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Validation of the Personal Social Capital Scale-16 in Portugal: preliminary data on Portuguese and immigrants

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Summary

Objectives. The Personal Social Capital Scale 16 (PSCS-16) is a self-report measure used to assess social capital, as a social determinant of health. To guarantee validated measures of this construct, the psychometric properties of the Portuguese version of the PSCS-16 were studied. **Methods.** The PSCS-16 comprises 16 items, organized in two scales: bonding and bridging social capital. A convenience sample of 280 participants was collected through an online survey. For construct validity, we used confirmatory factor analysis, and convergent and discriminant validity through the average variance extracted (AVE) and correlations. For reliability, we used: The Spearman–Brown split-half and the omega hierarchical coefficient. Correlations were made between the PSCS-16 and socio-demographic variables. **Results.** A first-order model depicting two oblique factors was supported, suggesting the use of the two scales. Evidence of convergent validity was achieved: acceptable AVE and associations between social capital and emotional self-disclosure. For discriminant validity, the AVE values surpassed the squared correlation between bonding and bridging, and associations with sexual health were found to be absent. Reliability was good. Additional correlations: A positive association between the education level and bridging social capital and participants with an immigrant status having more bridging social capital. **Conclusions.** Preliminary findings support the Portuguese version of PSCS-16 as suitable to evaluate social capital. Contributions are highlighted: the need to study correlates of social capital, particularly crossing migrations, social capital and mental health; and confirming the structure found by measuring its invariance.

Key words: social capital, portuguese version, immigrants, factor structure

SOCIAL CAPITAL: THE LACK OF CONSENSUS AND THE IMPORTANCE OF OVERCOMING IT

Throughout the years, we have been faced with the necessity of comprehending how social connections and ties contribute to a diversity of social and health conditions (Archuleta and Miller, 2011), with social capital

becoming a relevant concept to explain the relation between social interactions and mental health, due to the increasing acknowledgement of this construct as a social determinant of health (Ehsan and De Silva, 2015; Lecerof *et al.*, 2016; Yang *et al.*, 2018).

However, social capital has been a topic of abundant debates, revealing disagreement between different

researchers. In fact, despite many investigations about the implications of this construct in different areas, there is an absence of agreement about its definitions and dimensions (Agampodi *et al.*, 2015). Consequently, different concepts of social capital have been used to examine its relation to health, without reaching a definite conclusion (Villalonga-Olives and Kawachi, 2015; Álvarez and Romani, 2017). Additionally, several investigators have relied on inadequate procedures of social capital, which has extended the discrepancies among empirical evidence and social capital theory (Archuleta and Miller, 2011).

Despite the conceptual and the methodological issues, social capital is perceived as a construct contributing to health inequalities among populations, and has been acknowledged by social researchers, policymakers and global institutions (Henderson and Whiteford, 2003; De Silva *et al.*, 2005). Thus, the rapid growth of social capital and the recognition of its importance emphasizes the requirement for psychometrically sound instruments, in order to guarantee the proper operationalization of the construct, particularly at the individual level (De Silva *et al.*, 2005; Chen *et al.*, 2008; Wang *et al.*, 2014).

Social Capital definitions

The concept of social capital was initially mentioned by Bourdieu, one of the pioneers of social capital (Álvarez and Romani, 2017). For Bourdieu (1986), social networks are the core of social capital, and individuals' exchanges within those networks are defined by norms and values, allowing them to share resources and support. From Coleman's (1990) perspective, social capital evolves to a structural definition interconnecting individuals and communities. As for Putnam (1993), social capital is extended to comprise additional collectivistic elements, such as trust, reciprocity or community cooperation. At the first glance, these definitions may look different, yet they are interconnected because social capital is 'the presence of more or less structuralized networks between people or groups of people [...] that facilitate certain actions for different actors within the structures' (Morgan, 2011; Álvarez and Romani, 2017, 'Preface').

After decades of discussion about the definition of social capital, an agreement has been reached: social capital should be measured based on a person's network, by taking into account its reliability, size and resources (De Silva *et al.*, 2005; Chen *et al.*, 2008; Van Der Gaag and Webber, 2010; Wang *et al.*, 2014).

