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SCIENTIFIC ARTICLE

Validation of Emotional Intelligence Measure (MIE) for the Portuguese population

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KEYWORDS
Emotional intelligence;
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Abstract
Objective: To describe the process of validating Emotional Intelligence Measurement (MIE) Scale for Portuguese senior citizens.
Design: Observational, cross-sectional quantitative study.
Framework: Senior citizens attending senior universities and from the community in the district of Viseu.
Participants: 1084 subjects participated with a mean age of 72.98 years, residing in the district of Viseu, no longer involved in formal activities (retired) and participating voluntarily in study.
Main measurements: the Emotional Intelligence Measuring (MIE) Scale, socio-demographic characteristics (age, gender, marital status, residence). An exploratory factor analysis (EFA) and confirmatory factor analysis (CFA) of the MIE scale were performed.
Results: The MIE showed very good internal consistency (Cronbach's alpha = 0.952). The main component and rotation factor analysis *varimax* extracted 36 items and five factors which explain 54.78% of the total variance. After confirmatory factor analysis and re-specification of the model, the global indicator values of the adjustment model for the MIE revealed a quality of good fit ($X^2/df = 3.46$; RMR = 0.025). The final version of the MIE was composed of 33 items and five factors that represent emotional intelligence skills: Factor 1 - Empathy (12 items); Factor 2 - Self-motivation (10 items); Factor 3 - Self-awareness (4 items); Factor 4 - Self-control (4 items); Factor 5 - Sociability (3 items).
Conclusion: The MIE scale is shown to be suitable to assess emotional intelligence in Portuguese senior citizens.

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Framework

Emotional Intelligence (EI) was defined as the ability to identify and understand one's own feelings and those of others, to serve as motivation and to manage one's emotions well within oneself and in relationships with others.[1,2]

EI is based on basic emotional skills, such as the ability to recognize one's own feelings (Self-awareness); the ability to control one's emotions (Self-control); the ability to utilize one's existing potential (Self-motivation); the capacity for empathy and the ability to create social relations (Sociability).[3,4] The first two capabilities refer to the individual and what they do with their feelings and are designated "intrapersonal." The other two are directed outwardly and seek others' feelings and social interactions and are "interpersonal."

Emotional Intelligence acquires great importance in "providing tools" for the elderly, so that they will be able to identify and deal with emotional changes effectively. This depends on the ability of the older person to use a series of emotional strategies, a skill that remains almost intact when the person ages.[5]

Research indicates that emotionally intelligent individuals can perceive and better control their emotions facilitating the resolution of everyday problems, as well as promoting adaptive mechanisms.

Awareness of one's emotions, acceptance, motivation and autonomy are some characteristics that promote a more active aging process.

In this sense, the aim of this study is to validate the Emotional Intelligence Measurement Scale (MIE) for Portuguese senior citizens.

Original version of the scale

The Emotional Intelligence Measurement Scale (MIE) was constructed based on five emotional intelligence skills, as Goleman proposed (1995/1996) with the aim of "creating a valid and reliable instrument to measure psychological information processing about emotions and feelings experienced or observed in social interactions".[6] The items are on a scale Likert type with four response alternatives (1 = never, 2 = rarely, 3 = often; 4 = always) indicating how often those behaviours occur.

After validation for the Brazilian population, the final version was composed of 59 items and five factors:

- Factor 1 – *Empathy* ("The ability to identify feelings, desires, intentions, interests and problems in others through reading and understanding non-verbal communication behaviours") – 14 items.
- Factor 2 – *Sociability* ("The ability to initiate and maintain friendships, get along, be accepted by people, feel good among them and treat them with warmth even if they are strangers") – 13 items.
- Factor 3 – *Motivation* ("Persistence, courage, strength, optimism and enthusiasm with which the individual manages objectives and plans for life") – 12 items.
- Factor 4 – *Self-control* ("The capacity to deliberate, caution and control with which the individual acts facing unpleasant facts, provocations, aggression, affronts, insults, conflicts, disturbing feelings and impulses") – 10 items.
- Factor 5 – *Self-awareness* ("Introspective actions of recognizing, evaluating and reflecting, naming and identifying one's own feelings") – 10 items.

