

## EVERYDAY MEMORY QUESTIONNAIRE [13-ITEMS]: EUROPEAN PORTUGUESE TRANSLATION AND PSYCHOMETRIC CHARACTERIZATION

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### Abstract

Subjective Memory Complaints (SMCs) are very frequent in the community, but more markedly in older people (Ginó et al., 2010; Zapater-Fajari et al., 2022). Several studies have indicated an association between SMCs and memory objectively measured, although the results maintain inconsistency. However, SMCs constitute an important symptom in clinical contexts which is usually associated with the search for clinical care. Scientific literature has reported several questionnaires to assess SMCs [e.g., Everyday Memory Questionnaire (EMQ) - 13 items; Royle & Lincoln, 2008]. However, in Portugal there are very few instruments that measure SMCs. This study aimed to translate and present preliminary psychometric data of the EMQ (13-items) for application to the Portuguese population. This instrument has been reported in literature as one of the most used instruments to assess memory complaints. Additionally, this study aimed to explore factors that could predict SMCs (i.e., age, depression, anxiety). The sample was composed of 344 participants (241 female), with ages between 18 and 80 years ( $M = 36.4$ ,  $SD = 15.9$ ). Participants completed the following self-report questionnaires: Sociodemographic Questionnaire, EMQ 13-items, Montreal Cognitive Assessment (MoCA), Beck Depression Inventory-II (BDI-II), and State-Trait Anxiety Inventory (STAI-Y2). The results suggested that the EMQ 13-items presents good psychometric properties, specifically internal consistency (Cronbach's alpha of 0.92), and factorial validity (two-factor structure that explained 60.3% of the total variance), although the sample presents some limitations. In a sub-sample, some negative correlations were found between EMQ 13-items and MoCA subscales. The results also indicated that depression and age are predictors of the subjective memory complaints, a pattern of results found in studies with several instruments that assess memory complaints. Given that this instrument revealed good psychometric characteristics for a Portuguese sample, although this is a preliminary study, this constitutes a starting point for new studies (e.g., transcultural studies).

**Keywords:** *Subjective memory complaints, EMQ 13-items, psychometrics, individual factors.*

### 1. Introduction

Subjective Memory Complaints (SMCs) are very frequent in the community, but more markedly in older people (Ginó et al., 2010; Zapater-Fajari et al., 2022). SMCs represent an important symptom in clinical contexts which is usually associated with the search for clinical care. A longitudinal study carried by Kryscio et al. (2014) identified that SMCs were predictors of Mild Cognitive Impairment within 9 years. Another study by Sohrabi et al. (2019) found a positive relation between the severity of SMCs and development of cognitive impairment after three years of the initial complaints. Several studies have indicated an association between SMCs and memory objectively measured, although the results maintain inconsistency (Jacinto et al., 2014; Park et al., 2019; Rodrigues & Pandeirada, 2014).

To our knowledge, there are only two instruments for assessing SMCs in Portuguese population: *Questionário de Lapsos de Memória* (Pinto, 1990) and *Subjective Memory Complaints* (Ginó et al., 2007) with limited psychometric properties. So, with this project we aimed to: (1) translate and present preliminary psychometric data of the Everyday Memory Questionnaire [13-items; Royle & Lincoln, 2008;

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adapted by Ribeiro et al., 2023] for Portuguese population; (2) explore factors that influence SMCs (i.e., age, depression, anxiety; Dux et al., 2008; Elfgrén et al., 2009; Ginó et al., 2010; Sousa et al., 2015).

## 2. Method

### 2.1. Participants

The following inclusion criteria were applied: (1) age 18 years old and over; (2) no acute or serious medical conditions; (3) minimum education required: 4 years. The final sample consisted of 344 Portuguese participants aged between 18 and 80 years ( $M = 36.4$ ,  $SD = 15.9$ ): 70.1% female and 29.9% male; 31.4% in 18-22 age group, 19.2% in 23-33 age group, 25.6% in 34-49 age group, and 23.8% in  $\geq 50$  age group. Regarding educational level: 5.2% - 1<sup>st</sup> cycle of basic education, 7.8% - 2<sup>nd</sup> cycle of basic education, 5.5% - 3<sup>rd</sup> cycle of basic education, 18.6% - secondary education, and 16.9% - higher education.