From the perspective of Kaiser *et al.* (2015), social capital encompasses the bonding element related to how

people interact, how they participate within a group, and how cohesive the group is, as well as how those elements exist in an interconnection with larger social structures, namely the bridging dimension. Social capital has been considered an important buffer against social stress that arises from negative interpersonal relationships. Thus, social capital can be interpreted based on the individual's social network, more specifically the bonding, bridging and the linking dimensions. Social capital can be differentiated as vertical and horizontal social capital, which include the bonding and bridging social capital dimensions (Archuleta and Miller, 2011).

Putnam (2000) elaborated on bonding and bridging social capital: The first, addresses networks specificities and social ties (e.g. similarity, norms, loyalty; Whitley and McKenzie, 2005) while in the second the focus is not on the network itself, but on the weak ties established with other groups, the increasing opportunities to expand resources, and the interconnections (Whitley and McKenzie, 2005; Poortinga, 2006). A specific type of this dimension is linking social capital, representing social ties vertically, addressing power relationships (Poortinga, 2006).

Some authors remarked on the importance of continuing to conduct studies on social capital, especially at the horizontal level (bonding and bridging), because of the lack of studies on vertical trust (Lecroft *et al.*, 2016). The need to conduct studies on social capital remains relevant due to its links to psychological mechanisms that impact mental well-being; specifically, its study in the context of migration is crucial, because social capital may be lost due to disrupted social networks during the course of migration, contributing to issues in mental health. With network disruptions, migrant social capital will change and operate as a significant determinant of the postmigration quality of life and well-being. By directing their focus to migrant networks in the host country, and on how social capital is mobilized, policymakers will be able to design strategies to prevent migrant psychological distress (Johnson *et al.*, 2017).

Migrant population

Bridging social capital is helpful to immigrants because it offers access to resources in the host country and specific information about labour market chances. It also connects people to valuable resources (Flap and Völker, 2004), and that is why it is so important to evaluate the social capital in migration. Following Putnam's (2000), it will be possible to evaluate the dynamics of migrant networks (bonding) and especially how resources are mobilized from their networks to other social structures (bridging).

In addition to that, social capital is particularly important in the context of migration as it exerts a major influence on maintaining good migrant mental health (Abubakar *et al.*, 2018) by providing social ties, social integration (Teodorescu *et al.*, 2012) and social support (Carswell *et al.*, 2011; Lecerof *et al.*, 2016). Social capital has also been considered a protective factor against social stress (Kaiser *et al.*, 2015).

Many migrant studies have been conducted that corroborate that social capital has a major influence on mental health (Kawachi *et al.*, 2008; Lecerof *et al.*, 2016) and that the absence of it leads to bad mental health (De Silva *et al.*, 2005; Lecerof *et al.*, 2016). For instance, Uphoff *et al.* (2013) revealed that socioeconomic inequalities in health are associated with low social capital. Moreover, a Swedish research explicated the role of social capital in mental health in immigrants, by examining mental health inequalities between immigrants and the local population (Johnson *et al.*, 2017). When it comes to Portugal, few studies focus on assessing the social capital of immigrants; however, a study by Padilla (2006) revealed that the growth of the social capital of Brazilian immigrants in Portugal mainly depends on the contacts they already have.

Furthermore, the level of education also plays an important role when it comes to social capital. People tend to have more social capital when they have higher human capital (education and training). Social and human capital are interrelated because social capital helps in obtaining human capital; education contributes to an increase in social capital (Tokas, 2016). As mentioned by Oliver and O'Reilly (2010), migrants with a higher education level could use their cultural capital to differentiate themselves from other migrants and local citizens. The fact that qualified migrants have more linguistic abilities is key to making new connections and creating weak ties (bridging ties) with people outside their close or linguistic circle (Temple, 2010; Ryan, 2011).

