

## **VALIDATION AND ADAPTATION INTO SPANISH OF THE REVISED SENSE OF COHERENCE SCALE (SOC-R): A SCALE ASSOCIATED WITH LIFE SATISFACTION**

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### **ABSTRACT**

*This evaluates the psychometric properties of the Spanish version of the Revised Sense of Coherence (SOC-R) scale in Argentina, which assesses the general ability to perceive life phenomena as connected and to balance positive and negative appraisals of life experiences. A total of 575 people participated in the study with ages between 18 and 84 years ( $M = 43.94$ ,  $SD = 15.90$ ) and both genders (male= 35.7 %, female= 64.3 %). A 3-factor model resulted in acceptable fit indices ( $NNFI = .95$ ;  $CFI = .97$ ;  $IFI = .97$ ;  $RMSEA = .054$ ). Results indicated an acceptable internal consistency for the subscales Manageability ( $\omega = .73$ ;  $\alpha = .69$ ), Reflection ( $\omega = .89$ ;  $\alpha = .85$ ) and Balance ( $\omega = .70$ ;  $\alpha = .55$ ). The adaptation into Spanish presents 13 items, as proposed by the original authors. The findings showed that the scale is valid for use in the Argentine population.*

### **INTRODUCTION**

The sense of coherence (SOC) construct was developed to explain the striking variety of differences that individuals show in response to adversity. Antonovsky (1979) defined SOC as the ability to identify and use internal and external resources to successfully manage stressors. In this sense, he considered the SOC as confidence in (1) stimuli in the course of life being structured, predictable, and explicable; (2) having resources available to meet the demands of these stimuli; and (3) demands being challenges that require investment and engagement (Antonovsky, 1979). Each of the elements of the SOC definition represents a dimension on the respective 29-item scale (SOC-A; Antonovsky, 1987). While some authors verified properties of the SOC-A (Eriksson & Lindström, 2005), other studies indicated a variety of shortcomings, in particular regarding three main issues: factorial structure (e.g., Feldt et al., 2007; Gruszczynska, 2006); external validity (e.g., Gruszczynska, 2006; Strümpfer et al., 1998); and stability (Volanen et al., 2007).

Aiming to resolve these issues, Bachem and Maercker (2016) developed a revised Sense of Coherence Scale (SOC-R), based on the definition of SOC-R as the general ability to perceive life phenomena as connected and to balance positive and negative appraisals of life experiences (Arciero & Guidano, 2000). The scale assessing SOC-R was developed using two sample populations, namely people who were going through a mourning process and individuals of the general population. Confirmatory factor analyses (CFA) revealed a three-factor structure in both samples, comprising the dimensions of “Manageability”, “Reflection” and “Balance”. Thus, while Antonovsky (1987) and Bachem and Maercker (2016) agree that people with a strong SOC report higher levels of Manageability, the remaining two dimensions differ between the scales. Based on its initial validation, it was tentatively suggested that SOC-R is a reliable and valid measure that is applicable in clinical psychology and resilience research (Bachem & Maercker, 2016).

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In the next step, the scale was further validated in Switzerland in a population of older adults, which confirmed the three-factor structure and found good internal consistencies for the subscales of “Manageability” and “Reflection”, even though lower internal consistency was found for the “Balance” scale (McGee et al., 2018). It was also shown that SOC-R mediates the relationship between chronic stress and mental health, enabling the development of resilience (McGee et al., 2018).

Besides Switzerland, the SOC-R scale was validated in Germany (Thoma et al., 2018), Italy (Chiesi et al., 2020), and Turkey (Tekin & Kirlioglu, 2019; see Table1). In Germany, SOC-R was used in a sample of emergency medical workers, concluding that a higher SOC-R score was associated with less severe somatic and depressive symptoms, while lower SOC-R levels were correlated with higher post-traumatic stress symptoms (Behnke et al., 2019).

