Cognitive dysfunction involves 40–65% of Multiple Sclerosis (MS) patients. Minimal Assessment of Cognitive Function in MS (MACFIMS) has been proved to be the most sensitive and comprehensive battery available for MS cognitive assessment in English population (1).

In Italy the MACFIMS applicability is limited in everyday clinical practice since the overall validity of this battery in the MS Italian population has never been demonstrated.

Aim of this study is to translate, cross-culturally adapt and validate this battery.

Subjects

A total of 130 MS patients (100 Relapsing Remitting, 5 Clinical Isolated Syndrome, 16 Secondary Progressive, 9 Primary Progressive) and 70 Healthy Control (HC), matched by sex, age and education, were enrolled. Participants were administered Italian version of MACFIMS and Beck Depression Inventory (BDI).

Neuropsychological assessment

The MACFIMS included seven tests: COWAT, JLO, CVLT-II, BVMT-R, PASAT, DKEFS sorting test and SDMT.

Italian version of COWAT (Carlesimo et al., 1996), JLO (Ferracuti et al., 2000), PASAT (Amato et al., 2006), SDMT (Nocentini et al., 2006) was available.

To preserve semantic equivalence in the remaining tests (BVMT-R, DKEFS sorting test), CVLT-II, first a bilingual translator translated the tests into Italian, then, back translation into English was performed by an independent translator. Original and back-translated versions were compared to assure their equivalence. For DKEFS sorting test and CVLT-II an iterative process of modification, including cultural adaptation of some words, was undertaken as these tests emphasize verbal stimuli.

Tests were administered in a standardized manner in accordance with consensus panel recommendations (2-3).

All tests discriminated MS patients from HC.

In accordance to literature, approximately half of MS patients (56.9%) exhibited cognitive impairment (CI) at least two tests ≤ -1.5 standard deviation). The rate of CI tended to increment both with increasing of disease duration and of physical disability. Frequencies of impairment for every test are shown in Figure 1. Generally, the CIS/RR patients performed better than SP/PP patients (Figure 2).

A significant difference was found in BDI scores comparing MS patients and HC (p= 0.002); ANCOVA analyses demonstrated that the differences between MS patients and HC remained significant.

Principal components analysis (PCA) showed four distinct components: visual-spatial memory/processing speed, working memory, executive functions and verbal memory.