Social capital assessment

Social capital measurement is a complex and difficult procedure, since it is a multidimensional concept supported by a longstanding sociological discourse (Agampodi *et al.*, 2015). While many tactics are used, there is no unanimously valid standard instrument to evaluate social capital. Furthermore, the operationalization of social capital dimensions is a challenge (Krishna, 2001). The suitable level at which social capital should be evaluated is still ambiguous, suggesting its ability to address phenomena at the individual (attitudinal and psychological), micro (social networks of individuals),

meso (communities) and macro (nations, regions) levels (Agampodi *et al.*, 2015). Some studies indicate that personal level social capital variables help to identify differences in health, compared with those evaluated at an ecological level (De Silva *et al.*, 2005; Agampodi *et al.*, 2015). Nevertheless, in order to measure social capital at different levels, multilevel modelling should be applied (Islam *et al.*, 2006); this can help comprehend social capital at both individual and ecological levels, and understand the relation between health and social capital (Kawachi *et al.*, 2008; Agampodi *et al.*, 2015).

In addition to that, the number of social capital measures has grown over time (Mitchell and Bossert, 2007), but the psychometric studies of most of these measures lack robust evidence (Macinko and Starfield, 2001; Archuleta and Miller, 2011).

Social capital by addressing social networks is also an interesting way to evaluate social inclusion, which is particularly relevant within the study of migration. However, to fully assess this social determinant of health, the psychometric properties of social capital instruments should be properly evaluated and adapted to different contexts, owing to migration heterogeneity. For instance, one of the most used instruments to measure social capital is the A-SCAT (Harpham *et al.*, 2002), which is a shorter version of the lengthy social capital assessment tool SCAT (Krishna and Shrader, 2000) and the base of the Personal Social Capital Scale (PSCS; Chen *et al.*, 2008). The PSCS addresses social capital at the individual level to better inform how this construct is interconnected with health; demonstrates adequate psychometric properties; and focuses on the social network behaviour of individuals (De Silva *et al.*, 2005). However, unlike the A-SCAT, the PSCS disentangles the concept of social capital and what it does (Chen *et al.*, 2008). Also, Wang and collaborators (2014), after validating shorter versions of the PSCS in the Chinese context, concluded that additional psychometric validation is required, particularly within different cultural settings.

Measurements qualities of the PSCS

The PSCS is a self-report instrument that quantitatively assesses social factors related to health and behaviour (Chen *et al.*, 2008). It is a tool validated in the United States and China with recognized reliability and validity, but the initial version (42 items) is very extensive and hence unsuitable for large-scale survey research (Wang *et al.*, 2014). To overcome this issue, Wang *et al.* (2014) developed a shorter version, the PSCS-16, in order to fulfil the requirement for short instruments for large-scale studies on social capital and health.

This instrument was first measured in China using a sample of residents and rural-to-urban migrants ($N = 259$). A .90 Cronbach's alpha coefficient was obtained. The PSCS-16 was correlated with the original PSCS ($r = .95$; $p < .001$), with constructs adjusting to a two-factor first-order model, including bonding capital and bridging capital scales; in addition, the scale helped expressively differentiate the social capital of the migrant subsample as compared with the two non-migrant subsamples, with the urban migrants reporting a lower social capital than the rural and urban residents (Wang *et al.*, 2014).

Then Archuleta and Miller (2011), through a sample of college students in the United States, validated the English version of this instrument. They obtained exceptional item response scores, reliability and validity. The English version of this instrument focused on people of Mexican descent ($N = 322$) and the validation showed good reliability scores ($\alpha_{\text{global}} = .85$, $\alpha_{\text{bonding}} = .83$; $\alpha_{\text{bridging}} = .85$). Furthermore, a well-fitting model was obtained through a confirmatory factor analysis (CFA; Archuleta and Miller, 2011).

Validating the PSCS in the Portuguese context

As a social determinant of health, the study of social capital in the context of migration is relevant, because social capital in migrant populations is usually disrupted owing to the changes that take place during migration, such as changes in their support networks, making them highly vulnerable to social, psychological and health problems (Yang *et al.*, 2018). Therefore, and since social capital is directly related to mental health, it can be convenient to use the PSCS-16 scale in Portugal to better understand this relationship. When it comes to Portugal, to our knowledge, there is no evidence of a validated instrument capable of measuring social capital. Given the fact that Portugal is a country not only of emigration but also of immigration (Góis and Marques, 2018), and because social capital impacts migrant mental health (Johnson *et al.*, 2017), it is important to have a validated measure that allows us to accurately measure social capital. This study focuses on the native Portuguese and immigrant population (those who are from countries that speak Portuguese) that live in Portugal.