***Sense of coherence, life satisfaction, and well-being.*** The SOC construct has been strongly and positively associated with life satisfaction, having a positive role in subjective well-being (Bachem & Maercker, 2016; McGee et al., 2018; Moksnes et al., 2013). In older adults, a sense of coherence is one of the greatest predictors of satisfaction with life, being a promoter of aging well (Von Humboldt et al., 2014). In addition, it was also correlated to both physical and psychological well-being and the use of adaptive coping strategies (Pallant & Lae, 2002). The SOC construct, in addition to positively predicting well-being and life satisfaction, is a strong predictor of happiness (Alvi et al., 2021). The SOC can also be an important construct to assess people's health since when meaning in life is experienced, greater existential well-being is achieved (Routledge et al., 2021).

People who attach great importance to material possessions tend to experience greater dissatisfaction in life (Sirgy et al., 1998; Wright & Larsen, 1993). In contrast, the SOC construct moves away from a materialistic world vision in that when one feels the world is coherent and one experience a true connection with oneself, a significant increase in well-being is generated (Vainio & Daukantaitė, 2016).

The current study aims to validate the Spanish version of the SOC-R scale using an Argentinian sample since it can be useful in predicting mental health indicators such as well-being, life satisfaction, and happiness, or possible mental disorders such as depression, anxiety, and chronic stress (Bachem & Maercker, 2016; McGee et al., 2018)

## METHOD

***Participants.*** The sample was composed of 575 Argentinian adult men and women (male=35.7%; female=64.3%) residing in Buenos Aires aged between 18 and 84 years ( $M = 43.94$ ,  $SD = 15.90$ ). Participants who were under psychiatric treatment were excluded from the study. Participation was anonymous and voluntary; data were collected through an online form complying with the codes of ethical conduct established by the National Scientific and Technical Research Council (CONICET) (Res. D No. 2857/06).

***Measures.*** The *Revised Sense of Coherence* scale (SOC-R; Bachem & Maercker, 2016) is a 13-item self-administered questionnaire that measures three dimensions: (1) Manageability (items 1, 6, 7, 8, and 9; e.g. “Despite everything, I can learn from bad experiences”/ “*A pesar de todo, puedo aprender de las malas experiencias*”); (2) Reflection (items 10, 11, 12, 13; e.g. “It is important for me to maintain a good overview of situations”/ “*Para mi es importante mantener una mirada global de las situaciones*”); and (3) Balance (items 2, 3, 4, 5; e.g. “Evil also has its place in the world”/ “*La maldad también tiene su lugar en el mundo*”). A sociodemographic questionnaire was also developed that asked participants to record their age and gender.

***Procedure.*** For the adaptation and validation, the SOC-R scale items were translated into Spanish. Then, a translator unfamiliar with the scale back translated scale items. When comparing both scales, the psychological sense of each item was preserved. Recruitment for

**Table 1**

*Overview of validation studies of the Sense of Coherence Revised Scale*

<b>Authors</b>	<b>Year</b>	<b>Country</b>	<b>Sample</b>	<b>N</b>	<b>CFI</b>	<b>RMSEA</b>	<b><math>\alpha</math> Total</b>	<b><math>\alpha</math> Manag.</b>	<b><math>\alpha</math> Refl.</b>	<b><math>\alpha</math> Balan.</b>
Chiesi et al.	2020	Italy	General population	689	.93	.053	.70	.59	.70	.50
Tekin & Kirlioglu	2019	Turkey	General population	503	.95	.061	.82	.77	.77	.78
McGee, et al.	2018	Switzerland	Older adults	268	.94	.054	.78	.69	.74	.54
Thoma, et al.	2018	Germany	General population	2373	.94	.066	.78	.69	.74	.54

Note N=Sample size; Manag=Manageability; Refl=Reflection; Balan= Balance

the study was carried out online through Facebook advertising between February 2<sup>nd</sup> and April 13<sup>th</sup>, 2020, aimed at the general adult population of Buenos Aires, Argentina. The effectiveness of this data collection tool has been proven in several studies (Stier et al., 2019). No compensation or incentive was offered for participation. See Appendix A.

To conduct statistical analyses, we used SPSS 22 and Lisrel 8.80 programs. The structural validity was analyzed using a confirmatory factor analysis (CFA). The model was tested using the goodness of fit indexes  $\chi^2$ , Incremental Fit Index (IFI), Non-Normed Fit Index (NNFI), Comparative Fit Index (CFI) and Root Mean Square Error of Approximation (RMSEA). The cut-off point is those higher than .90 for NNFI, IFI and CFI (Brown, 2015) and lower than .080 for RMSEA (Green & Yang, 2015). To estimate the robustness of the model, we decided to use two different estimation methods: Maximum Likelihood (ML) and Generalized Least Squares (GLS).