Scoring should be carried out by adding the assigned values in the response divided by the number of items for each factor. The higher the total score, the higher is one's emotional intelligence.

This scale was applied to Brazilian individuals aged between 13 and 59. A version for Portuguese senior citizens is unknown until now.

Methods

Observational, cross-sectional study

1084 individuals participated aged between 56 and 96 (72.98 ± 8.039), of whom 60.2% are female and 39.8% male. The majority (54.3%) lives in rural areas and 53.5% are married while 33% are widowed.

Inclusion criteria: *a)* individuals who no longer perform formal professional activities (retired seniors); *b)* residents in the district of Viseu (central region of Portugal); *c)* without cognitive impairment; *d)* voluntary consent to participate in the study.

The authors of the original scale were contacted requesting authorization for this validation. After authorization was granted, we proceeded to adapt the language (change some terms) for the Portuguese population. It was subsequently evaluated by the spoken reflection method (thinking aloud) with individuals who attended the Senior University and senior citizens in the community. No comprehension difficulties were detected with regards to how to fill in the form or in terms of the meaning of the items on the scale. The instrument can be self-administered or in interview form.

Statistical validation for the MIE procedures were mean, standard deviation, exploratory factor analysis, Cronbach's alpha coefficient and confirmatory factor analysis.

The statistical software used was the Statistical Package for Social Sciences (SPSS - version 22) and Analysis of Moment Structures (AMOS - version 22).

Results

To study the validity of the Emotional Intelligence Measurement Scale (MIE), an exploratory factor analysis was performed to examine construct validity, i.e., to check whether the variables that constitute the factors measure the same concepts or not.[7]

To study the homogeneity of the items, descriptive statistics (mean and SD) and correlations between each item and the overall value were used (Table 1). It was defined as a criterion that items with lower correlations with the overall value of 0.20 would be eliminated. Thus, some items were removed from the original scale which was composed of 53 items that were numbered in sequential order.

The mean values and respective standard deviations of the items allow us say whether they are well centred.

The correlation values range from 0.208 for item 50 "I have an answer to an insult on the tip of my tongue," and

Table 1 Statistics, Pearson correlation and Cronbach's alpha for the of Emotional Intelligence Measure (MIE − 53 items)

