).

Confirmatory factor analysis. The goodness of fit of the factorial structure of the scale identified in the EFA was investigated through the R package lavaan (Rosseel, 2012). Maximum likelihood estimation with a mean-adjusted chi-square test (MLM estimator), which is robust to nonnormal score distributions, was used. The metric of the latent variables was established by fixing the factor loading of the first item of each factor as equal to one. Overall model fit was determined by using the Satorra-Bentler scaled chi-square statistic ($S-B\chi^2$), robust comparative fit index (rCFI), robust root mean square error of approxi-

mation (rRMSEA) with associated 95% confidence intervals (CIs), and standardized root mean square residual (SRMR) (Schermelleh-Engel, Moosbrugger, & Müller, 2003). Values close to .95 for rCFI, smaller than .05 for rRMSEA, and smaller than .08 for SRMR, suggest a reasonable fit (Byrne, 2011).

Literature has highlighted that a single influential case (i.e., an individual that impacts on model results) can have serious consequences for factor analysis (e.g., Chalmers & Flora, 2015; Flora, LaBrish, & Chalmers, 2012; Zygmunt & Smith, 2014). Moreover, given the importance of ensuring that observed patterns of association were not due to a small number of highly influential cases (Lee & MacCallum, 2015; Pek & MacCallum, 2011), we used the R package *faoutlier* (Chalmers, 2011) to detect factor model-based influential cases as identified by an excessive negative likelihood distance, that is, < -4 (Chalmers & Flora, 2015).

The factorial structure found in EFA was compared with alternative nested models, which were theoretically plausible. To this aim, $\Delta S-B\chi^2$ and $\Delta rCFI$ were used as fit indices. To indicate that the null hypothesis of equivalence should be rejected (i.e., that the EFA factorial structure model had a better fit than the alternative models), a significant $\Delta S-B\chi^2$ and a value of $\Delta rCFI$ (which is less affected by sample size) higher than .01 are required (Cheung & Rensvold, 2002). Finally, Akaike's information criterion (AIC) was measured, with a lower value indicating a better fitting model (Schermelleh-Engel et al., 2003; Sterba & Pek, 2012).

Results

Exploratory Factor Analysis

As preliminary analyses, we excluded two univariate outliers, and normalized the SCC-PV total score distribution for the remaining 214 participants (Table 1). No multivariate outliers were found. We normalized the score distribution of each of the 20 SCC-PV items. EFA statistical assumptions were confirmed: KMO = .85; Bartlett's test, $\chi^2_{(91)} = 835.67$, $p < .001$. However, given that the item score distributions were still far from being multivariate normal (based on Mardia's test), as mentioned, we decided to use the principal axis method of factor extraction which is recommended when the assumption of multivariate normality is violated.

A first EFA was run with the responses for all the 20 SCC-PV items. Based on parallel analysis, scree test, incremental variance, and interpretability of item factor loadings, three interrelated factors followed by a Promax rotation were extracted. This led to selecting from the original set 16 items having a communality higher than .20, a factor loading higher than .32 on only one factor, an item-total correlation higher than .30, and a good discrimination ability. Next, to identify a factor solution from the 16 items, a second EFA was conducted on these items. Using the same criteria described above, a three-factor solution followed by a Promax rotation was extracted and 14 items were selected. A third EFA was conducted with the 14 chosen items.

The first factor, labeled *participating*, comprised four items regarding the role played and time devoted as a member of cultural, social, and religious or political groups/associations. The second factor, labeled *consuming*, was loaded by five items regarding the number of exhibitions, museums, and galleries visited, theatrical and musical events attended, and books owned or read for pleasure. The third factor, labeled *expert using*, was made up of five items regarding the number of books read for study/work and number of courses/conferences on cultural themes attended. Moreover, it included the frequency of using foreign languages and the Internet to stay informed, and involvement in high-level cultural activities such

as: creating art (painting, drawing, sculpture, photography, carving, restoration); writing music or texts (narratives, poetry, scripts, satire, articles); performing in concerts, plays, or ballets; or speaking at conferences or seminars.² Table 2 shows the factor loadings and communality of each of the 14 items, explained variance and McDonald's omega of the three factors, and interfactor correlation coefficients. The total explained variance was 40.61%, McDonald's omega of the 14 items was .84, 95% CI [.80, .86], and the item-total score correlation ranged from .32 to .63 (mean, median = .47, .48). We kept all 14 selected items to develop the SCC.

Confirmatory Factor Analysis

As preliminary analyses, no univariate outliers were found. We normalized the SCC total score distribution (equal to the sum of the score of the 14 items selected using the EFA), and checked for multivariate outliers. None was found. We normalized the score for each of the 14 items selected in the EFA. However, given that the item score distributions were still far from being multivariate normal (based on Mardia's test), as mentioned, we decided to use a robust estimator for the CFA.

The three-factor model selected in the EFA did not meet the criteria for a good fit: $S-B\chi^2_{(74)} = 162.07$, $p < .001$; $rCFI = .865$; $rRMSEA = .079$, 90% CI [.063, .096]; $SRMR = .059$. After excluding 16 (8%) influential cases and normalizing the score distribution of the 14 SCC items for the remaining 191 participants (for the differences between the influential cases and the remaining participants, see the Note of Table 1), the fit indices of the three-factor model were adequate: $S-B\chi^2_{(74)} = 97.22$, $p < .05$; $rCFI = .960$; $rRMSEA = .042$, 90% CI [.011, .064]; $SRMR = .055$. We also estimated the goodness of fit of four alternative nested models obtained by collapsing the three factors into one (i.e., participating-consuming-expert using) or two factors (i.e., participating-consuming vs. expert using; participating-expert using vs. consuming; consuming-expert using vs. participating). The three-factor model demonstrated better results than all alternative nested models: $\Delta S-B\chi^2_{(\Delta df)}$ range = $17.19_{(2)}-74.53_{(3)}$; $\Delta rCFI$ range = .025-.121; three-factor model AIC was the lowest except in one case. The total explained variance was 37%. McDonald's omega was .84, 95% CI [.81, .87]. All factor loadings were statistically significant. The confidence interval for each interfactor correlation did not include the value of 1, indicating that the three factors were separate constructs (see the path diagram for the three-factor model in Figure 1).

Discussion

The purpose of the first stage of Study 1 was to select the best of the 20 items we developed to measure the three dimensions of cultural capital and identify their factorial structure. To this end, first, we performed an EFA to identify the best items and the factors into which they are organized. Then, we conducted a CFA for an independent group of participants to verify the goodness of fit of the found factorial structure.

Three interrelated factors were identified, which were made up of 14 of the 20 original items. All were kept to develop the SCC. The first one, *participating*, refers to active participation as a member of different types of groups and associations. The second factor, *consuming*, concerns cultural activities in free time and the role of consumers or spectators. The third factor, *expert using*, concerns all cultural activities requiring expertise and formal education or implying creative production. The factors demonstrated moderate intercorrelations, except for consuming and expert using factors, which showed a high correlation.