The following goals were pursued: (i) examine the factorial structure of the PSCS-16 by comparing a unidimensional model with a two-factor first-order one; (ii) evaluate the internal consistency of the scale; (iii) assess convergent and discriminant validity of the PSCS-16; and (iv) explore associations of the PSCS-16 with demographic characteristics of our sample. Due to the

forementioned psychometric studies using the PSCS we expect the following results: (i) the two-factor first-order structure will better adjust to the data; (ii) good internal reliability; and (iii) evidence of both convergent and discriminant validity obtained by analysing the measurement model, but also by associations between social capital dimensions and health-related quality-of-life indicators (both immigrant and native social capital being associated with better emotional disclosure for convergent validity; and non-existent associations for both groups between social capital and sexual health for discriminant validity). Finally, it is expected that an overall positive association between education level and social capital will be observed, and the presence of an immigrant status will be associated with higher levels of bridging social capital.

METHOD

Participants

The sample comprised 280 participants. The following inclusion criteria were defined: (i) being a Portuguese native, (ii) being an immigrant from a country with official language Portuguese and (iii) being at least 18 years of age. As shown in Table 1, the participants were mostly Portuguese natives and females, and had diverse levels of education: ~39% of the participants had already completed their high school education.

Procedure

This study was approved by the Ethics Committee of the Faculty of Psychology of Lisbon University and followed the ethical code defined by the American Psychological Association (APA) (2002; 2010). Authorization was requested from the authors of the original version of the PSCS to validate the scale in a Portuguese context, which was granted. Regarding the adequate translation into Portuguese, the International Test Commission recommendations (Muñiz *et al.*, 2013) were followed. To minimize discrepancies between the Portuguese interpretation and the original version of the PSCS, appropriate attention was paid to the semantic equivalence (Schmidt and Bullinger, 2003); in addition, the Translate, Adjudicate, Pretest and Document (TRAPD) method was also followed. Initially, the instrument was translated by the authors and another researcher outside the team, after which a fluent English speaker considered the two versions to identify possible problems with the translation, and helped the authors reach a consensual translated version. This version was then tested with a small convenience sample to identify difficulties in

Table 1: Sociodemographic characteristics of the sample (N = 280)

Participants	Portuguese natives	n	%
		211	75.4
Gender	Immigrants from Portuguese-speaking countries	69	24.6
	Female	201	71.8
	Male	77	27.5
	Other	2	.7
Education level	Primary School (first cycle)	2	.7
	Second or third cycle	5	1.8
	professional training course (level 2)	1	.4
	High school	111	39.6
	Professional training course (level 2 or 3)	15	5.4
	Bachelor's degree	72	25.7
	Master's degree	64	22.9
Marital status	Doctoral degree	10	3.6
	Single	165	58.9
	Cohabitation	29	10.4
	Married	69	24.6
	widower	1	.4
Current employment situation	Divorced	16	5.7
	Employed	124	44.3
	Student	121	43.2
	Unemployed	16	5.7
	Inactive	7	2.5
Residence area	Retired	12	4.3
	Rural	42	15.0
	Suburban	60	21.4
	Urban	178	63.6

answering any of the questions. Their feedback was then taken onboard to compile a final, more accurate, translation of the PSCS-16 (Willis *et al.*, 2010).

For data collection, a convenience sampling strategy was used. The data collection was carried out through the Qualtrics Surveys platform (version 1.2020; Qualtrics, 2005) between January and April 2020. The snowball technique was also used through the authors' professional and informal contacts. The participants had access to the informed consent to learn about the study's aims and procedures. Detailed information was provided, and confidentiality and anonymity of their responses were granted. Responses to the questionnaire took an average of 10 min.