No.	Items	$\bar{X}$	SD	5th item corrected correlation total	Cronbach's α without item
1	I execute my projects optimistically	2.64	0.820	0.317	0.949
2	I increase the number of people in my circle of friends	2.57	0.682	0.459	0.948
3	I evaluate my feelings to understand what I feel	2.73	0.725	0.588	0.947
4	I can enliven any environment	2.67	0.750	0.569	0.948
5	I can identify the feelings of the closest people	2.75	0.661	0.607	0.947
6	I recognize feelings of joy and sadness in myself	3.00	0.647	0.467	0.948
7	I count to ten before responding to provocation	2.43	0.969	0.341	0.949
8	I have a lively conversation with a stranger	2.39	0.862	0.377	0.949
9	I identify the interests of people I spend time with	2.80	0.646	0.558	0.948
10	I make people around me feel at ease	3.11	0.703	0.528	0.948
11	I discover a person's intentions by how they act	2.71	0.661	0.538	0.948
12	I use my feelings to act wisely	2.91	0.699	0.594	0.947
13	I control the feelings that disturb me	2.76	0.725	0.626	0.947
14	I'm not sure about accomplishing my future projects	2.41	0.747	0.229	0.949
15	I can name the feelings that mark my life	2.95	0.744	0.566	0.948
16	I work with enthusiasm on a personal project	2.80	0.799	0.628	0.947
17	I meet someone I know in most places I go to	2.81	0.722	0.467	0.948
18	I achieve the goals I set out for my life	2.67	0.645	0.626	0.947
19	I face any obstacle to get what I want in life	2.68	0.718	0.583	0.947
20	I understand what a person wants with it being mentioned	2.61	0.650	0.551	0.948
21	I avoid analysing what I feel	2.44	0.784	0.243	0.949
22	I make people who are around me feel good	3.17	0.694	0.580	0.948
23	I insist on achieving my goals when facing strong obstacles	2.75	0.758	0.648	0.947
24	I talk to myself about my feelings	2.75	0.779	0.445	0.948
25	I recognise when someone is in trouble	2.81	0.603	0.629	0.947
26	I feel at ease around people I've just met	2.64	0.755	0.502	0.948
27	I focus on the plans I set forth for my life	2.76	0.717	0.606	0.947
28	I easily identify other people's feelings	2.72	0.619	0.643	0.947
29	I control my impulses in conflict situations	2.75	0.772	0.508	0.948
30	I identify a person's intentions as soon as they begin talking	2.60	0.667	0.546	0.948
31	I identify all of my feelings	2.89	0.683	0.612	0.947
32	I guide my present actions in accordance with the plans I've made for the future	2.72	0.715	0.560	0.948
33	I plan situations to achieve my goals	2.69	0.734	0.622	0.947
34	I can identify it when someone I know is in trouble	2.81	0.637	0.604	0.947
35	I worry about how I feel	2.87	0.726	0.463	0.948
36	I know when a friend needs my help	2.90	0.622	0.622	0.947
37	I try to react carefully when facing provocations	2.94	0.762	0.480	0.948
38	I react immediately to aggression	2.34	0.917	0.233	0.950
39	I recognise how a friend feels through their gestures	2.68	0.670	0.560	0.948
40	I recognise my feelings very easily	2.92	0.685	0.631	0.947
41	I prefer to stay quiet in conversations with strangers	2.55	0.923	0.216	0.950
42	I recognise my contradictory feelings	2.75	0.699	0.540	0.948
43	I try to think before responding to something I didn't like	2.87	0.721	0.526	0.948
44	I recognise a person's feeling by the way they are speaking	2.77	0.639	0.557	0.948
45	I avoid reflecting on something I'm thinking about	2.47	0.799	0.266	0.949
46	I get on well with anyone	3.03	0.705	0.567	0.948
47	I know when someone is in trouble even if they don't say anything	2.74	0.657	0.594	0.947
48	I feel enthusiastic about my life	2.85	0.804	0.642	0.947
49	I easily find out what a friend is feeling	2.72	0.636	0.599	0.947
50	I have an answer to an insult on the tip of my tongue	2.38	0.928	0.208	0.950
51	I have a lot of friends	2.99	0.771	0.446	0.948
52	I make decisions according to my impulses	2.55	0.788	0.329	0.949
53	I recognise whether someone is ok or not by their tone of voice	2.78	0.671	0.552	0.948
Overall Cronbach's alpha		0.952			
Split-half coefficient		First half = 0.913		Second half = 0.903	

0.648 for item 23 "I insist on achieving my goals when facing strong obstacles."

The Cronbach's alpha coefficient indicates a very good consistency (0.952) and the values for the items ranged from 0.947 and 0.950.

The reliability index by the split-half halves method yielded a value of 0.913 for the first half and 0.903 for the second half revealing very good internal consistency (Table 1). These Cronbach's alpha values are below the value of Alpha for the overall scale, since this index tends to produce lower reliability values of as it considers a smaller number of items.[8,9]

The values obtained by the Kaiser-Meyer-Olkin test (KMO = 0.961) and the Bartlett test (X^2 = 25491.863; gl = 1378; P = .000) show a significant correlation between the items, suggesting an excellent index of sampling adequacy and a favourable matrix to proceed with the factor analysis. Factor extraction by the varimax rotation method revealed nine factors with eigenvalues greater than 1, which together explained 56.10% of the total variance.

Based on the original scale and the theoretical construct, a new factor analysis was conducted forcing five factors. Of the 53 items some were eliminated due to the values of the factor weights and the commonalities.

Factor weights for each item and for each of the five factors ranged from 0.449 (item 5, factor 2) and 0.824 (item 25, factor 5) (Table 2).