### 2.2. Materials

The following materials were applied: **Sociodemographic Questionnaire** with several questions such as age, sex, medical conditions, etc. **Everyday Memory Questionnaire [EMQ] 13-items** (original version: Royle & Lincoln, 2008; Portuguese version: Ribeiro et al., 2023). It is composed of 13 items, with a Likert-type scale ranging from “once or less in the last month” (1) to “once or more once per day” (5); higher values indicate the presence of SMCs. **Beck Depression Inventory-II (BDI-II)**; Portuguese version: Oliveira-Brochado et al., 2014). It contains 21 items, with a scale ranging from zero to three points: zero being the absence of symptoms and three being the presence of strong symptomatology. **State-Trait Anxiety Inventory – Form Trait (STAI-Y2)**; Portuguese version: Silva, 2003) is an instrument developed to measure an individual’s tendency to experience anxiety in trait form (20-items). A subgroup of participants ( $n = 14$ ) also completed the **MOCA - Montreal Cognitive Assessment** (Freitas et al., 2011).

### 2.3. Procedure

The translation of the EMQ 13-items into European Portuguese included the following four phases: 1) translation of the original questionnaire into European Portuguese by two Portuguese researchers highly proficient in English; 2) re-translation the translated form into English by a bilingual English Professor naïve to the original version; 3) examination of the translated and re-translated versions by two researchers; and 4) final wording adjustments (Kline, 2005). After that, an independent sample of 344 participants completed all instruments mentioned above. All participants were informed about the objectives of the study and were invited to participate after signing an informed consent form.

### 2.4. Statistical analysis

All analyses were computed using IBM SPSS v.27: descriptive analyses, principal component analysis with the resource of orthogonal rotation (Varimax), internal consistency (Cronbach’s  $\alpha$ ),  $t$  test (to assess sex differences), ANOVA (to assess differences among educational levels) and multiple regression (to detect predictors of SMCs).

## 3. Results

An initial analysis of item properties was conducted. Table 1 presents the descriptive statistics of the EMQ 13-items.

The factorial structure of the EMQ 13-items was determined by a principal component analysis with the resource of orthogonal rotation (Varimax) [ $KMO = .93$ ; Bartlett’s sphericity test:  $\chi^2(78) = 2417.436$ ,  $p < .001$ ; communalities values  $> .40$ ]. We obtained a two-factor structure that combined explained 60.3% of the total variance. The first component identified presented an eigenvalue of 6.78 which explains 67.8% of the total variance. This component includes 8 items (Q1, Q2, Q3, Q5, Q6, Q8, Q11, and Q12), with values ranging from 0.58 (Q11) to 0.79 (Q2). To this component (factor 1), we propose the designation ‘Retrieval’, identical to Evans et al. (2020). The second component (factor 2) was identified, with an eigenvalue of 1.06 which explains 10.6% of the variance. This second component contains 5 items (Q4, Q7, Q9, Q10, Q13) with values ranging from 0.59 (Q13) to 0.82 (Q4). To this component (factor 2), we propose the same name as Evans et al. (2020): ‘Attentional Tracking’. The instrument also revealed a very good internal consistency, as measured by Cronbach’s  $\alpha$  of 0.92 (factor 1: Cronbach’s  $\alpha = .89$ ; factor 2: Cronbach’s  $\alpha = .84$ ). See Table 2 for descriptive data into two factors.

The multiple regression (depression, age, and anxiety are predictors of the SMCs?) revealed statistical significance,  $F(3, 18) = 33.36$   $p < .001$  (depression:  $\beta = .469$ ,  $p < .001$ ; age:  $\beta = .14$ ,  $p = .026$ ; anxiety:  $\beta = .13$ ,  $p = .133$ ). An ANOVA revealed significative differences for the EMQ 13-items among the different

educational levels,  $F(4, 183) = 3.97, p = .004$ . Multiple comparisons revealed differences ( $p < .05$ ) between the 1<sup>st</sup> cycle and all other educational levels, i.e., lower educational level had more SMCs. No sex differences were found for the EMQ 13-items,  $t(204) = 1.30, p = .195$ .