Measures

Socio-demographic questionnaire

To collect the socio-demographic information from the Portuguese natives and immigrants from Portuguese-speaking countries, we used a self-report questionnaire to retrieve data on age, gender, educational level, marital status, employment status and residence area.

Personal Social Capital Scale-16

The PSCS (Chen *et al.*, 2008), as a self-report instrument, assesses the social capital of individuals. It consists of 16 items, where items 1–8 assess bonding social capital, and items 9–16 assess bridging social capital. The PSCS-16 consists of two Likert-type response scales that vary between 1 and 5. The response scale that assesses the size of the participants' networks also varies between 'much below average' and 'much above average.' The response scale that assesses the participants' perception of the number of members in their networks varies between 'none' and 'all.' After item aggregation, the bonding social capital scale is made up of 8 items (e.g. *How do you measure the number of people in your network: your friends; your fellow citizens*); and, the bridging social capital scale is also made up of 8 items (e.g. *If you consider all the groups and organizations referred to, how many have the following assets and/or resources: vast network of contacts; high level of social influence*). For a better description of the items, see Appendix A (English and Portuguese versions).

Health-related quality-of-life proxy indicators

Two items were used as proxies to evaluate the perceived quality of life. One item was sexual health (WHOQOL Group, 1994; Portuguese version by Vaz Serra et al., 2006; *How satisfied are you with your sex life?*) with answers being given in a 5-type Likert scale (1 being ‘very dissatisfied’ to 5 being ‘very satisfied’). The other item was emotional disclosure (Kring et al., 1994, Portuguese version by Dinis et al. (2011); *I keep my feelings to myself*). After reverse coding, answers ranged in a 5-type Likert scale (1 being ‘always true’ to 5 being ‘never true’).

Data analyses

To examine which factorial structural solution best fitted the data, a CFA was used. Following Wang et al. (2014), the PSCS-16 items were grouped into eight parcels for measurement modelling, with 4 parcels assessing bonding capital and another 4 parcels measuring bridging capital. Each parcel included 2 items. Then, data were screened for normality using cut-off values for skewness $|\lt 3|$ and kurtosis $|\lt 7|$ (Finney and DiStefano, 2013), outliers and missing values. Two factorial models were tested and compared: a unidimensional structure, with all items loading into a single factor (Model 1), followed by a two-factor first-order oblique model (Model 2) representing the theoretical PSCS structure, with the 4 parcels loading separately into bonding and bridging social capital.

Model adequacy and acceptable adjustment was based on the following fit indices (and cut-off values): the Satorra–Bentler (S–B) chi square; the Bayesian information criteria (BIC); the comparative fit index value (CFI $\gt .90$) and the Tucker–Lewis index (TLI $\gt .90$) (Bentler, 1990; Bentler and Dudgeon, 1996); the standardized root mean square residual (SRMR) and the root mean square error of approximation (RMSEA), with 90% confidence interval (both $\lt .08$) (Arbuckle, 2009). When a comparison between the models was performed, the best factorial solution was the one with lower BIC values (Byrne, 2010), and lower values in the S–B χ^2 likelihood ratio (Satorra and Bentler, 2001) when using $\Delta S-B\chi^2$.

Additional analyses were performed to the best factorial structure to examine convergent and discriminant validity as well as reliability. First, the measurement model was evaluated by assessing the average variance extracted (AVE) to check for convergent validity (AVE equal to or $\gt 0.50$ were considered); whenever AVE values were $\lt 0.50$, composite reliability should surpass 0.70 (Fornell and Larcker, 1981). Evidence of

discriminant validity occurred when dimension AVE values surpassed construct squared correlations (Fornell and Larcker, 1981). Next, the pattern of correlations between social capital dimensions and quality-of-life proxies was examined to complement the evidence for construct validity. Convergent validity occurred when significant associations with conceptual meaning were found; discriminant validity occurred when significant associations were absent. The split-half reliability using equal-length Spearman–Brown coefficient was computed. Internal consistency was assessed using the omega hierarchical (ω_H ; Green and Yang, 2009). Evidence of adequate reliability occurred when omega values were $\gt .70$ (Marôco, 2014).