TABLE 2
EFA ($n = 214$): Factor loadings and communalities of the selected 14 items of the Scale of Cultural Capital, explained variance and reliability of the factors, and interfactor correlations

Items	Factor			h^2
	Participating	Consuming	Expert using	
14. Considering all these types of associations/groups, how much time do you spend on these activities altogether? ^a	.90	-.10	-.10	.93
13. Do you usually participate in the activities of cultural associations/groups (for example, theatre or dance troupes, bands, choirs or orchestras, arts and crafts groups, traditional folk groups, promotional associations for cultural events, senior citizens' study programs, youth-oriented cultural associations, online cultural associations)? ^b	.61	.01	.04	.35
11. Do you usually participate in the activities of social associations/groups (volunteer groups which offer caregiving, assistance and solidarity, environmental protection; cooperatives; women's groups; local tourism promotion; student unions)? ^b	.60	.09	-.01	.35
12. Do you usually participate in the activities of religious or political associations/groups? ^b	.59	-.01	-.07	.28
7. How many times a year do you go to exhibitions, museums, art museums, or galleries? ^c	.08	.76	-.07	.58
6. How many times a year do you attend theatrical performances? ^c	.08	.72	-.13	.49
1. On average, how many books a year do you read for pleasure? ^d	-.20	.61	.11	.35
3. How many books do you have in your home? (Considering that each meter of shelving can contain about 40 books) ^e	-.05	.54	.15	.35
8. How many times a year do you attend concerts, music festivals, or other musical events? ^c	.19	.37	.10	.30
2. On average, how many books a year do you read for study/work? ^d	.14	-.06	.66	.49
5. Do you usually use languages other than your own for fun/pleasure or study/work? (Please mark each activity in which you use foreign languages, or leave blank) ^f	-.23	.03	.63	.26
4. How often do you use the Internet to stay informed or to learn more about something? ^g	-.02	.06	.46	.30
9. How many times a year do you attend courses, conventions, conferences, or seminars that focus on cultural themes? ^c	.30	.14	.39	.48
10. Which of the following cultural activities do you participate in? (Please mark all that apply, or leave blank) ^h	.26	-.07	.37	.22

(Table 2 continues)

Table 2 (continued)

	Factor			<i>h</i> ²
	Participating	Consuming	Expert using	
Explained variance (%)	15.84	14.31	10.46	
McDonald's omega [95% CI]	.76 [.70, .80]	.76 [.71, .81]	.70 [.64, .76]	
Interfactor correlations				
1. Participating		.46	.52	
2. Consuming			.62	

Note. *h*² = item communality. Factor loadings > |.32| are in bold.

^a "I do not participate in any of these associations/groups," "No more than one hour a month," "An hour a week," "At least three hours a week," "More than three hours a week."

^b "I do not participate in any of these groups," "I participate in some public events offered by these groups," "I am an active member of at least one of these groups," "I am on the board of one of these groups," "I am on the board of more than one of these groups."

^c "Never," "One or twice a year," "Between three and four times a year," "Between five and six times a year," "Seven or more times a year."

^d "None," "Between one and three," "Between four and seven," "Between 8 and 12," "13 or more."

^e "Between 0 and 20," "Between 21 and 50," "Between 51 and 200," "Between 201 and 500," "More than 500."

^f "I watch films in foreign languages," "I read in foreign languages (for example, books, magazines, newspapers)," "I write in foreign languages (for example, letters, documents)," "I speak foreign languages (for example, with friends, colleagues)."

^g "Never," "Only occasionally," "Not more than once a week," "Several times a week," "Every day."

^h "I create art (for example, painting, drawing, sculpture, photography, carving, restoration)," "I write music or texts (for example, narratives, poetry, scripts, satire, articles)," "I perform in concerts, plays, or dance productions," "I speak at conferences or seminars."

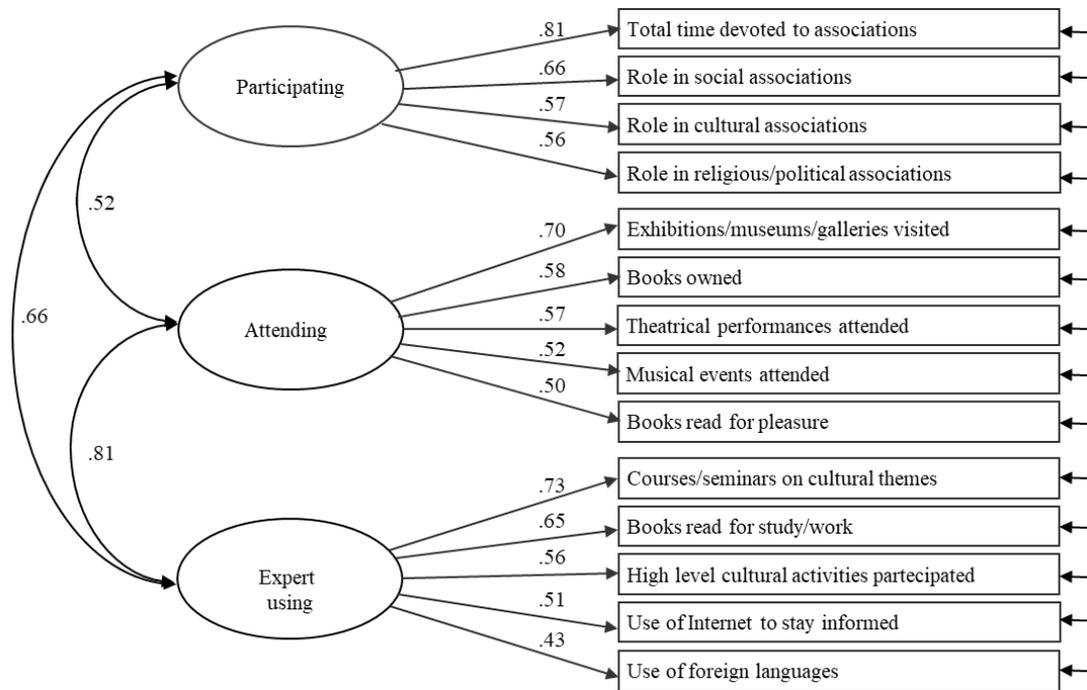


FIGURE 1
 The three-factor model of the Scale of Cultural Capital (CFA).

However, the three-factor model proved better than an alternative two-factor model, which was obtained by collapsing consuming and expert using into one factor, indicating that these two factors must remain separated.

The eliminated items were: reading newspapers or magazines; watching movies; owning technology objects; participating in the activities of recreational groups and associations; attending courses on writing and language, dance, music, or singing; and acting classes. It seems that these activities reflect cultural interests which do not enable distinguishing user dimensions (i.e., participating, consuming, or expert using).

In Appendix A, the English translated version of the SCC is available. The translation was performed according to the International Test Commission (2017) Guidelines for Translating and Adapting Tests, and verified independently by a professional Italian-English translator and an American native speaker professor of psychology.

STUDY 1, STAGE 2: MEASUREMENT AND STRUCTURAL INVARIANCE OF THE SCALE OF CULTURAL CAPITAL FOR SEX AND OCCUPATIONAL PRESTIGE

The purpose of the second stage was to conduct multiple-group confirmatory factor analyses (MG-CFA) to investigate the measurement and structural invariance of the three-factor model of the 14-item SCC across sex and occupational prestige. We aimed to identify the degree to which the SCC measures in the same way (measurement invariance) the same constructs (structural invariance) that is, the three interrelated latent factors among participants with different sex and occupational prestige.

Materials and Methods

Instruments and procedure. See Study 1, Stage 1.