Table 2 Factor weights after varimax rotation, communalities, percentage of explained variance and Cronbach's alpha in all 5 MIE factors

No.	Items	Factor 1	Factor 2	Factor 3	Factor 4	Factor 5	h^2
31	I know when someone is in trouble even if they don't say anything	0.716					0.590
33	I easily find out what a friend is feeling	0.714					0.593
26	I recognise how a friend feels through their gestures	0.668					0.522
21	I recognise when someone is in trouble	0.664					0.572
36	I recognise whether someone is ok or not by their tone of voice	0.660					0.515
15	I easily identify other people's feelings	0.645					0.561
10	I understand what a person wants with it being mentioned	0.642					0.526
23	I know when a friend needs my help	0.632					0.582
17	I identify a person's intentions as soon as they begin talking	0.614					0.488
30	I recognise a person's feeling by the way they are speaking	0.610					0.500
13	I recognise when someone is in trouble	0.609					0.532
3	I can identify the feelings of the closest people	0.543					0.473
8	I achieve the goals I set out for my life		0.718				0.592
7	I work with enthusiasm on a personal project		0.696				0.572
19	I guide my present actions in accordance with the plans I've made for the future		0.672				0.538
12	I insist on achieving my goals when facing strong obstacles		0.672				0.593
20	I plan situations to achieve my goals		0.670				0.568
14	I focus on the plans I set forth for my life		0.666				0.563
9	I face any obstacle to get what I want in life		0.665				0.530
32	I feel enthusiastic about my life		0.609				0.532
2	I can enliven any environment		0.558				0.432
6	I control the feelings that disturb me		0.476				0.494
1	I execute my projects optimistically		0.466				0.442
5	I use my feelings to act wisely		0.449				0.406
22	I worry about how I feel			0.652			0.505
27	I recognise my feelings very easily			0.617			0.609
18	I identify all of my feelings			0.607			0.578
28	I recognise my contradictory feelings			0.578			0.503
11	I make people who are around me feel good			0.501			0.476
16	I control my impulses in conflict situations				0.704		0.634
4	I count to ten before responding to provocation				0.690		0.563
29	I try to think before responding to something I didn't like				0.641		0.640
24	I try to react carefully when facing provocations				0.636		0.581
25	I react immediately to aggression					0.824	0.701
34	I have an answer to an insult on the tip of my tongue					0.818	0.687
35	I make decisions according to my impulses					0.679	0.528
Number of items		12	12	5	4	3	
Cronbach's alpha		0.913	0.889	0.766	0.752	0.736	
Eigenvalues		12.552	2.201	2.022	1.631	1.317	
% Explained variance		17.083	16.157	8.460	7.051	6.032	
% Accumulated Variance		17.083	33.240	41.700	48.751	54.783	

The MIE was composed of 36 items explaining 54.78% of the total variance, with a contribution of 17.08% by factor 1 designated *Empathy* with 12 items (3, 10, 13, 15, 17, 21, 23, 26, 30, 31, 33 and 36), 16.15% by factor 2 called *Self-motivation* with 12 items (1, 2, 5, 6 7, 8, 9, 12, 14, 19, 20 and 32), 8.46% by factor 3 designated *Self-awareness* with 5 items (11, 18, 22, 27 and 28), 7.05% by factor 4 called *Self-control* with 4 items (4, 16, 24 and 29) and 6.03% by factor 5 called *sociability* with 3 items (25, 34 and 35).

With regards to the original version, the five factors were kept with the same name, but with a different order of presentation and different organization of items by factors.

Cronbach's alpha coefficients obtained in the five factors indicate good internal consistency of items and good agreement between the statements by presenting values higher than 0.70 (Table 2).

A correlation matrix was formulated between various factors and the overall value of the scale, and the values showed positive correlations ranging from r = 0.649 (Self-Motivation/Empathy) and r = 0.063 (Sociability/Self-control). Only Sociability has a low correlation with the overall scale value (Table 3).

After exploratory factor analysis, it is necessary to confirm whether certain latent factors are responsible for the observed behaviour of certain variables.[9] To verify the quality of factor model deduced a confirmatory factor analysis was carried out.