Finally, correlation coefficients were used to explore associations between the PSCS dimensions and item components and socio-demographic variables. SPSS (v. 26, IBM Corp., Armonk, New York, USA) and R (R Core Team, 2020) software were used to perform the statistical analyses. In terms of R, lavaan (Rosseel, 2012) was used for CFA and semTools (Jorgensen et al., 2018) for estimating AVE values and internal consistency coefficients.

RESULTS

PSCS descriptive statistics and factorial structure

Table 2 provides a summary of the descriptive statistics for the 8 item parcels to be included in the measurement model. Absolute values of skewness and kurtosis revealed reasonable normal distribution of the data. The percentage of outliers was 7.5% (6.1% in BOC 1, 0.36% in BOC 3 and the remaining 1% in BRC 1). Due

Table 2: Descriptive statistics for the PSCS components ($N = 280$)

Items	$M(SD)$ [min–max]	Skewness	Kurtosis
BOC 1	3.13(.75) [1–5]	2.48	2.12
BOC 2	3.05(.75) [1–5]	0.74	0.44
BOC 3	3.30(.74) [1–5]	1.72	0.91
BOC 4	3.08(.75) [1–5]	1.34	1.26
BRC 1	2.74(.84) [1–5]	1.08	0.42
BRC 2	2.89(.70) [1–5]	2.30	0.54
BRC 3	2.47(.71) [1–4]	0.78	1.19
BRC 4	2.35(.72) [1–4]	1.06	1.07

Note. Mean (M), standard deviation (SD), and absolute values for skewness and kurtosis.

BOC items correspond to bonding social capital, and BRC to bridging social capital.

Items represent the following components: network size (1), trustworthiness (2), resources (3) and reciprocity (4).

to its small percentage, and adequate skewness and kurtosis values, outliers were kept in the analysis. There were no missing values. Despite these reasonable distributional results, a maximum likelihood estimator with robust standard errors (MLM) was used.

The best fit was obtained for Model 2 ($S-B\chi^2(16) = 56.016, p < .001; CFI = .92, TLI = .87, BIC = 4547.6, SRMR = .06, RMSEA = .10, 90\% CI [.07, .13]$), which represents the PSCS structure with two-factor first-order latent structure. Model 1, depicting the unidimensional structure, did not provide the adequate fit indices ($S-B\chi^2(17) = 94.217, p < .001, CFI = .85, TLI = .75, BIC = 4591.9, SRMR = .08, RMSEA = .14, 90\% CI [.11, .17]$). The model comparison revealed significant scaled chi-square differences ($\Delta S-B\chi^2(1) = 21.785, p < .001$), with all Model 2 factor loadings reaching significance ($p < .001$) and being greater than .50, except for parcel BOC 1. Table 3 depicts the Model 2 measurement model.

Convergent, discriminant validity and reliability

The AVE values were acceptable for bridging social capital (.50) and low for bonding social capital (.39). For bonding social capital, even though the AVE values reflected >50% of the variance—due to error—as the omega hierarchical coefficient was above the required cut-off value, convergent validity evidence of the construct was considered acceptable (Fornell and Larcker, 1981). For discriminant validity, the AVE values for bonding and social capital were greater than the squared correlation between the factors ($r^2 = .31$), suggesting adequate evidence for this validity. In terms of associations, for convergent validity significant correlations were found between social capital and emotional expression (Immigrants: $r_s \text{ Bonding} = -.34, p = .014; r_s \text{ Bridging} = -.28, p = .046$; Natives: $r_s \text{ Bonding} = .14, p = .049; r_s .19, p = .006$), while non-existent associations occurred

between social capital and sexual health, suggesting discriminant validity (Immigrants: $r_s \text{ Bonding} = .13, p = .357; r_s \text{ Bridging} = -.02, p = .918$; Natives: $r_s \text{ Bonding} = -.04, p = .536; r_s \text{ Bridging} = .01, p = .844$). Internal consistency was good ($\omega_H(\text{Bonding}) = .71; \omega_H(\text{Bridging}) = .84$). The equal-length Spearman–Brown split-half coefficient was adequate ($r \text{ Bonding} = .63; r \text{ Bridging} = .68$).