Cross-validation was carried out to corroborate whether a three-factor model presented adequate fit and similar performance when the sample was divided according to gender. To evaluate the fit of the model in the cross-validation study, the following fit indices were analyzed: CFI, NNFI, IFI and RMSEA.

The internal consistency reliability of SOC-R scores was analyzed using McDonald's omega and ordinal alpha, considering as adequate values those greater than .70 according to the literature (Viladrich et al., 2017).

**Table 2**

*Confirmatory factor analysis of SOC-R*

	$X^2_{(df)}$	NNFI	CFI	IFI	RMSEA
SOC-R	172.99 <sub>(52)</sub>	.95	.97	.97	.064

Note= SOC-R = Revised sense of coherence; NNFI= Non-Normed Fit Index; CFI= Comparative Fit Index; IFI: Incremental Fit Index; RMSEA= Root Mean Square Error of Approximation

**Table 3**

*Cross-validation SOC-R*

	$X^2_{(df)}$	NNFI	CFI	IFI	RMSEA
<b>Gender</b>					
Male	107.64 <sub>(52)</sub>	.94	.96	.96	.072
Female	142.39 <sub>(52)</sub>	.94	.96	.96	.069

Note= SOC-R = Revised sense of coherence; NNFI= Non-Normed Fit Index; CFI= Comparative Fit Index; IFI: Incremental Fit Index; RMSEA= Root Mean Square Error of Approximation

## RESULTS

**Confirmatory factor analysis.** In both estimation methods, confirmatory factor analysis indicated a good fit to the data of the 3-factor correlated model proposed by the original authors. The IFI, NNFI and CFI indexes achieved values higher than .90 and the RMSEA achieved a value below .080 (Table 2). The CFA results for the model can be seen in Figure 1.

In the cross-validation using gender as a segmentation variable, both samples of women and men demonstrated a good model fit, with an NNFI, CFI, and IFI above .90 and an RMSEA below .080 for both subsamples (Table 3).

**Internal consistency.** The internal consistency of SOC-R was analyzed using McDonald's Omega and ordinal alpha (Ventura León & Caycho Rodriguez, 2017) giving acceptable results for the total score ( $\omega = .89$ ;  $\alpha = .88$ ) and all three dimensions: Manageability ( $\omega = .73$ ;  $\alpha = .69$ ), Reflection ( $\omega = .89$ ;  $\alpha = .85$ ) and Balance ( $\omega = .70$ ;  $\alpha = .55$ ).

## DISCUSSION

This article set out to validate the Argentinian version of the SOC-R scale. The results suggest that concerning factor structure and internal consistency, the SOC-R scale has acceptable psychometric properties in the Argentinean context.

The results of the CFA present an adequate fit of the model for the two estimation methods used, which verifies the robustness of the internal structure of the instrument. According to the CFA, this study presents acceptable Fit Indexes (CFI>.90; NFI>.90; NNFI>.90), showing a CFI and an NFI of .97 and an NNFI of .95, obtaining higher values than the validations carried out in other countries (.93 >CFI >.95;.93 >NFI>.95; .93 >NNFI>.95; (Chiesi et al., 2020; McGee et al., 2018; Tekin & Kirlioglu, 2019; Thoma et al., 2018). Concerning the RMSEA, an acceptable value was found (RMSEA < .080), presenting an RMSEA of .064, which was higher than in the Italian, Turkish and Swiss validations (.053>RMSEA>.061), but lower than in the German validation, with a value of .066.

One of the most appropriate procedures to examine whether the fit of a model is maintained in different samples is cross-validation. In this study, the fit indices obtained in the two sub-samples based on gender were adequate and provide further support to the trifactorial structure of the SOC-R scale (CFI>.90; NFI> .90; NNFI>.90; RMSEA< .080). Although the estimated parameters do not reach optimal values, they are acceptable if it is considered that in psychology factor loadings tend to oscillate by .50 (Beauducel & Herzberg, 2006).