Participants. Participants were 385 Italian adults (45% male), aged 28 to 68 years ($M = 45.3$, $SD = 7.1$), living in Italian towns of different population size. Of the 454 participants who agreed to participate in the study, 69 (15%) were excluded: 26 did not complete all the questionnaires and 43 exceeded the cut-off for the simulation in the social desirability scale BIDR-6 Short Form (Bobbio & Manganelli, 2011; Paulhus, 1991). Furthermore, we detected and excluded two univariate outliers, normalized the SCC total score distribution, and detected and excluded one multivariate outlier. The remaining 382 participants were categorized into different groups according to sex and occupational prestige (Table 3). Participants were selected from the same databases used in the first stage study, and did not have any kinship ties. All participants provided their informed consent and did not receive any form of incentive.

Data Analysis

As suggested by Tabachnick and Fidell (2013), in each subgroup with different sex or occupational prestige, we checked for the presence of univariate outliers, normalized the 14-item SCC total score distribution, and checked for the presence of multivariate outliers. Each time we excluded participants, we normalized the SCC score distribution.

Confirmatory factor analysis. We tested the fit of the three-factor model and theoretically plausible alternative models of the SCC for each sex and occupational prestige subgroup using the R package lavaan (MLM estimator). When necessary, we also checked for the presence of influential cases for the three-factor model (Chalmers & Flora, 2015) by using the R package faoutlier (Chalmers, 2011).

Multigroup confirmatory factor analysis. If the data fitted the three-factor model in each sex and occupation prestige subgroup, we performed an MG-CFA to test the invariance of the model across subgroups (R package lavaan; MLM estimator). To this end, the fit of the model was tested more times simultaneously for all sex or occupational prestige subgroups in agreement with a given sequence of invariance tests (Vandenberg & Lance, 2000). For each step, a highest number of parameter categories of the model was constrained to be invariant across the subgroups as follows.

(a) Measurement invariance. (1) Configural invariance: no invariance constraints were imposed to test if the pattern (or configuration) of fixed and freely estimated parameters was invariant across the subgroups. (2) Metric invariance (weak invariance): factor loadings of each item on the corresponding factor (i.e., the scale unit, metric, of each item) were constrained to be invariant across subgroups. (3) Scalar invariance (strong invariance): factor loadings plus the intercepts of each item on the corresponding factor (i.e., the origin of the scale of each item) were constrained to be invariant.

(b) Structural invariance. (4) Factor variance and covariance invariance: factor variance and covariance were constrained to be invariant. (5) Factor mean invariance: the means of the latent factors were constrained to be invariant to investigate if there were any statistically significant differences between the subgroups (Byrne, 2008; Vandenberg & Lance, 2000).

For each invariance test, we evaluated fit indices of the MG-CFM model (as in Stage 1), and comparisons between the fit indices of the MG-CFM model and those of the immediately previous model with fewer constraints in the given sequence of invariance tests. Changes in the Satorra-Bentler chi-square values ($\Delta S-B\chi^2$), rCFI values ($\Delta rCFI$), and AIC values, were used to compare the nested models. As the models became more restrictive, the nonsignificant $\Delta S-B\chi^2$ ($p > .05$) and $\Delta rCFI$ value $\leq .01$ revealed that the

TABLE 3
Characteristics of participants of MG-CFA: Total group and sex and occupational prestige subgroups

	All participants	Sex invariance subgroups ^a		Occupational prestige subgroups ^b		
		Males	Females	Low	Medium	High
Sex (%)	(<i>N</i> = 382)	(<i>n</i> = 158)	(<i>n</i> = 202)	(<i>n</i> = 113)	(<i>n</i> = 123)	(<i>n</i> = 134)
M – F	45 – 55	100 – 0	0 – 100	45 – 55	37 – 63	51 – 49
Age (Years)						
Range	28–68	35–68	28–59	28–63	31–68	30–63
<i>M</i> (<i>SD</i>)	45.3 (7.1)	49.8 (5.2)	41.0 (5.5)	43.7 (7.2)	45.4 (6.7)	46.0 (6.7)
Educational level (%)						
Third year secondary school (or lower)	28	43	15	51	22	11
Secondary school	46	45	46	34	57	46
Post-secondary school (or higher)	26	12	39	15	21	43
Occupational status (%)						
Employed	88	94	85	72	96	97
Unemployed/retired	12	6	15	28	4	3
Occupational prestige (%)						
Low	32	32	31	100	-	-
Medium	33	28	37	-	100	-
High	35	40	32	-	-	100
Town size class (%)						
< 5,000 people	38	39	37	43	32	40
5,000–20,000 people	30	33	26	35	30	24
> 20,000 people	32	28	37	22	38	36

Note. ^a Twenty-two influential cases (6%) were removed, that did not differ from the 360 remaining participants for all variables except for being more frequently unemployed/retired ($\chi^2_{(1)} = 3.70, p = .05$), and having higher age (Mann-Whitney $U = 1584.0, p < .001$), and a SCC total score (Mann-Whitney $U = 836.5, p < .01$).

^b Twelve influential cases (3%) were removed. They were more frequently unemployed/retired ($\chi^2_{(1)} = 7.58, p < .01$), older (Mann-Whitney $U = 1190.0, p < .01$), had a lower occupational prestige (Mann-Whitney $U = 1104.0, p < .01$), and obtained a higher score on Item 8 (Mann-Whitney $U = 1174.5, p < .01$), Item 10 (Mann-Whitney $U = 1121.0, p < .001$), Item 12 (Mann-Whitney $U = 1558.5, p < .05$), Item 13 (Mann-Whitney $U = 1013.5, p < .001$), and Item 14 (Mann-Whitney $U = 1370.0, p < .05$). For a description of items, see Appendix A.

more restrictive model fit the data as well as the less restrictive one; therefore, being more parsimonious should be preferred (Byrne, 2011; Satorra & Bentler, 2001). The $\Delta rCFI$ value was weighted more heavily than the $\Delta S-B\chi^2$ when evaluating the change in model fit, because the rCFI values are less sensitive to sample size (Cheung & Rensvold, 2002). For the AIC, a lower value indicates a better fitting model (Schermelleh-Engel et al., 2003). If the more constrained model did not fit the data, the full invariance tested in that step was not met and we investigated the partial invariance, releasing the equality constraints of individual parameters that contributed more greatly to deteriorating the model fit (Byrne, Shavelson, & Muthén, 1989). To proceed to the following invariance test, at least partial invariance had to be met. The 14-item SCC should have met at least partial factor variance/covariance invariance to exhibit measurement and structural invariance. Differences between the subgroups for the mean latent factors did not compromise these equivalences.

Results

Sex Invariance

For the 14-item SCC total score, neither univariate nor multivariate outliers were found in the male and female subgroups. Scores for each of the 14 SCC items were normalized. The three-factor model demonstrated reasonably good fit for females: $S-B\chi^2_{(74)} = 128.5$, $p < .001$; rCFI = .923; rRMSEA = .061, 90% CI [.043, .078]; SRMR = .058, but not for males: $S-B\chi^2_{(74)} = 160.9$, $p < .001$; rCFI = .856; rRMSEA = .085, 90% CI [.067, .103]; SRMR = .067. After excluding 22 influential cases (14 males and 8 females), and normalizing the item score distribution of the remaining 158 males and 202 females (for the differences between the influential cases and the remaining participants, see Table 3), the three-factor model resulted in a well-fitting model for females: $S-B\chi^2_{(74)} = 96.2$, $p < .05$; rCFI = .969; rRMSEA = .039, 90% CI [.008, .060]; SRMR = .051, and males: $S-B\chi^2_{(74)} = 92.0$, $p > .05$; rCFI = .966; rRMSEA = .041, 90% CI [0, .065]; SRMR = .054. Moreover, the three-factor model was better than the four alternative nested models obtained by collapsing the three factors into one factor (i.e., participating-consuming-expert using) or two factors (i.e., participating-consuming vs. expert using; participating-expert using vs. consuming; consuming-expert using vs. participating), for males: $\Delta S-B\chi^2_{(\Delta df)}$ range = 8.1₍₂₎–57.9₍₃₎; $\Delta rCFI$ range = .012–.103, for females: $\Delta S-B\chi^2_{(\Delta df)}$ range = 30.1₍₂₎–92.7₍₃₎; $\Delta rCFI$ range = .040–.132, and for both groups: the three-factor model AIC was the lowest.