Additional correlational analyses

There was an overall small positive association between the education level and bridging social capital ($r_s = .14, p = .018$). In addition, participants with an immigrant status showed higher levels of bridging social capital ($r_{pb} = .20, p = .001$), and were specifically associated with the following bridging social capital components: network size ($r_{pb} = .14, p = .023$), trustworthiness ($r_{pb} = .20, p = .001$) and resources ($r_{pb} = .16, p = .006$).

DISCUSSION

Social capital is related to health, in developed and developing countries, and is a crucial construct in predicting the health of the populations (Palmer and Xu, 2013). In specific, social capital is a relevant construct to migration and health, since their decision to migrate is related to the social capital that they have, based on their household and network ties. Migrant networks can help them with getting access to health services, assist them with getting a job, and have the potential to have a positive influence on their mental health (Palmer and Xu, 2013). Given these facts, there is a requirement for a valid psychometric tool that measures the social capital, which is currently lacking (Macinko and Starfield, 2001; Archuleta and Miller, 2011). The present study validates in the Portuguese context, the PSCS-16 instrument that assesses the social capital of Portuguese natives and immigrants living in Portugal (from countries that also speak Portuguese).

Our results indicate the PSCSC seems to be a valid assessment tool to evaluate social capital, which is in accordance with the work of Wang *et al.* (2014). As hypothesized, and corroborating previous studies on PSCS (Chen *et al.*, 2008; Archuleta and Miller, 2011; Wang *et al.*, 2014), the results revealed an oblique two-factor first-order model with an acceptable fit, with suitable item grouping and split-up in bonding and bridging social capital. Even though a wide variety of instruments have been developed to evaluate social capital, the length of these instruments revealed they are not adequate to evaluate personal possessed social capital in large-scale survey investigations (Wang *et al.*, 2014).

Table 3: Standardized factor loadings and variances for the two first order oblique latent factors solution

Items	Bonding capital	Social bridging social capital
BOC 1	.42 (.82)	
BOC 2	.61 (.63)	
BOC 3	.56 (.69)	
BOC 4	.80 (.36)	
BRC 1		.57 (.68)
BRC 2		.80 (.35)
BRC 3		.78 (.40)
BRC 4		.71 (.50)

Note. Items corresponding variances in parentheses.

The current study also illustrated that the PSCS-16 is a short and suitable instrument for large-scale studies, disentangling social capital dimensions with good reliability scores. This idea seems to be consistent with the work of Putnam (2000) and Coleman (1988), making the distinction between bonding ‘ties to people who are like me in some way’; and bridging ‘ties to people who are unlike me in some important way’ (Putnam, 2000, p.23; Ryan, 2011).

By analysing the factorial measurement model, evidence of a convergent validity was achieved, with adequate AVE values. As for discriminant validity, both AVE values surpassed the squared correlation between bonding and bridging. This evidence was also supported by the results of the association patterns. Specifically, for immigrants, a negative association between social capital and emotion disclosure was found, suggesting this group generally does not keep their emotions to themselves. Because migrants need to bridge cultural boundaries to form new relationships (Utz and Muscanell, 2015), emotional disclosure may occur more often, contributing to social integration and well-being (Slatcher and Pennebaker, 2007). However, unexpectedly, the opposite was found true for natives. Yet, because native networks may be mostly determined by significant strong ties, social exchanges may be more prone to ambivalence, which can be detrimental to emotional disclosure and well-being (Holt-Lunstad and Uchino, 2019). Furthermore, because native social embeddedness is more well established when compared with that of migrants (Arpino and de Valk, 2018), emotional disclosure breadth may decrease, because it is more relevant when ties are being initiated (Greene et al., 2006). As for discriminant validity, both groups showed non-significant associations between social capital and sexual health, despite the literature considering sexual health highly important to the quality of life (Flynn et al., 2016).