Regarding internal consistency, the Reflection dimension had the highest values with an Alpha of .85 and an Omega of .89, obtaining a higher value than those reported in most validation studies of SOC-R in other countries (.70> $\alpha$  <.77). Both in the present study and the validations in other countries, lower values were obtained for the dimensions of Manageability (.59> $\alpha$  <.77) and Balance (.50> $\alpha$  < .78). Only in Turkey were high values obtained across all three dimensions (Tekin & Kirlioglu, 2019). For the total scale, an Alpha of .88 was obtained, presenting a higher value than those reported in validation studies in other countries (.70> $\alpha$  <.82; (Chiesi et al., 2020; McGee et al., 2018; Tekin & Kirlioglu, 2019; Thoma et al., 2018).

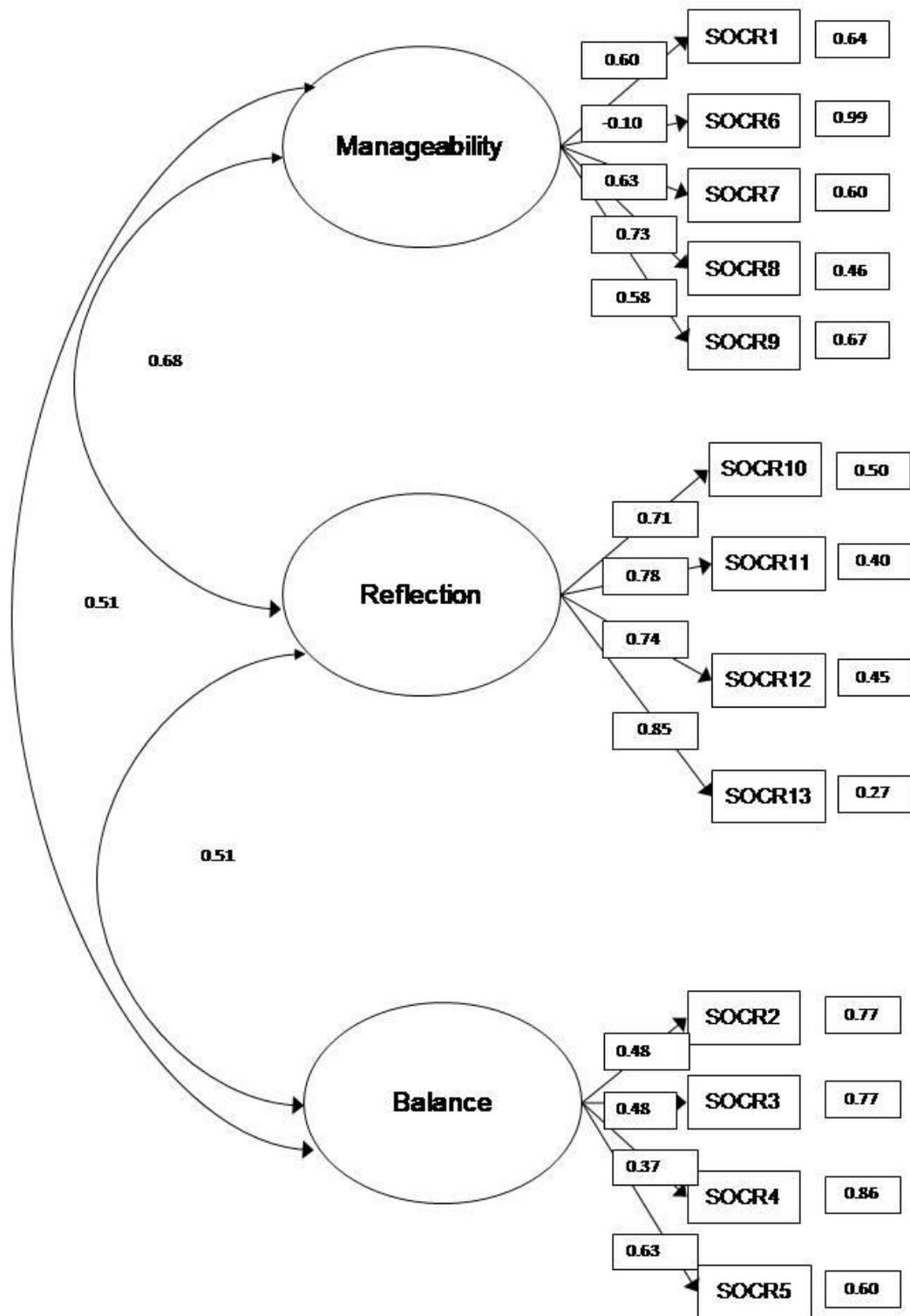
## LIMITATIONS AND FUTURE DIRECTIONS

In this study, the Reflection dimension was the best represented. According to Bachem and Maercker (2016), the Reflection dimension can be more reliably evaluated in general population samples which do not face adverse situations and therefore can reflect on potential difficulties without being directly involved in those difficulties. Future studies should further explore the reliability of the SOC-R and possible revisions to the scale should focus on increasing its reliability.

Ethical compliance information is contained in Appendix B.

**Figure 1**

*SOC-R Structural model*



Note: SOC-R= Revised Sense of Coherence Scale

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## APPENDIX A: ENGLISH AND SPANISH SCALE ITEMS

Listed below are a number of statements about life. Please read each statement carefully and indicate how much it is typical of you:

	Totally disagree				Totally agree
1) In spite of everything, I can learn from bad experiences.	1	2	3	4	5
2) Evil also has its place in the world.	1	2	3	4	5
3) I know that I could suddenly experience something really horrible or shocking.	1	2	3	4	5
4) I am convinced that a lot of negative feelings (e.g., rage) also have positive sides.	1	2	3	4	5
5) In my thoughts and actions, I take into account that things often have two sides: good and bad ones.	1	2	3	4	5
6) Difficult situations overstrain me.	1	2	3	4	5
7) One can always find a way to cope with painful things in life.	1	2	3	4	5