Table 4 reports the results of the sex invariance tests. The three-factor model exhibited full configural and metric invariance and partial scalar invariance. We needed to release the constraint of the intercept of Item 1, regarding the number of books read for pleasure. We found that females had a higher intercept, meaning that they rated this item higher than did males with the same level of cultural capital. The three-factor model also exhibited full factor variance/covariance invariance, and no differences were found between the latent factor means for males and females.

Occupational Prestige Invariance

No univariate or multivariate outliers were found for the 14-item SCC total score within subgroups with low, medium, and high occupational prestige. Scores for each of the 14 SCC items were normalized.

TABLE 4
Sex and occupational prestige invariance: Fit indices for the multigroup three-factor model of the 14-item Scale of Cultural Capital for each invariance test with a highest number of parameter categories constrained to be invariant across sex and occupational prestige

Invariance	rCFI	rRMSEA [90% CI]	SRMR	S-B χ^2 (df)	versus	AIC	$\Delta S-B\chi^2$ (Δdf)	$\Delta rCFI$
Sex Invariance								
Measurement								
Configural	.967	.040 [.020, .056]	.053	189.1 ₍₁₄₈₎ *		11022.1	-	-
Metric	.957	.044 [.027, .059]	.067	213.2 ₍₁₅₉₎ **	Configural	11024.3	24.1 ₍₁₁₎ *	-.010
Scalar	.937	.052 [.038, .065]	.071	251.1 ₍₁₇₀₎ ***	Metric	11037.2	37.9 ₍₁₁₎ ***	-.030
Partial (free Item 1 ^a)	.951	.046 [.030, .060]	.069	231.2 ₍₁₆₉₎ **	Metric	11020.8	18.0 ₍₁₀₎	-.006
Structural								
Factor var/covariance	.952	.044 [.028, .058]	.069	235.4 ₍₁₇₅₎ **	Partial Scalar	11013.3	4.3 ₍₆₎	.001
Factor mean	.949	.046 [.030, .059]	.073	243.4 ₍₁₇₈₎ ***	Factor var/covariance	11014.9	8.0 ₍₃₎ *	-.003
Occupational Prestige Invariance								
Measurement								
Configural	.963	.039 [.010, .057]	.059	261.0 ₍₂₂₂₎ *	-	11309.7	-	-
Metric	.967	.035 [.000, .053]	.068	278.8 ₍₂₄₄₎	Configural	11283.9	17.8 ₍₂₂₎	.004
Scalar	.944	.044 [.024, .059]	.074	325.5 ₍₂₆₆₎ **	Metric	11283.5	46.7 ₍₂₂₎ **	-.023
Partial (free Item 4 ^b)	.957	.038 [.014, .055]	.071	309.5 ₍₂₆₄₎ *	Metric	11272.2	30.7 ₍₂₀₎	-.010
Structural								
Factor var/covariance	.959	.037 [.011, .054]	.076	320.1 ₍₂₇₆₎ *	Partial Scalar	11259.3	10.1 ₍₁₂₎	.002
Factor mean	.898	.057 [.043, .070]	.121	392.7 ₍₂₈₂₎ ***	Factor var/covariance	11314.4	72.6 ₍₆₎ ***	-.061

Note. ^aNumber of books read for pleasure. ^bFrequency of using the Internet to stay informed.
* $p < .05$. ** $p < .01$. *** $p < .001$.

The three-factor model had reasonably good fit in the medium: $S-B\chi^2_{(74)} = 101.4$, $p < .05$; $rCFI = .917$; $rRMSEA = .057$, 90% CI [.024, .083]; $SRMR = .066$, and high occupational prestige subgroups: $S-B\chi^2_{(74)} = 97.2$, $p < .05$; $rCFI = .939$; $rRMSEA = .048$, 90% CI [.013, .072]; $SRMR = .061$, but not in the low occupational prestige subgroup: $S-B\chi^2_{(74)} = 123.3$, $p < .001$; $rCFI = .869$; $rRMSEA = .080$, 90% CI [.054, .103]; $SRMR = .071$. We detected influential cases in the three subgroups: eight participants (7%) in the low occupational prestige subgroup and four participants (3%) in the medium occupational prestige subgroup (for the differences between the influential cases and the remaining participants, see Table 3). After normalizing the distribution in the remaining 113 and 123 participants with low and medium occupational prestige, respectively, the three-factor model demonstrated a good fit in both subgroups (low occupational prestige: $S-B\chi^2_{(74)} = 78.0$, $p > .05$; $rCFI = .988$; $rRMSEA = .023$, 90% CI [0, .063]; $SRMR = .056$; medium occupational prestige: $S-B\chi^2_{(74)} = 86.5$, $p > .05$; $rCFI = .963$; $rRMSEA = .039$, 90% CI [0, .069]; $SRMR = .059$. Moreover, the three-factor model was better than the four alternative nested models obtained by collapsing the three factors into one factor (i.e., participating-consuming-expert using) or two factors (i.e., participating-consuming vs. expert using; participating-expert using vs. consuming; consuming-expert using vs. participating), for low occupational prestige: $\Delta S-B\chi^2_{(\Delta df)}$ range = $7.8_{(2)}-32.6_{(3)}$; $\Delta rCFI$ range = .017-.089, medium occupational prestige: $\Delta S-B\chi^2_{(\Delta df)}$ range = $10.7_{(2)}-29.7_{(3)}$; $\Delta rCFI$ range = .027-.081, high occupational prestige: $\Delta S-B\chi^2_{(\Delta df)}$ range = $15.7_{(2)}-72.0_{(3)}$; $\Delta rCFI$ range = .036-.184, and for the three groups: three-factor model AIC was the lowest.

Table 4 reports the results of the occupational prestige invariance test. The three-factor model exhibited full configural and metric invariance and partial scalar invariance. We needed to release the intercept of Item 4 regarding the frequency of using the Internet to stay informed. We found that subgroups with higher occupational prestige had a higher intercept, meaning that they rated this item higher than did subgroups with a lower occupation prestige with the same level of cultural capital. The model also exhibited full factor variance/covariance invariance. Only the factor mean invariance was not met: subgroups with a higher occupational prestige had a statistically significant higher latent mean for all three factors.

Discussion

The purpose of the second stage of Study 1 was to perform MG-CFA to investigate the measurement and structural invariance of the three-factor model of the 14-item SCC across sex and occupational prestige. The three-factor model of the SCC exhibits partial factor mean invariance across sex and partial factor variance/covariance invariance across occupational prestige. Only two items presented different intercepts (i.e., biases). Females attributed more relevance to reading books than males, and individuals with higher occupational prestige attributed more relevance to using the Internet than those with lower occupational prestige.

The results suggest that the SCC measures in the same way the same three-factor model of cultural capital across sex and occupational prestige subgroups. These results are particularly relevant given that gender and occupational prestige are among the most important factors accounting for individual differences.