A Pearson correlation revealed a strong negative correlation between the total score of the MoCA and EMQ 13-items ( $r = -.75, p < .001$ ); however, this analysis was conducted only with 14 participants. Concretely, the total score of the EMQ 13-items was negatively correlated with the following domains/subscales of the MoCA: Visuospatial skills ( $r = -.59, p = .024$ ), Naming ( $r = -.61, p = .021$ ), Attention ( $r = -.66, p = .010$ ), Abstraction ( $r = -.68, p = .007$ ), Delayed Recall ( $r = -.57, p = .035$ ), and Orientation ( $r = -.68, p = .008$ ). The “language domain” of the MoCA was not associated with the EMQ 13-items ( $r = -.40, p = .154$ ).

Table 1. Descriptive properties of the items - EMQ 13-items (Portuguese version).

	Item Description	Min	Max	M	SD	Corrected Item-total correlation	Cronbach's alfa is the item is deleted
1	Having to check whether you have done something that you should have done.	0	4	1.83	1.38	0.56	0.92
2	Forgetting when it was that something happened; for example, whether it was yesterday or last week.	0	4	1.40	1.25	0.68	0.91
3	Forgetting that you were told something yesterday or a few days ago, and maybe having to be reminded about it	0	4	1.21	1.18	0.70	0.91
4	Starting to read something (a book or an article in a newspaper, or a magazine) without realizing you have already read it before.	0	4	0.66	1.10	0.44	0.92
5	Finding that a word is 'on the tip of your tongue'. You know what it is but cannot quite find it.	0	4	1.49	1.25	0.66	0.92
6	Completely forgetting to do things you said you would do, and things you planned to do.	0	4	1.14	1.21	0.74	0.91
7	Forgetting important details of what you did or what happened to you the day before.	0	4	0.97	1.13	0.74	0.91
8	When talking to someone, forgetting what you have just said. Maybe saying 'what was I talking about?'	0	4	1.25	1.26	0.71	0.91
9	When reading a newspaper or magazine, being unable to follow the thread of a story; losing track of what it is about.	0	4	0.91	1.17	0.66	0.92
10	Forgetting to tell somebody something important, perhaps forgetting to pass on a message or remind someone of something.	0	4	1.03	1.11	0.71	0.91
11	Getting the details of what someone was told you mixed up and confused.	0	4	1.04	1.19	0.61	0.92
12	Forgetting where things are normally kept or looking for them in the wrong place.	0	4	1.46	1.34	0.68	0.92
13	Repeating to someone what you have just told them or asking someone the same question twice.	0	4	1.03	1.17	0.68	0.92

Table 2. Descriptive data divided into two factors.

	Retrieval (M; SD)	Attentional Tracking (M; SD)
<i>Sex</i>		
Male	11; 7.29	4; 4.44
Female	10; 7.72	3; 4.42
<i>Education</i>		
1 <sup>st</sup> cycle	15; 5.01	10; 3.63
2 <sup>nd</sup> cycle	14; 7.44	7; 5.11
3 <sup>rd</sup> cycle	6; 7.88	3; 5.21
Secondary education	9; 7.88	3; 4.33
Higher education	11; 7.75	4; 4.01
<i>Age</i>		
[18-49]	10; 7.55	3; 4.29
[50-80]	12; 7.69	4; 4.87

#### 4. Conclusions

In this study, we present the European Portuguese version of the Everyday Memory Questionnaire [EMQ 13-items], one of the most used instruments to assess SMCs, presenting also its preliminary psychometric properties. The factor structure (two-factor model) found is analogous to the structure of the study by Evans et al. (2020): retrieval and attentional tracking factors. The internal consistency of the total scale is very good (Cronbach's  $\alpha > .90$ ; Kline, 2005). Depression and age were predictors of the SMCs, as mentioned in the literature. Lower educational level (1<sup>st</sup> cycle) presented more SMCs when compared to other educational levels (Dux et al., 2008; Elfgren et al., 2009; Ginó et al., 2010; Sousa et al., 2015). In next steps, we intend to: collect additional data to balance the groups according to age and school levels; apply MoCA to a larger number of participants; conduct a Confirmatory Factorial Analysis; conduct invariance analyses; expand the project to the Spanish population allowing a cross-cultural study. Since the good psychometric properties revealed in this study and the fact that memory complaints are still a very unknown topic, this project is promising for providing a valid measure for assessing SMCs. It is a starting point for a crucial line of research in Portugal and Spain, two progressively ageing countries.

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