The overall quality fit of factorial model was evaluated according to the indices including the chi-square fit (X^2/df), the Goodness of Fit Index (GFI) the Comparative Fit Index (CFI), the Parcimony Comparative Fit Index (PCFI), the Root Mean Square Error of Approximation (RMSEA, P [rmsea≤0.05]) and the Root Mean Square Residual (RMR), based on the reference values.[10]

In analyzing the final structure of the 36 item model of the MIE, it reveals a tolerable quality fit ($X^2/df = 3.71$; GFI = 0.894; RMR = 0.046; CFI = 0.909; PCFI = 0.843; RMSEA = 0.050). To promote its overall fit the model was re-specified.

In the new MIE model item 2, "I can enliven any environment," item 6, "I control the feelings that disturb me," and item 11, "I make people around me feel good," were removed because the theoretical construct as well as the original scale positions them in a factor (Self-control) that is not coincident with the factor analysis (Self-motivation and Self-awareness). It is thus composed of 33 factors and five dimensions. There was no change to the positioning of items per factor.

In comparing the results of the internal consistency obtained in MIE between the sample used in the study and the original scale, the values of Cronbach's alpha of the study are found to be higher in only factor 1 ($\alpha = 0.913/\alpha = 0.87$) and factor 2 ($\alpha = 0.889/\alpha = 0.82$). The overall value of Cronbach's alpha in our study ($\alpha = 0.932$) shows a very good consistency (Table 4).

As for discriminant validity, item 1 (Self-motivation) and item 21 (Self-control) showed negative correlations with the Sociability factor. Items 22 and 31 of the Sociability factor and items 13 and 21 of the Self-control factor did not correlate with the, Self-control and Sociability factors respectively (Table 5).

For Sociability only items 7, 9, 29 (Self-awareness) and item 14 (Empathy) reveal an item discrimination index greater than 0.20 between the magnitude of the correlation

Table 3 Pearson correlation matrix between the factors and the overall value of MIE

Factors	Empathy	Self-motivation	Self-awareness	Self-control	Sociability
Self-motivation	0.649[a]	—			
Self-awareness	0.617[a]	0.617[a]	—		
Self-control	0.496[a]	0.470[a]	0.484[a]	—	
Sociability	0.193[a]	0.211[a]	0.183[a]	0.063[b]	—
Overall value of MIE	0.882[a]	0.872[a]	0.769[a]	0.655[a]	0.361[a]

[a] $P < .01$.
[b] $P < .05$.

Table 4 Cronbach's alpha by MIE factors

Factors	No. of items	*Cronbach's alpha*			Overall Alpha (original)
		(Split-half)		Overall Alpha	
		Part 1	Part 2		
Factor 1 – Empathy	12	0.837	0.706	0.913	0.87
Factor 2 – Self-Motivation	10	0.751	0.846	0.889	0.82
Factor 3 – Self-awareness	4	0.558	0.664	0.766	0.78
Factor 4 – Self-control	4	0.538	0.708	0.752	0.84
Factor5 – Sociability	3	Not applicable	Not applicable	0.736	0.82
Overall value of MIE	33	0.901	0.863	0.932	Not obtained