In agreement with the literature (e.g., Sullivan & Katz-Gerro, 2007), we found that males and female do not differ regarding the amount of cultural capital (i.e., there were no differences between the means of each latent factor). This result could depend on the fact that, for each SCC factor, we measured the quantity and not the quality of cultural activities. In contrast, if we discriminate between the types of activity participation, we could find differences between males and females in agreement with the existing

literature (e.g., Lehman & Dumais, 2017; Schmutz, Stearns, & Glennie, 2016). Individuals with higher occupational prestige demonstrated a greater amount of each SCC factor. These results are consistent with Bourdieu (1986), who stated that participating, attending, and playing an active role in cultural activities can be considered high-status social signals. The differences between the mean latent factors across gender and occupational prestige are in the expected direction and consistent with the literature. Therefore, these differences support the construct validity of the three-factor model of the SCC.

STUDY 2: AN APPLICATION OF THE SCALE OF CULTURAL CAPITAL

The aim of the second study was to verify whether the three cultural capital factors, namely participating, consuming, and expert using enable the measurement of different activities. For this aim, we investigated the convergent and divergent validity of the SCC and the three factors in relation with the two factors of bonding and bridging social capital.

Given the differences in bonding and bridging social capital (i.e., resources associated with homogenous groups like family, neighbors, and friends, or with members of heterogeneous groups, like social, cultural, and recreational associations, respectively), we expected different patterns of correlation between the scores on the three cultural capital factors and the scores on bonding and bridging social capital. In particular, we hypothesized that participating and expert using cultural capital factors correlated with bridging social capital more than with bonding social capital. Participating cultural capital factor and bridging social capital both assess engagement in local groups or associations. Expert using cultural capital factor assesses abilities and knowledge that have more chance to develop in the case of a high bridging social capital than of a high bonding social capital. In contrast, we hypothesized that consuming cultural capital factor correlated to the same extent with bonding and bridging social capital. Consuming cultural capital factor comprises cultural activities (e.g., attending concerts and theatrical performances, visiting museums) that individuals may share with friends, family, or colleagues, but that also depend on the opportunities provided by local groups or associations.

Materials and Methods

Instruments. Four scales were used: the SCC developed in Study 1, the Balanced Inventory of Desirable Responding-6 (BIDR-6) Short Form to detect attempts of simulation, and the Personal Social Capital Scale (Chen et al., 2009).

Personal Social Capital Scale. This scale comprises 10 composite items with 54 subitems, based on a 5-point Likert scale, to measure trustworthy, reciprocity, network size, frequency of connections, and networking resources associated with relationships among members of homogenous groups (bonding social capital) and among members of heterogeneous groups (bridging social capital). The Chinese (Chen et al., 2009) and English (Archuleta & Miller, 2011) versions of the scale have shown good internal consistency and factorial structure. In the present study, an Italian adaptation of the scale (Menardo, Cubelli, & Balboni, 2019) was used.

Procedure. See Stage 1, Study 1.

Participants. Participants were 140 Italian adults (50% male) aged 22 to 52 years ($M = 37.5$, $SD = 6.2$) living in towns of different population size in Italy: with less than 20,000 individuals (37%); with

20,000–50,000 individuals (22%); and more than 50,000 individuals (41%). Regarding educational level, 23% of participants had completed a third year secondary school or lower level, 47% had completed secondary school, and 30% had completed post-secondary school or higher level. Of these, 29% was unemployed.

Participants were selected among the parents of toddlers involved in a previous study on the association between sociocultural level and adaptive behavior (Balboni, Menardo, & Cubelli, 2018). Of the 156 participants who agreed to participate in the study, 16 (10%) were excluded because they exceeded the cut-off for simulation on the BIDR-6 Short Form (Bobbio & Manganeli, 2011; Paulhus, 1991). Participants had no kinship ties. They provided their informed consent and did not receive any form of incentive.

Data analysis. Pearson correlation coefficients were computed between scores on the SCC and its factors, and on the Personal Social Capital Scale and its bonding and bridging social capital factors. A *t*-test for dependent correlations coefficients (Steiger, 1980) was conducted to investigate whether the correlations between the SCC (and its factors) and bridging social capital were significantly higher than the corresponding correlations between the SCC (and its factors) and bonding social capital.

Results

The correlation between the total score on the SCC and Personal Social Capital Scale was $r = .48$. As reported in Table 5, the correlations between the score on the SCC, its factors, and the score on the Personal Social Capital Scale bridging factor were statistically higher than the corresponding correlations of the score on the SCC, its factors, and the score regarding the bonding factor (with only one exception).

TABLE 5
 Pearson correlations between the Scale of Cultural Capital (SCC) and its factors
 and Personal Social Capital Scale factors

	Personal Social Capital Scale factors		Comparisons <i>t</i> -test value
	Bonding <i>r</i>	Bridging <i>r</i>	
SCC factors			
1. Participating	.21	.39	1.98*
2. Consuming	.16	.26	1.08
3. Expert using	.19	.47	3.28***
Total SCC	.25	.51	3.15**

Note. All correlations were statistically significant ($p < .05$), except for $r = .16$.
 * $p < .05$. ** $p < .01$. *** $p < .001$.

Discussion

The second study aimed to ascertain the convergent/divergent validity of the SCC by relating it to the Personal Social Capital Scale. The correlation found between the two scales is moderate and in agreement with the related but distinct constructs of cultural capital and social capital (Gould, 2001; Jeannotte, 2003). Moreover, in agreement with our hypotheses, the correlations between the participant and expert using cultural capital factors and the bridging social capital were statistically significantly higher than those

between the participant and expert using cultural capital factors and the bonding social capital. In contrast, the consuming cultural capital factor equally correlates with the same magnitude with bonding and bridging social capital.

GENERAL DISCUSSION

The developed SCC seems to be a short, reliable, and valid scale to measure the three dimensions of cultural capital (participating, consuming, and expert using) of males and females with different occupational prestige. Our investigation suggests that the construct of cultural capital, developed in Western countries, comprises three related dimensions regarding (a) involvement in social, cultural, political, and religious groups; (b) reading books and attending cultural events as consumers/spectators; and (c) developing cultural products requiring expertise and formal education. These results are particularly relevant from a theoretical viewpoint, as they provide empirical evidence for developing a model of cultural capital, which is relevant in several areas of applied research and professional settings.

Regarding the experimental setting, we recently found a relation between the dimensions of personal and familial sociocultural level (cultural capital, social capital, and SES) and the Big Five factors of personality of adolescents and adults (Menardo et al., 2017; Pellicci et al., 2015). This relation could be explored in more depth by employing the SCC factors. Moreover, the SCC may be useful in the investigations which require considering educational levels to better measure cultural interests and competences.

Regarding the practical implications, an adequate assessment of cultural capital using the SCC may be particularly useful in diagnostic formulation to distinguish the effect of low sociocultural level and cognitive deficits. For example, in the case of children with specific learning disabilities and low sociocultural level, an invalid assessment of cultural capital may be a result of both false positives and false negatives. The effect of the low sociocultural level on cognitive performances could be underestimated and learning difficulties attributed to specific cognitive disorders rather than to the poor environmental stimulation (false positives). On the contrary, the effect of the low sociocultural level could be overestimated and learning difficulties interpreted as the effect of the poor environmental support rather than as a specific learning disorder (false negatives). SCC may be useful also in prognosis. Personal and familial cultural capital may be a relevant resource (if high) or disadvantage (if low) to consider in planning interventions for a child with a specific learning disorder or an adult with an acquired cognitive impairment.