Moreover, previous results showed that participants with a higher education level are positively related with bridging social capital. This kind of social capital allows the entrance of resources that do not exist in the network and also offers better acceptance to strangers, tolerates further individuality inside the group and boosts connections with other persons (Granovetter, 1973; Putnam, 2000; Andreas, 2018). People with a higher education have better communication skills (Ryan, 2011), which allows them to communicate with more people and establish more relationships with people outside their network. As Volker et al. (2008) indicate, qualified immigrants have less homogeneous networks (fewer bonding networks). This can be especially important for the immigrant population, because qualified immigrants

have more abilities (i.e. language skills), which allow them to communicate with everybody clearly, a vital element/factor in networking with people outside one’s direct ethnic or linguistic group (Temple, 2010). Furthermore, the immigrants with a higher cultural capital may distance themselves from other migrants and natives with lower education because they see them as ‘lower class’ (Oliver and O’Reilly, 2010; Ryan, 2011).

Accordingly, present results indicated that being an immigrant living in Portugal meant better levels of bridging social capital. Bridging connections tend to be correlated with social movement and positive social capital integration (Nannestad et al., 2008; Ryan, 2011); it helps connect people across different, diverse groups, thus being more inclusive (Putnam, 2000), which is why having more bridging social capital is beneficial for the migrant population. Most of the employers of migrants are natives, which makes it more important for the migrants to build new ties with the natives. In addition, most of the natives are more qualified and have better jobs, which is why they may be more informed and able to indicate better jobs to the migrant population (Lancee, 2012). The bridging or weak ties that migrants make are valuable and fundamental for them, because the information that runs through these bridges has a significant effect on the social life of these people and their communities (Granovetter, 1973; Ryan, 2011), as well as on their potential job opportunities (Flap and Völker, 2004). Moreover, migrant groups that are culturally similar to the native groups may have more inter-ethnic contacts than groups that are culturally more distant (Volker et al., 2008), which may explain why the migrants who live in Portugal and speak Portuguese are rated as having higher bridging social capital; since they speak the same language, it allows them to expand their circles to include the Portuguese natives. On the opposite end, the results indicated that the Portuguese natives revealed lower levels of bridging social capital when compared with immigrants, which is in accordance with the work of Volker et al. (2008). These authors indicate that the networks of native people are usually more homogeneous, meaning bonding social capital in their networks tends to be higher when it comes to ethnicity as compared with the networks of immigrants, ‘because the chance to interact with a person from the majority group are highest for everybody’ (p.330).

Limitations and directions for future research

One limitation that we can point out is the cross-sectional design of the study, providing us a glimpse of a single temporal moment. Moreover, the sample was

collected through a convenience strategy. Although we incorporated different groups (Portuguese natives and immigrants from Portuguese-speaking countries), these groups were not comparable in size. The fact that the dimension of the sample is small and unbalanced prevents us from comparing the factorial structure and testing its invariance. Future studies should incorporate groups equivalent in size and complement our cross-sectional validation with a longitudinal one, which will also allow the administration of test-retest reliability. Also, by testing invariance over time, we would obtain information not only about whether the factorial model would hold across groups but also about whether the social capital scores would be equivalent across time points. Regarding model adequacy, the SRMR value was below the cut-off value of .08, but the RMSEA indicator was not. This may happen whenever the factorial models have small degrees of freedom, falsely suggesting lack of fit (Kenny *et al.*, 2015). Thus, testing the current solution with larger sample sizes will also provide more insights regarding model adjustment and AVE values.

Future investigations should reinforce the preliminary psychometric validation of the findings of this study, by including other measures to examine convergent and discriminant validities, and explore correlates of social capital, particularly how multifaceted network configurations may be more prone to emotional disclosure and how both elements impact the quality of life.

It can be thus concluded that the preliminary validation of the PSCS-16 for the Portuguese context adds to the social capital literature by reinforcing its psychometric evidence in the context of migration.

SUPPLEMENTARY MATERIAL

Supplementary material is available at *Health Promotion International* online.

AUTHORS' CONTRIBUTIONS

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CONFLICT OF INTEREST STATEMENT

The authors declare that they have no conflict of interest.

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