The study was conducted in 531 patients (349 women, 182 men) at ages between 17 and 60 years (mean±SD: 39.7±9.8 years). The course of the disease was relapsing-remitting in the majority of patients (77%). The EDSS score was between 0 and 7.5 (mean±SD: 2.8±1.7). In the MS patients we found significant impairments of the episodic and the verbal short-term memory as well as of the episodic working memory (p<0.01). In 20.2% of the patients, the score in the episodic short-term memory was two or more SD below the mean score of the reference group. Performance in the other memory domains and in the selective attention task was not found significantly impaired. There were significant correlations of the episodic short-term memory impairment with the EDSS score (p<0.001) as well as with the duration of disease (p<0.01); after elimination of partial correlations only with the EDSS score.

### Background

The Memory and Attention Test (MAT) is a newly developed computer-based neuropsychological test for the assessment of selective attention, working and short-term memory for verbal, figural and episodic material. It is adaptive and standardized for age, sex and education. It can be easily performed with little personnel expenses and little strain for the patients.

### Patients and Methods

The MAT was administered in a multicentric cross-sectional study in MS out-patients at practice-based neurologists and specialized multiple sclerosis out-patient clinics. A time interval of at least three months to the last relapse was observed. Disease history, severity of neurological symptoms (by means of the EDSS), medication and the presence of depression or fatigue were determined. The MAT findings of the MS patients were compared to those in an age-, education- and sex-matched control group by means of unpaired Student’s t-tests. The relationship of the MAT findings to EDSS and duration of disease was examined by linear regression analyses.

### Results

The study was conducted in 531 patients (349 women, 182 men) at ages between 17 and 60 years (mean±SD: 39.7±9.8 years). The course of the disease was relapsing-remitting in the majority of patients (77%). The EDSS score was between 0 and 7.5 (mean±SD: 2.8±1.7). In the MS patients we found significant impairments of the episodic and the verbal short-term memory as well as of the episodic working memory (p<0.01). In 20.2% of the patients, the score in the episodic short-term memory was two or more SD below the mean score of the reference group. Performance in the other memory domains and in the selective attention task was not found significantly impaired. There were significant correlations of the episodic short-term memory impairment with the EDSS score (p<0.001) as well as with the duration of disease (p<0.01); after elimination of partial correlations only with the EDSS score.

### Episodic short-term memory and EDSS score

Impairment of episodic short-term memory (ESTM) is correlated with the severity of neurological symptoms as assessed by the EDSS (r = -0.208; p<0.001).

![Episodic short-term memory score (ESTM) is plotted over EDSS scores.](image)

### Conclusion

About 20% of not-acutely-ill MS out-patients suffer from substantial memory impairments, particularly of the episodic short-term memory. The impairments are of such a strong degree that they have an impact on functional level and quality of life. The MAT has proved to be a useful tool for the assessment of memory and attention in MS patients under conditions of practice.

### Disclosure

This study was sponsored by Novartis GmbH Nürnberg through an unrestricted research grant. The MAT is property of Dynamikos GmbH.

Contact: Prof. Dr. Georg Adler: adler@ispg-mannheim.de
Präsentiert bei der International MS Cognition Society (IMSCOGS) 2013 in Zürich.