Further studies are necessary to overcome some methodological limitations of the present investigation. Given the importance of ensuring that observed patterns of association are not due to highly influential cases (Lee & MacCallum, 2015; Pek & MacCallum, 2011), and in accordance with best practice recommendations (Arguinis, Gottfredson, & Joo, 2013), we detected and eliminated different outliers and cases influencing the factor models when we performed the CFA. We reported the results of CFA with and without the influential cases. We also verified if there was any difference between the influential cases and the remaining participants on SCC total score as well as on each item score. We found that influential cases, compared with the remaining participants, had a higher SCC total score in the CFA group and in the gender invariance group, and a higher score on some items in the occupational prestige invariance group. Therefore, further investigations are necessary to verify whether the proposed model fits also when including participants with a very high sociocultural level. Moreover, future investigations using a different and larger population will make it possible to have enough participants to investigate the invariance of the SCC factor structure for respondents differing in educational level, age, nationality, or ethnic group. In this way, also the stability of the model would be confirmed.

In future work, the SCC should be modified to include items measuring the cultural capital developed with the Internet: e-books read and owned; theater shows, musical events, and conferences attended online; using the Internet to download movies, books, songs, or other cultural materials; consulting online libraries or archives; and attending online training courses. Furthermore, standardization studies should provide normative scores to classify individual profiles. This will allow a more complete assessment of personal and familial cultural capital.

NOTES

1. Original data are available at <http://dx.doi.org/10.17632/7hfbp2hshd.2>

2. Excluded items:

On average, how often a week do you read at least one newspaper? a. Never; b. Occasionally (not every week); c. Not every day; d. Every day at least one newspaper; e. Every day more than one newspaper.

On average, how many magazines a year do you read? a. None; b. I read magazines only if it happens to me to find them (for example, in the doctor's office); c. I buy and read them sometimes; d. I read them frequently but not systematically; e. I read all the issues of at least one magazine.

On average, how many movies do you watch at the cinema, in DVD, or in streaming? a. Less than one a week; b. One or twice a week; c. Between three and six a week; d. Once or twice a day; e. Three or more a day.

Which of the following courses have you attended during the last year (*Please mark all that apply, or leave blank*)? Art courses (for example, painting, drawing, sculpture, photography, carving, restoration); University courses (including single teaching), writing (for example, fiction, poetry, screenplay, satire, or journalistic articles), musical composition, language or communication; Acting or dance classes; Music or singing courses.

Which of the following technology is available in your house? a. Internet; b. satellite TV or pay TV; c. CD or DVD player; d. Other technology allowing the access to information (e.g., iPad).

Do you usually participate in the activities of recreational and leisure associations/groups (for example, sport and play, youth-oriented leisure associations, online leisure associations)? a. I do not participate in any of these groups; b. I participate in some public events offered by these groups; c. I am an active member of at least one of these groups; d. I am on the board of one of these groups; e. I am on the board of more than one of these groups.

REFERENCES

- Arguinis, H., Gottfredson, R. K., & Joo, H. (2013). Best-practice recommendations for defining, identifying, and handling outliers. *Organizational Research Methods, 16*, 270-301.
doi:10.1177/1094428112470848
- Archuleta, A. J., & Miller, C. R. (2011). Validity evidence for the translated version of the Personal Social Capital Scale among people of Mexican descent. *Journal of the Society of Social Work and Research, 2*, 39-53.
doi:10.5243/jsswr.2011.2
- Aschaffenburg, K., & Maas, I. (1997). Cultural and educational careers: The dynamics of social reproduction. *American Sociological Review, 62*(4), 573-587.
- Balboni, G., & Cubelli, R. (2016). *Scale of Cultural Capital*. Unpublished manuscript, Department of Philosophy, Social and Human Sciences and Education, University of Perugia, Italy.
- Balboni, G., Belacchi, C., Bonichini, S., & Coscarelli, A. (2016). *Vineland-II. Vineland Adaptive Behavior Scales Second edition. Survey Interview Form*. [Vineland-II, Survey Interview Form. Italian standardization]. Firenze, Italy: Giunti OS Organizzazioni Speciali.

- Balboni, G., Menardo, E., & Cubelli, R. (2018). Environmental factors and at-risk families: The measurement of familial socio-cultural level. *Proceedings XX National Congress Italian Psychological Association, Clinical and Dynamic Section, Urbino – 7/9 September 2018. Symposium Session. Mediterranean Journal of Clinical Psychology, 6*(2 Suppl.), 159.
doi:10.6092/2282-1619/2018.6.1938
- Balboni, G., Perrucci, V., Cacciamani, S., & Zumbo, B. D. (2018). Development of a scale of sense-of-community in university online courses. *Distance Education, 39*, 317-333.
doi:10.1080/01587919.2018.1476843
- Bobbio, A., & Manganelli, A. (2011). Measuring social desirability responding. A short version of Paulhus' BIDR 6. *TPM – Testing Psychometrics, Methodology in Applied Psychology, 18*, 117-135.
doi:10.4473/TPM.18.2.4
- Bornstein, M. H., & Bradley, R. H. (2003). *Socioeconomic status, parenting, and child development*. Mahwah, NJ: Lawrence Erlbaum Associates.
- Böröcz, J., & Southworth, C. (1996). Decomposing the intellectuals' class power: Conversion of cultural capital to income, Hungary, 1986. *Social Forces, 74*(3), 797-821.
- Bourdieu, P. (1973). Cultural reproduction and social reproduction. In R. Brown (Ed.), *Knowledge, education, and social change* (pp. 71-84). London, UK: Taylor & Francis.
- Bourdieu, P. (1986). The forms of capital. In J.E. Richardsun (Ed.), *Handbook of theory and research for the sociology of education* (pp. 241-258). New York, NY: Greenwood Press.
- Byrne, B. M. (2008). Testing for multigroup equivalence of a measuring instrument: A walk through the process. *Psicothema, 20*(4), 872-882.
- Byrne, B. M. (2011). *Structural equation modeling with Mplus: Basic concepts, applications, and programming*. Mahwah, NJ: Erlbaum.
- Byrne, B. M., Shavelson, R. J., & Muthén, B. O. (1989). Testing for equivalence of factor covariance and mean structures: The issue of partial measurement invariance. *Psychological Bulletin, 105*(3), 456-466.
- Chalmers, P. (2011). faoutlier: Influential case detection methods for factor analysis and sem [Computer software manual].
Retrieved from <https://github.com/philchalmers/faoutlier>
- Chalmers, R., & Flora, D. (2015). faoutlier: An R package for detecting outliers and influential cases in exploratory and confirmatory factor analysis. *Applied Psychological Measurement, 39*, 1-14.
doi:10.1177/0146621615597894
- Chen, X., Stanton, B., Gong, J., Fang, X., & Li, X. (2009). Personal Social Capital Scale: An instrument for health and behavioral researchers. *Health Education Research, 24*, 306-317.
doi:10.1093/her/cyn020
- Cheung, G., & Rensvold, R. (2002). Evaluating goodness-of-fit indexes for testing measurement invariance. *Structural Equation Modeling: A Multidisciplinary Journal, 9*, 233-255.
doi:10.1207/S15328007SEM0902_5
- Coleman, J. S. (1988). Social capital in the creation of human capital. *American Journal of Sociology, 94*, S95-S120.
- Coscarelli, A., Balboni, G., & Cubelli, R. (2007). The problem of measuring the socio-cultural level in psychological research. In T.E. Scruggs & M.A. Mastropieri (Eds.), *Advances in Learning and Behavioral Disabilities, Volume 20: International perspectives* (pp.163-180). Oxford, UK: Elsevier Science Ltd.
- Costello, A. B., & Osborne, J. W. (2005). Best practices in exploratory factor analysis: Four recommendations for getting the most from your analysis. *Practical Assessment, Research, and Evaluation, 10*(7), 1-9.
- De Graaf, N. D., De Graaf, P. M., & Kraaykamp, G. (2000). Parental cultural capital and educational attainment in the Netherlands: A refinement of the cultural capital perspective. *Sociology of Education, 73*(2), 92-111.
- DiMaggio, P. (1982). Cultural capital and school success: The impact of status culture participation on the grades of U.S. high school students. *American Sociological Review, 47*(2), 189-201.
- Dumais, S. A. (2002). Cultural capital, gender, and school success: The role of habitus. *Sociology of Education, 75*, 44-68.
- Dumais, S. A. (2015). Cultural capital and education. In *International Encyclopedia of the Social & Behavioral Sciences* (2nd ed., pp. 375-381).
doi:10.1016/B978-0-08-097086-8.10433-7
- Dunn, T. J., Baguley, T., & Brunson, V. (2014). From alpha to omega. A practical solution to the pervasive problem of internal consistency estimation. *British Journal of Psychology, 105*, 399-412.
doi:10.1111/bjop.12046
- Fabrigar, L. R., Wegener, D. T., MacCallum, R. C., & Strahan, E. J. (1999). Evaluating the use of exploratory factor analysis in psychological research. *Psychological Methods, 4*(3), 272-299.
- Flora, D. B., LaBrish, C., & Chalmers, R. P. (2012). Old and new ideas for data screening and assumption testing for exploratory and confirmatory factor analysis. *Frontiers in Psychology, 3*, 1-20.
doi:10.3389/fpsyg.2012.00055