8) Due to my experiences in life I can handle new situations well.	1	2	3	4	5
9) I can accept things that cannot be changed.	1	2	3	4	5
10) It is important for me to maintain a good overview of situations	1	2	3	4	5
11) Normally I can consider a situation from various perspectives.	1	2	3	4	5
12) I always try to see things in context.	1	2	3	4	5
13) I put effort into considering different perspectives when I am exposed to problematic situations.	1	2	3	4	5

*A continuación, se enumeran varias declaraciones sobre la vida, lea cada una cuidadosamente e indique cuán típica suele ser en usted:*

	Totalmente en desacuerdo				Totalmente de acuerdo
1) A pesar de todo, puedo aprender de las malas experiencias	1	2	3	4	5
2) La maldad también tiene su lugar en el mundo	1	2	3	4	5
3) Soy consciente que de repente podría experimentar algo realmente horrible o impactante	1	2	3	4	5
4) Estoy convencido/a de que muchos sentimientos negativos (por ejemplo, la ira) también tienen lados positivos	1	2	3	4	5
5) En mis pensamientos y acciones tomo en cuenta que las cosas a menudo tienen dos caras: una buena y una mala	1	2	3	4	5
6) Me siento sobrecargado ante las situaciones difíciles	1	2	3	4	5
7) Uno siempre puede encontrar una manera de lidiar con las cosas dolorosas de la vida	1	2	3	4	5
8) Debido a mis experiencias vividas, puedo manejar nuevas situaciones de manera eficaz	1	2	3	4	5
9) Puedo aceptar aquellas cosas que no se pueden cambiar	1	2	3	4	5
10) Para mí es importante mantener una mirada global de las situaciones	1	2	3	4	5
11) Por lo general puedo considerar una situación desde varias perspectivas	1	2	3	4	5
12) Siempre trato de ver las cosas en contexto	1	2	3	4	5
13) Me esfuerzo en considerar diferentes perspectivas cuando estoy ante situaciones problemáticas	1	2	3	4	5

## APPENDIX B

### ETHICAL COMPLIANCE SECTION

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**Compliance with Ethical Standards.** The study was approved by the ethics committee of Buenos Aires University.

**Conflicts of Interest.** The authors declare they have no conflict of interest.

**Informed Consent.** It was stated that completing the form would be equivalent to giving informed consent. Participants were also informed that the data derived from this research would be used exclusively for scientific purposes following National Law 25,326 of Protection of personal data.