



# Mentalizing in Multiple Sclerosis



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## Introduction

Multiple Sclerosis (MS) is an inflammatory disease that may involve the cognitive functions and between these, the abilities of social interaction. Here we decided to explore the relationship between two facets of theory of mind, namely the ability to correctly describe the mental status of other people (i.e. emotion recognition) and of oneself (i.e. self-description) and to evaluate their association with general cognitive functioning

## Materials and Methods

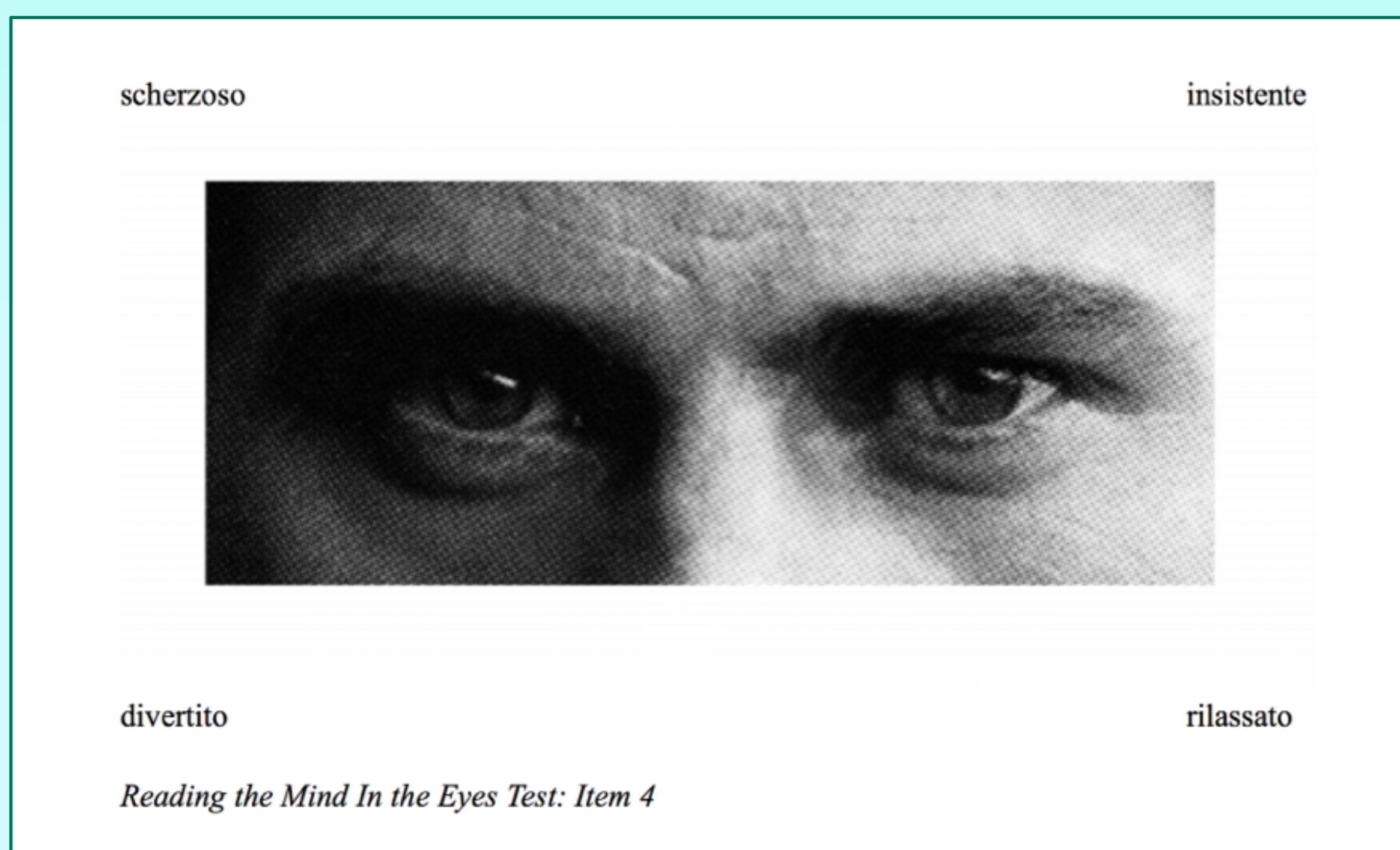
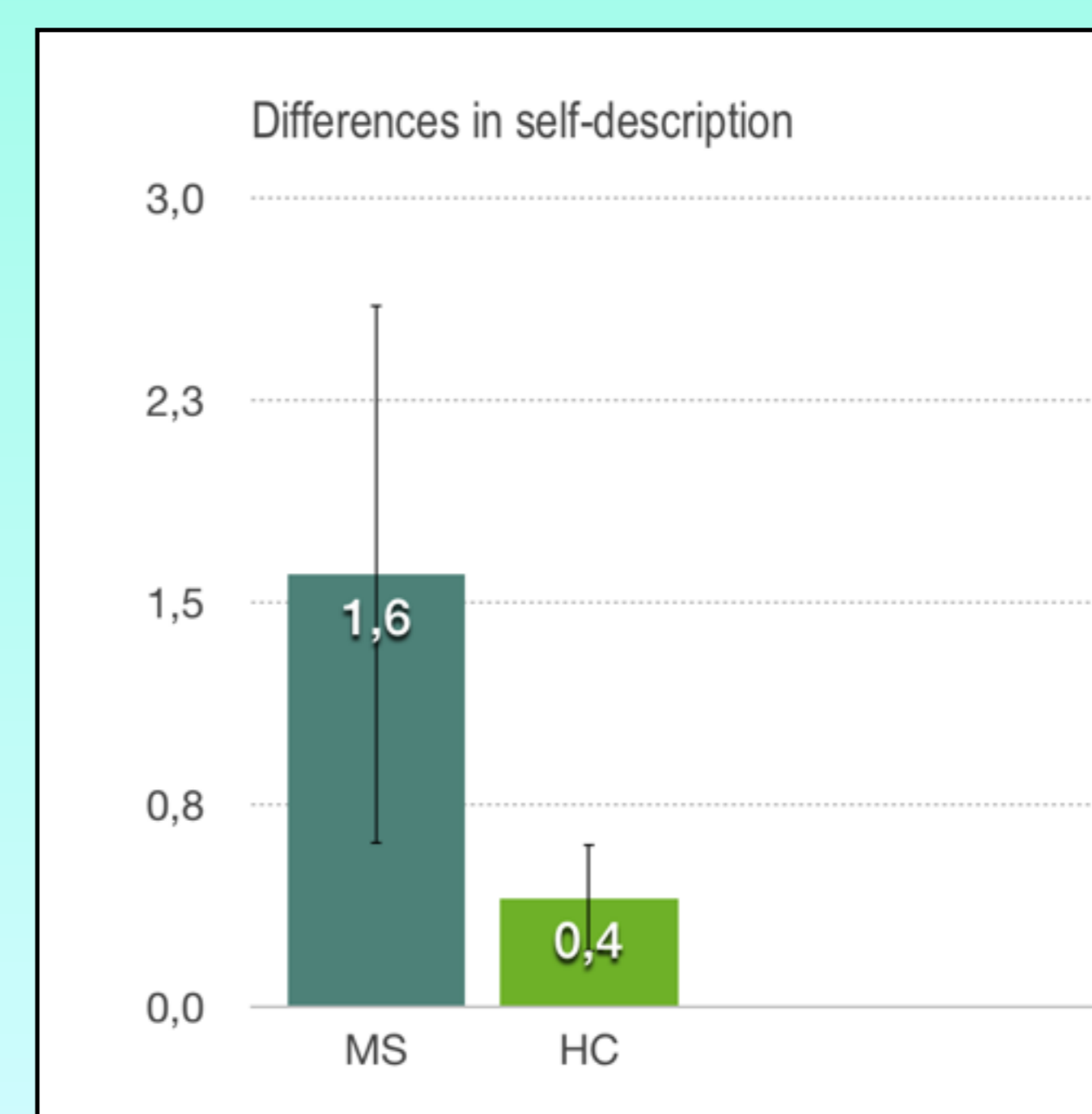
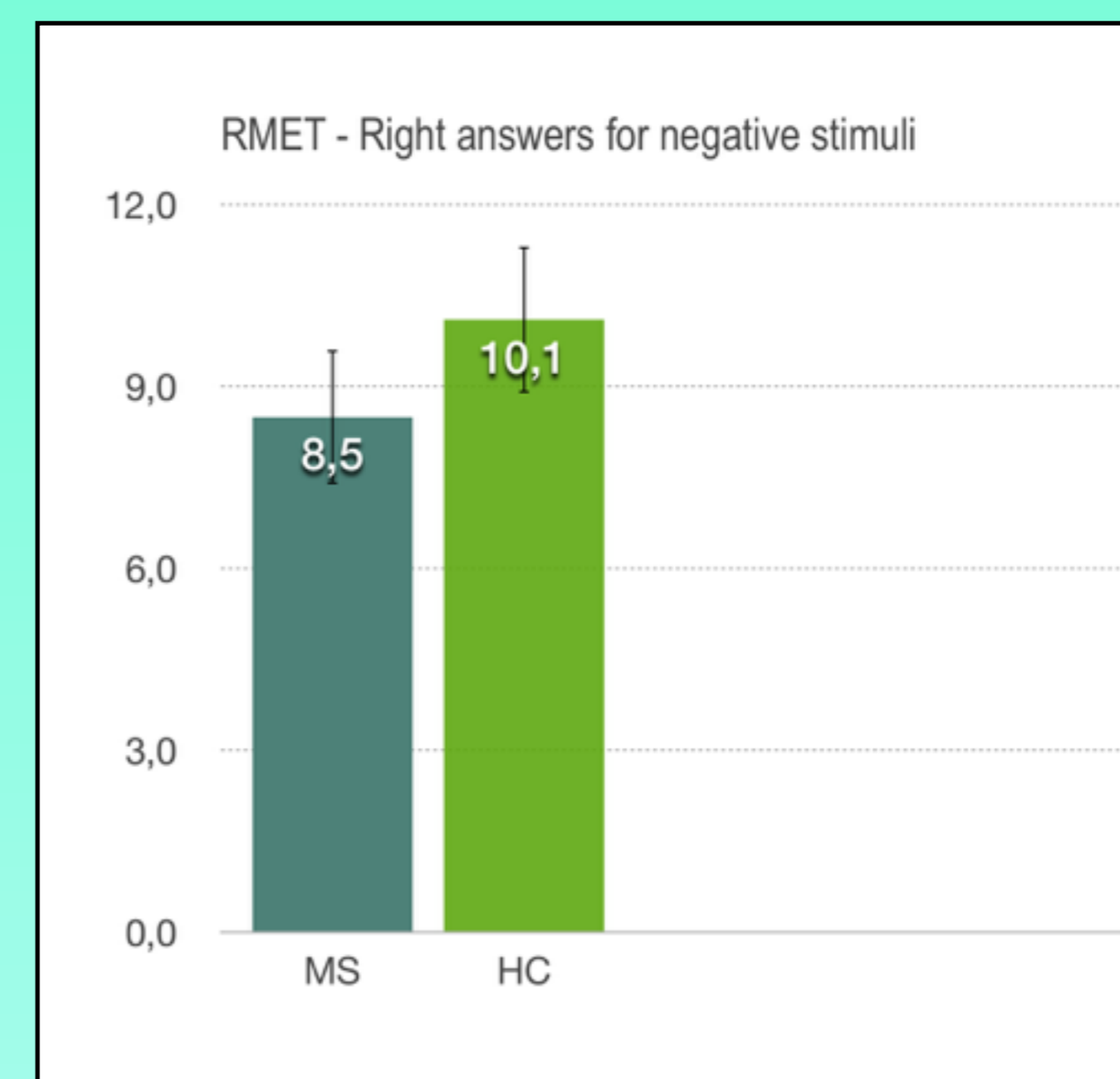
We recruited 35 subjects with RRMS (age: 53.7 +/-11.2 years; education 13.1 +/-3,3 years; 11 males) 35 age and education matched HC (age: 52.4 +/-11.3 years; education 13.0 +/-2. 2 years; 18 males). All subjects underwent the Symbol Digit Modalities Test (SDMT), the Reading The Mind in the Eye Test (RMET), the Hospital Anxiety and Depression Scale (HADS) and the Big Five Personality Questionnaire (BFQ). An eligible care-giver also completed the BFQ (Observer Version). The RMET is a test used to evaluate the Mental State Decoding function. To the patients are presented a series of photographs related to three types of emotions: positive, negative and neutral. The BFQ with its observer version evaluates the differences between a self-evaluation and the one given from a care-giver.