- Gould, H. (2001). Culture and social capital. In F. Matarasso (Ed.), *Recognising Culture – A series of briefing papers on culture and development* (pp. 85-92). London, UK: Comedia, the Department of Canadian Heritage and UNESCO.
- Igarashi, H., & Saito, H. (2014). Cosmopolitanism as cultural capital: Exploring the intersection of globalization, education and stratification. *Cultural Sociology*, 8, 222-239.
doi:10.1177/1749975514523935
- International Test Commission. (2017). *The ITC guidelines for translating and adapting tests* (2nd ed.). Retrieved from <https://www.intestcom.org/>
- Jæger, M. M., & Møllegaard, S. (2017). Cultural capital, teacher bias, and educational success: New evidence from monozygotic twins. *Social Science Research*, 65, 130-144.
doi:10.1016/j.ssresearch.2017.04.003
- Jeannotte, M. S. (2003). Singing alone? The contribution of cultural capital to social cohesion and sustainable communities. *International Journal of Cultural Policy*, 9, 35-49.
doi:10.1080/1028663032000089507
- Kamphuis, C. B. M., Jansen, T., Mackenbach, J. P., & van Lenthe, F. J. (2015). Bourdieu's cultural capital in relation to food choices: A systematic review of cultural capital indicators and an empirical proof of concept. *PLoS ONE*, 10(8), e0130695.
doi:10.1371/journal.pone.0130695
- Katz-Gerro, T. (2006). Comparative evidence of inequality in cultural preferences gender, class, and family status. *Sociological Spectrum*, 26, 63-83,
doi:10.1080/02732170500368701
- Khawaja, M., & Mowafi, M. (2006). Cultural capital and self-rated health in low income women evidence from the urban health study, Beirut, Lebanon. *Journal of Urban Health*, 83, 444-458.
doi:10.1007/s11524-006-9051-8
- Khodadady, E., & Natanzi, M. (2012). Designing and validating a scale measuring cultural capitals of Iranian university students majoring in English. *Theory and Practice in Language Studies*, 2, 1627-1634.
doi:10.4304/tpls.2.8.1627-1634
- Lamont, M., & Lareau, A. (1988). Cultural capital: Allusions, gaps and glissandos in recent theoretical developments. *Sociological Theory*, 6, 153-168.
doi:10.2307/202113
- Lareau, A., & Weininger, E. B. (2003). Cultural capital in educational research: A critical assessment. *Theory and Society*, 32(5-6), 567-606.
- Lee, T., & MacCallum, R. C. (2015) Parameter influence in structural equation modeling. *Structural Equation Modeling: A Multidisciplinary Journal*, 22, 102-114.
doi:10.1080/10705511.2014.935255
- Lehman, B., & Dumais, S. A. (2017). Feminization of arts participation and extracurricular activities? Gender differences in cultural capital and bullying victimization. *Poetics*, 61, 26-38.
doi:10.1016/j.poetic.2016.12.003
- McDonald, R. P. (1999). *Test theory: A unified treatment*. Mahwah, NJ: Lawrence Erlbaum.
- Menardo, E., Balboni, G., & Cubelli, R. (2017). Environmental factors and teenagers' personalities: The role of personal and familial socio-cultural level. *Behavioral Brain Research*, 325, 181-187.
doi:10.1016/j.bbr.2017.02.038
- Menardo, E., Cubelli, R., & Balboni, G. (2019). *Personal Social Capital Scale-Brief Version*. Manuscript submitted for publication.
- Meraviglia, C., & Accornero, L. (2007). La valutazione sociale delle occupazioni nell'Italia contemporanea: Una nuova scala per vecchie ipotesi [The social evaluation of the occupations in contemporary Italy: A new scale for old hypotheses]. *Quaderni di Sociologia*, 45, 19-73.
doi:10.4000/qds.899
- Oates, G. L. (2009). An empirical test of five prominent explanations for the black-white academic performance gap. *Social Psychology of Education*, 12, 415-441.
doi:10.1007/s11218-009-9091-5
- Paulhus, D. L. (1991). Measurement and control of response bias. In J. P. Robinson, P. R. Shaver, & L. S. Wrightsman (Eds.), *Measures of personality and social psychological attitudes* (Vol. 1, pp. 17-59). San Diego, CA: Academic Press.
- Pek, J., & MacCallum, R. (2011). Sensitivity analysis in structural equation models: Case and their influence. *Multivariate Behavioral Research*, 46, 202-228.
doi:10.1080/00273171.2011.561068
- Pellicci, F., Menardo, E., Balboni, G., & Cubelli, R. (2015). Effetti del livello socio-culturale sulle dimensioni di personalità [Effects of socio-cultural level (SCL) on personality dimensions]. *Giornale Italiano di Psicologia*, 4, 875-884.
doi:10.1421/81946

