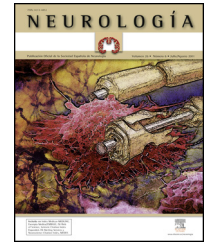




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## ORIGINAL ARTICLE

# Validation of a Spanish version of the Test Your Memory<sup>☆</sup>



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### KEYWORDS

Test Your Memory;  
Sensitivity and specificity;  
Mild cognitive impairment;  
Dementia;  
Alzheimer disease;  
Cognitive screening test

### Abstract

**Objective:** To validate a Spanish version of the TYM, a self-administered cognitive screening test designed for the detection of Alzheimer's disease and mild cognitive defect.

**Methods:** A cross-sectional study was conducted in a neurology outpatient clinic. The TYM was administered to individuals of 50 years or more who came to the clinic because of any symptom. Their cognitive state was evaluated regardless of the outcome of TYM. They were categorised into 3 groups: (1) Cognitively normal (739), (2) with mild cognitive impairment (183), (3) with dementia (127). An analysis of items was made and the psychometric properties of the TYM were defined. There was a cross-validation, and the predictive validity of the TYM score, adjusted to the demographic variables, was determined by evaluating their performance in ROC curves.

**Results:** The internal consistency, interobserver reliability, short term and long-term test-retest reliability were adequate. The TYM correlated with the MMSE ( $r=0.779$ ,  $P<.0001$ ). The cross validation showed consistent results. With the TYM Score adjusted according to the educational level, a sensitivity of 0.86 with a specificity of 0.88 in the cut-off point of  $\leq 40/50$  was obtained to identify subjects with cognitive impairment, and a sensitivity of 0.94 with a specificity of 0.89 in the cut-off point of  $\leq 36/50$  to identify subjects with dementia.

**Conclusions:** The TYM is a self-administered global cognitive test, possessing excellent psychometric properties and good predictive validity. It can be used as a cognitive screening test in subjects with 4 years or more of formal education.

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**PALABRAS CLAVE**

Test Your Memory;  
Sensibilidad y especificidad;  
Defecto cognitivo ligero;  
Demencia;  
Enfermedad de Alzheimer;  
Prueba cognitiva de cribado

**Validación de una versión española del Test Your Memory****Resumen**

**Objetivo:** Validar una versión en español del TYM, una prueba cognitiva de cribado autoadministrada, diseñada para la detección de la enfermedad de Alzheimer y defecto cognitivo ligero.

**Métodos:** Realizamos un estudio transversal en una clínica ambulatoria neurológica. El TYM fue administrado a todas las personas de 50 años o más que acudieron a la consulta, sin tener en cuenta el síntoma por el que consultaban. Independientemente del resultado del TYM se evaluó su estado cognoscitivo. Se clasificaron en 3 grupos: 1) cognitivamente normales (739), 2) con deterioro cognitivo leve (183) y 3) con demencia (127). Se analizaron los ítems y se definieron las propiedades psicométricas del TYM. También se procedió a una validación cruzada y se determinó la validez predictiva del TYM, corregido por las variables demográficas, mediante la evaluación de su desempeño en curvas ROC.

**Resultados:** La consistencia interna, fiabilidad interobservador y fiabilidad test-retest a corto y largo plazo fueron adecuadas. El TYM está correlacionado con el MMSE ( $r=0,779$ ;  $p < 0,0001$ ). La validación cruzada mostró resultados consistentes. Con la puntuación TYM ajustada por nivel educativo, se obtuvo una sensibilidad de 0,86 con una especificidad de 0,88 en el punto de corte de  $\leq 40/50$  para identificar a sujetos con defecto cognitivo y una sensibilidad de 0,94 con una especificidad de 0,89 en el punto de corte de  $\leq 36/50$  para identificar a sujetos con demencia.

**Conclusiones:** El TYM es una prueba cognitiva global autoadministrada, que posee excelentes propiedades psicométricas y buena validez predictiva. Puede usarse como un test cognitivo de cribado en sujetos con 4 o más años de instrucción formal.

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**Introduction**

Every day, doctors must determine whether patients have cognitive deficiencies. This task involves specific difficulties made more onerous by the fact that consultation times have been shortened in almost all care settings.<sup>1</sup>

Time constraints have made it necessary to apply brief screening tests to patients with cognitive concerns. Unfortunately, the vast majority of currently available brief tests do not possess sufficient diagnostic efficacy to detect cognitive impairment.<sup>2</sup>

We feel that the best approach, when time is limited, is to combine 2 strategies: using effective clinical screening tests and extending consultation times by letting the subject begin the tests while he or she is still in the waiting room. The assessment can later be completed with any tests that would have to be administered during the consultation itself. To achieve this end, doctors can first provide a self-administered cognitive test requiring only moderate supervision by support staff at the clinic.

In light of the above, we were particularly intrigued by the Brown et al. study<sup>3</sup> presenting a self-administered cognitive test (Test Your Memory [TYM]) that seems to display excellent psychometric properties, including acceptable predictive validity. The TYM has been used in several countries and in many translated versions with good results.<sup>4-7</sup> Furthermore, it compares favourably with the Mini-Mental State Examination (MMSE) as a screening test for cognitive impairment.<sup>8</sup> This article presents a Spanish-language version of the TYM and its validation process in a private neurology clinic.

**Subjects, material, and methods****Subject selection**

Our aim was to administer the TYM to every new patient aged 50 or older examined by one of the authors (JFA) regardless of their initial symptoms. Subjects were asked to sign their informed consent once the objective of the study, validation of a Spanish-language version of the test, had been explained.

We excluded individuals with sensory or motor impairments that would prevent them from completing the TYM, as well as illiterate subjects or those with less than 4 years of formal education. We also excluded patients with chronic alcoholism, major psychiatric disorders, and those taking significant amounts of psychotropic substances. Subjects filled out the TYM before being admitted to the consultation room; they were supervised, and assisted if necessary, by the same person (MTR). JFA reviewed and scored the TYM at a different time, following the consultation and after having determined whether or not the subject was cognitively impaired.

As sociodemographic data, we recorded age, sex, education level (as one of 4 levels: 4-8 years, 9-12 years, 13-15 years, and more than 15 years of schooling). Scores on each item of the TYM and the total were also recorded, along with results from other neurocognitive tests; the subject's cognitive and functional state expressed as a Clinical Dementia Rating (CDR) score<sup>9</sup>; and the definitive diagnosis.

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