## Results

We found that compared to HC subjects, patients with MS presented reduced overall emotional recognition abilities. However, this deficit was focused only on negative emotions (*Negative 8.5 (+/-1.1) vs 10.1 (+/-1.2); p <0.001*), while the ability to recognize positive and neutral emotion was not different between RRMS patients and controls. Moreover we found that compared to controls, MS subjects presented with significantly different self description compared to those reported by their relatives (*1.6 (+/-1.0)vs. 0.4(+/-0.2); p=0.005*). The discrepancy self-description significantly correlated with SDMT performance, with subjects with higher discrepancy scores presenting with lower SDMT scores (*rho=-0.68, p=0.001*), while none of the above scales correlated with anxiety or depression levels as quantified with the HADS.

## Conclusions

Our results bring novel evidence to a more frequent impairment of negative emotion recognition in subjects with MS. We think this finding is in line with the key role played by the orbitofrontal and ventrolateral prefrontal cortices in negative stimuli recognition and by the frequent involvement of these regions in MS. The discrepancy in self-description, on the other hand, could be interpreted by a reduced insight of the patient due to medial prefrontal damage or to behavioural changes secondary to the disease, as previously shown in frontotemporal dementia. The latter hypothesis seems to be supported by the observed correlation with the SDMT scores. Future studies are warranted to explore the neural basis of these findings as well as their ecological validity.



## References

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