- Pinxten, W., & Lievens, J. (2014). The importance of economic, social and cultural capital in understanding health inequalities: Using a Bourdieu-based approach in research on physical and mental health perceptions. *Sociology of Health and Illness*, *36*, 1095-1110.
doi:10.1111/1467-9566.12154
- Rijnen, S. J. M., Meskal, I., Emons, W. H. M., Campman, C. A. M., van der Linden, S. D., Gehring, K., & Sitskoorn, M. M. (2017). Evaluation of normative data of a widely used computerized neuropsychological battery: Applicability and effects of sociodemographic variables in a Dutch sample. *Assessment*. Advance online publication.
doi:10.1177/1073191117727346
- Rosseel, Y. (2012). lavaan: An R package for structural equation modeling. *Journal of Statistical Software*, *48*(2), 1-36.
- Satorra, A., & Bentler, P. (2001). A scaled difference chi-square test statistic for moment structure analysis. *Psychometrika*, *66*(4), 507-514.
- Schermelleh-Engel, K., Moosbrugger, H., & Müller, H. (2003). Evaluating the fit of structural equation models: Test of significance and descriptive goodness-of-fit measures. *Methods of Psychological Research*, *8*(2), 23-74.
- Schmutz, V., Stearns, E., & Glennie, E. J. (2016). Cultural capital formation in adolescence: High schools and the gender gap in arts activity participation. *Poetics*, *57*, 27-39.
doi:10.1016/j.poetic.2016.04.003
- Sočan, G. (2000). Assessment of reliability when test items are not essentially tau-equivalent. *Advances in Methodology and Statistics*, *15*, 23-35.
Retrieved from <http://ams.sisplet.org/uploadi/editor/mz15socan.pdf>
- Steiger, J. H. (1980). Tests for comparing elements of a correlation matrix. *Psychological Bulletin*, *87*, 245-251.
doi:10.1037/0033-2909.87.2.245
- Sterba, S. K., & Pek, J. (2012). Individual influence on model selection. *Psychological Methods*, *17*, 582-599.
doi:10.1037/a0029253
- Sullivan, O., & Katz-Gerro, T. (2007). The omnivore thesis revisited: Voracious cultural consumers. *European Sociological Review*, *23*, 123-137.
doi:10.1093/esr/jcl024
- Tabachnick, B., & Fidell, L. (2013). *Using multivariate statistics (6th ed.)*. New York, NY: Harper Collins.
- Teachman, J. (1987). Family background, educational resources and educational attainment. *American Sociological Review*, *52*, 548-557.
doi:10.2307/2095300
- Vandenberg, R., & Lance, C. (2000). A review and synthesis of the measurement invariance literature: Suggestions, practices, and recommendations for organizational research. *Organizational Research Methods*, *3*, 4-70.
doi:10.1177/109442810031002
- Zygmunt, C., & Smith, M. R. (2014). Robust factor analysis in the presence of normality violations, missing data, and outliers: Empirical questions and possible solutions. *The Quantitative Methods for Psychology*, *10*, 40-55.
doi:10.20982/tqmp.10.1.p040

APPENDIX A

Scale of Cultural Capital¹
(Balboni & Cubelli, 2016)

The following questions will ask about your participation in activities encompassing various fields of cultural interest; for example, reading, internet use, participation in cultural events, attendance at performances, memberships in groups or associations. Please read each question carefully and mark your response in the corresponding box.

1. On average, how many books a year do you read **for pleasure**?
 - None
 - Between 1 and 3
 - Between 4 and 7
 - Between 8 and 12
 - 13 or more

 2. On average, how many books a year do you read **for study/work**?
 - None
 - Between 1 and 3
 - Between 4 and 7
 - Between 8 and 12
 - 13 or more

 3. How many books do you have in your home? (*Consider that each meter of shelving can contain about 40 books*)
 - Between 0 and 20
 - Between 21 and 50
 - Between 51 and 200
 - Between 201 and 500
 - More than 500

 4. How often do you use the Internet to stay informed or to learn more about something?
 - Never
 - Only occasionally
 - Not more than once a week
 - Several times a week
 - Every day
-

5. Do you usually use languages other than your own for fun/pleasure or work/study (*Please mark each activity in which you use foreign languages, or leave blank*)?
- I watch films in foreign languages
 - I read in foreign languages (for example, books, magazines, newspapers)
 - I write in foreign languages (for example, letters, documents)
 - I speak foreign languages (for example, with friends, colleagues)
6. How many times a year do you attend theatrical performances?
- Never
 - Once or twice a year
 - Between 3 and 4 times a year
 - Between 5 and 6 times a year
 - 7 or more times a year
7. How many times a year do you go to exhibitions, museums, art museums, or galleries?
- Never
 - Once or twice a year
 - Between 3 and 4 times a year
 - Between 5 and 6 times a year
 - 7 or more times a year
8. How many times a year do you attend concerts, music festivals, or other musical events?
- Never
 - Once or twice a year
 - Between 3 and 4 times a year
 - Between 5 and 6 times a year
 - 7 or more times a year
9. How many times a year do you attend courses, conventions, conferences, or seminars that focus on cultural themes?
- Never
 - Once or twice a year
 - Between 3 and 4 times a year
 - Between 5 and 6 times a year
 - 7 or more times a year
-

10. Which of the following cultural activities do you practice? *(Please mark all that apply, or leave blank)*
- I create art (for example, painting, drawing, sculpture, photography, carving, restoration)
 - I write music or texts (for example, narratives, poetry, scripts, satire, articles)
 - I perform in concerts, plays or dance productions
 - I speak at conferences or seminars
11. Do you usually participate in the activities of **social** associations/groups (volunteer groups which offer caregiving, assistance and solidarity, environmental protection; cooperatives; women's groups; local tourism promotion; student unions)?
- I do not participate in any of these groups
 - I participate in some public events offered by these groups
 - I am an active member of at least one of these groups
 - I am on the board of one of these groups
 - I am on the board of more than one of these groups
12. Do you usually participate in the activities of **religious** or **political** associations/groups?
- I do not participate in any of these groups
 - I participate in some public events offered by these groups
 - I am an active member of at least one of these groups
 - I am on the board of one of these groups
 - I am on the board of more than one of these groups
13. Do you usually participate in the activities of **cultural** associations/groups? (for example, theatre or dance troupes, bands, choirs or orchestras, arts and crafts groups, traditional folk groups, promotional associations for cultural events, senior citizens' study programs, youth-oriented cultural associations, online cultural associations)?
- I do not participate in any of these groups
 - I participate in some public events offered by these groups
 - I am an active member of at least one of these groups
 - I am on the board of one of these groups
 - I am on the board of more than one of these groups
-

14. Considering all these types of associations/groups, how much time, do you spend for these activities altogether?

- I do not participate in any of these associations/groups
- No more than one hour a month
- An hour a week
- At least 3 hours a week
- More than 3 hours a week

Comments: _____

PLEASE CHECK THAT YOU HAVE ANSWERED ALL THE QUESTIONS
THANK YOU FOR YOUR TIME

NOTES

1. A copy of the Italian version of the Scale of Cultural Capital can be obtained from authors.

APPENDIX B

Scale of Cultural Capital: Item Scoring Rules
(Balboni & Cubelli, 2016)

- (1) Score each item, except Items 5 and 10, using the following values:
 - 0 to the first answer (e.g., *None/Never/ I do not participate in any of these groups*);
 - 1 to the second answer (e.g., *Between 1 and 3/ Once or twice a year /I participate in some public events offered by these groups*);
 - 2 to the third answer (*Between 4 and 7/Between 3 and 4 times a year/I am an active member of at least one of these groups*);
 - 3 to the fourth answer (*Between 8 and 12/Between 5 and 6 times a year/ I am on the board of one of these groups*);
 - 4 to the fifth answer (*13 or more/ 7 or more times a year/ I am on the board of more than one of these groups*).
 - (2) Score Items 5 and 10 counting 1 for each marked activities.
Missing items count as zero. In this way, the score for each 14 items ranges from 0 to 4.
 - (3) Add up all 14 item scores to calculate the total score.
-