Table 5 Correlation of items with the factors and the overall MIE scale

Original item	No.	Items	Factor 1	Factor 2	Factor 3	Factor 4	Factor 5	Total MIE
e1	1	I execute my projects optimistically	0.304[a]	0.511[a]	0.285[a]	0.119[a]	−0.121[a]	0.371[a]
e5	2	I can identify the feelings of the closest people	0.671[a]	0.510[a]	0.419[a]	0.365[a]	0.080[a]	0.619[a]
e7	3	I count to ten before responding to provocation	0.246[a]	0.262[a]	0.197[a]	0.712[a]	0.121[a]	0.382[a]
e14	4	I use my feelings to act wisely	0.478[a]	0.616[a]	0.466[a]	0.387[a]	0.161[a]	0.606[a]
e18	5	I work with enthusiasm on a personal project	0.479[a]	0.754[a]	0.433[a]	0.348[a]	0.183[a]	0.651[a]
e20	6	I achieve the goals I set out for my life	0.463[a]	0.752[a]	0.446[a]	0.345[a]	0.185[a]	0.646[a]
e21	7	I face any obstacle to get what I want in life	0.451[a]	0.704[a]	0.406[a]	0.317[a]	0.219[a]	0.616[a]
e22	8	I understand what a person wants with it being mentioned	0.686[a]	0.466[a]	0.364[a]	0.312[a]	0.119[a]	0.596[a]
e25	9	I insist on achieving my goals when facing strong obstacles	0.521[a]	0.758[a]	0.435[a]	0.389[a]	0.236[a]	0.686[a]
e27	10	I recognise when someone is in trouble	0.719[a]	0.510[a]	0.490[a]	0.351[a]	0.126[a]	0.655[a]
e30	11	I focus on the plans I set forth for my life	0.455[a]	0.751[a]	0.477[a]	0.353[a]	0.152[a]	0.643[a]
e31	12	I easily identify other people's feelings	0.747[a]	0.525[a]	0.466[a]	0.399[a]	0.128[a]	0.678[a]
e32	13	I control my impulses in conflict situations	0.429[a]	0.419[a]	0.412[a]	0.784[a]	0.032ns	0.552[a]
e33	14	I identify a person's intentions as soon as they begin talking	0.667[a]	0.413[a]	0.364[a]	0.361[a]	0.214[a]	0.592[a]
e34	15	I identify all of my feelings	0.528[a]	0.522[a]	0.791[a]	0.431[a]	0.142[a]	0.646[a]
e35	16	I guide my present actions in accordance with the plans I've made for the future	0.431[a]	0.736[a]	0.449[a]	0.307[a]	0.119[a]	0.609[a]
e36	17	I plan situations to achieve my goals	0.512[a]	0.758[a]	0.486[a]	0.358[a]	0.168[a]	0.674[a]
e38	18	I can identify it when someone I know is in trouble	0.742[a]	0.481[a]	0.486[a]	0.324[a]	0.103[b]	0.645[a]
e40	19	I worry about how I feel	0.357[a]	0.393[a]	0.710[a]	0.251[a]	0.167[a]	0.485[a]
e41	20	I know when a friend needs my help	0.734[a]	0.481[a]	0.544[a]	0.388[a]	0.109[a]	0.663[a]
e42	21	I try to react carefully when facing provocations	0.428[a]	0.365[a]	0.414[a]	0.763[a]	−0.010ns	0.520[a]
e43	22	I react immediately to aggression	0.163[a]	0.135[a]	0.134[a]	0.031ns	0.833[a]	0.279[a]
e44	23	I recognise how a friend feels through their gestures	0.706[a]	0.434[a]	0.414[a]	0.361[a]	0.187[a]	0.620[a]
e45	24	I recognise my feelings very easily	0.552[a]	0.553[a]	0.807[a]	0.419[a]	0.090[b]	0.660[a]
e47	25	I recognise my contradictory feelings	0.460[a]	0.426[a]	0.757[a]	0.389[a]	0.159[a]	0.571[a]
e48	26	I try to think before responding to something I didn't like	0.429[a]	0.397[a]	0.488[a]	0.764[a]	0.026ns	0.551[a]
e49	27	I recognise a person's feeling by the way they are speaking	0.683[a]	0.392[a]	0.453[a]	0.357[a]	0.167[a]	0.596[a]
e52	28	I know when someone is in trouble even if they don't say anything	0.755[a]	0.448[a]	0.443[a]	0.366[a]	0.119[a]	0.640[a]
e53	29	I feel enthusiastic about my life	0.491[a]	0.730[a]	0.483[a]	0.411[a]	0.214[a]	0.671[a]
e54	30	I easily find out what a friend is feeling	0.759[a]	0.480[a]	0.423[a]	0.368[a]	0.135[a]	0.654[a]
e55	31	I have an answer to an insult on the tip of my tongue	0.115[a]	0.137[a]	0.108[a]	0.002ns	0.852[a]	0.254[a]
e57	32	I make decisions according to my impulses	0.197[a]	0.255[a]	0.213[a]	0.132[a]	0.740[a]	0.356[a]
e59	33	I recognise whether someone is ok or not by their tone of voice	0.708[a]	0.429[a]	0.435[a]	0.305[a]	0.158[a]	0.607[a]

[a] $P < .001$.
[b] $P < .01$.
[c] $P < .05$.

with the scale it belongs to and the magnitude of the second correlation value with another scale.

Items 22 and 31 of the Sociability factor present a discrimination index of the items less than 0.20, with all factors, item 32 (Sociability) with Empathy and Self-Motivation and item 3 (Self-control) with the Self-awareness.

Analysing the final factorial structure of the 33 item MIE model, relative to the overall fit of the model to the data revealed a good quality of fit ($X^2/df = 3.46$; GFI = 0.909; RMR = 0.025; CFI = 0.924; PCFI = 0.849; RMSEA = 0.048). The final model yielded a good fit, demonstrating that the changes made improved the indices' fit.

Analysing the estimated parameters after CFA, it appears that the factor saturations show moderate to high values (0.40 to 0.77). The measurement errors of the observed variables proved to be low to moderate (0.16 to 0.62). The correlations between the factors show a large amplitude (r = 0.02 and r = 0.74) (Fig. 1).

Discussion

The aging of populations is an irreversible phenomenon of modern society[11,12] making it currently a major challenge. Portugal continues this trend with an aging index of 127.6 in 2011[13] (INE, 2013).

The aging process involves changes at different levels and emotions are identified as the source of most people's problems.[14] EI is of great importance for the elderly making them capable of perceiving emotions and dealing with emotional changes, promoting a healthier and productive aging as well as a better quality of life.[15]

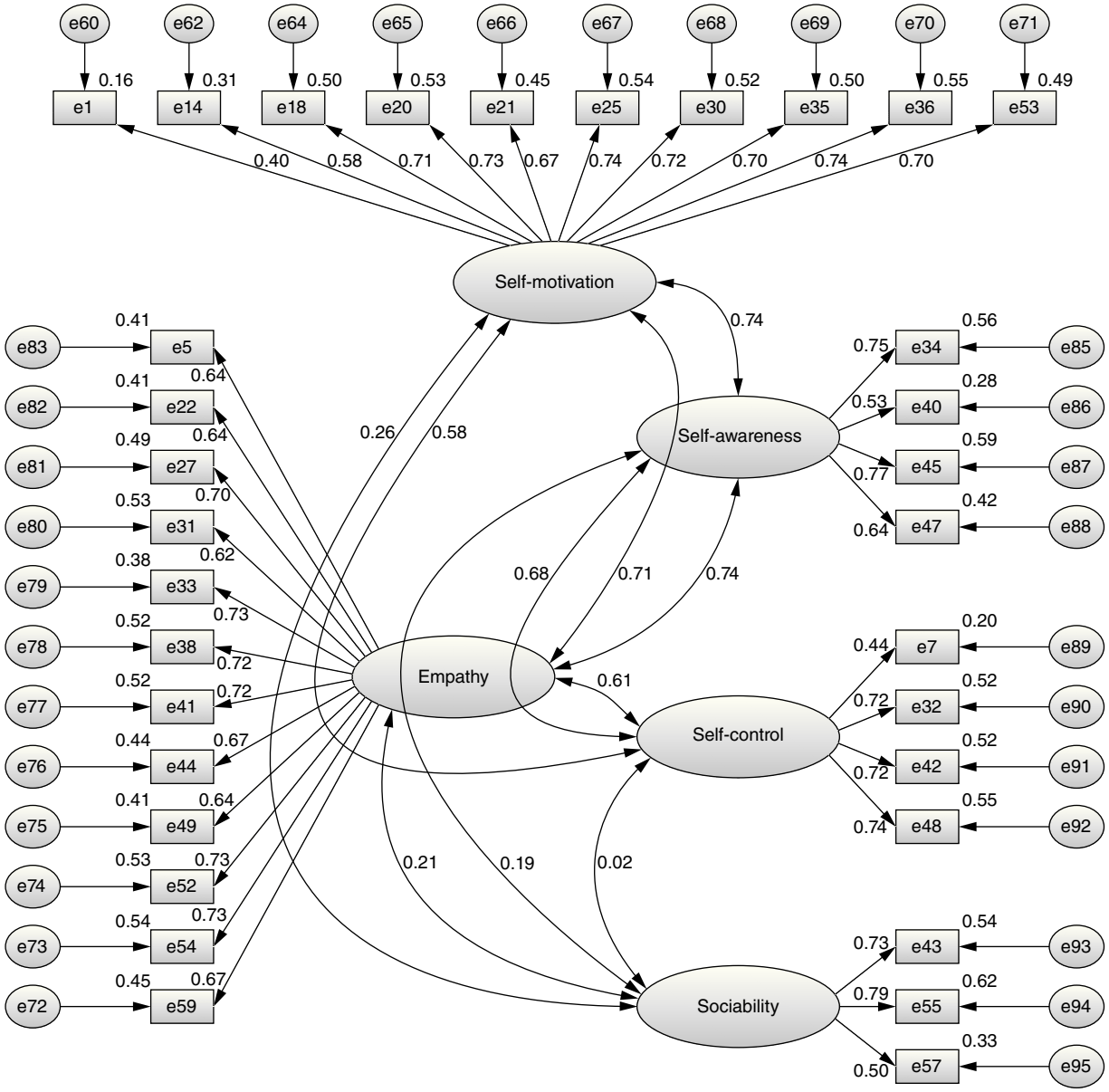

Figure 1 Factor loads, intercorrelations between the factors and error associated with each item, in the 5-factor model with 33 items.

This work sought to validate the Emotional Intelligence Measurement Scale (MIE) for the Portuguese elderly population. The psychometric validation (n=1084) for 53 items highlights a Cronbach's alpha of 0.952 indicating very good consistency. The values for the items ranged between 0.947 and 0.950 and are higher than those obtained in the original scale (between 0.78 and 0.87).[6]

In order to apply the factorial model, there should be a correlation between the variables.[9] Assessing the validity of the factor analysis revealed a significant correlation between the items and an excellent quality of the data (KMO = 0.961). Factor extraction by the varimax rotation method identified nine factors that explained 56.10% of the total variance of the MIE with 53 items.

The theoretical criteria have an important role in guiding the factors[9] and in this sense, a new factorial analysis was performed forcing 5 factors corresponding to the five EI skills, in accordance with the original scale.[6] Some items were eliminated because the values of the factor weights and commonalities. The MIE with 36 items explained 54.78% of the total variance.

From the correlation matrix between the factors and the overall value of the scale, significant positive correlations were obtained, revealing sensitivity to different aspects of the same construct.

To confirm the factorial structure that was derived from an exploratory factor analysis, a confirmatory factor analysis with a model consisting of 5 factors and 36 items was performed. With regards to the overall fit of the model to the data, a tolerable quality fit was shown ($X^2/df = 3.71$; GFI = 0.894; RMR = 0.046), such that it was re-specified so as to improve the fit.

In the model 2 items were eliminated because they did not coincide with the theoretical construct nor with the original scale's factorial positioning. A very good internal consistency was maintained (Cronbach's alpha = 0.932).

Analysing the final factorial structure of the 33 item MIE model, relative to the overall fit of the model to the data, revealed goodness indices and of good and very good fit ($X^2/df = 3.46$; GFI = 0.909; RMR = 0.025). For the estimated parameters analysis after the AFC, it appears that the factor saturations showed moderate to high values (0.40 to 0.77) and the measurement errors of the observed variables proved to be low to moderate (0.16 to 0.62).

The analyses for the factorial validity of the MIE confirmed that the 33 items selected and distributed into five factors is in line with what was conceptualized on the five basic skills that make up emotional intelligence.

In this study we obtained lower Cronbach's alpha values (less than 0.80) in the factors of Self-Awareness, Self-control and Sociability, suggesting further studies with the MIE applied to senior citizens in different situational contexts or with different demographic characteristics.

What we know about the theme

- The assessment of emotional intelligence is important to perceive emotions, identifying behaviours in adverse situations.
- People with better emotional intelligence show greater satisfaction with life and consequently a better quality of life.

What we get out the study

- The Emotional Intelligence Measurement Scale (MIE) was composed of 33 items and 5 factors (Empathy, Self-motivation, Self-awareness, Self-control and Sociability).
- Exploratory factor analysis showed values corresponding to good psychometric properties and confirmatory factor analysis quality fit to the model.

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Conflicts of interest

The authors declare that there are no conflicts of interest.

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