with a significance level of p<0.05, the effect size was calculated with Cohen's d test.
Results: Groups did not differ significantly in age, sex, type of treatment, Montreal Cognitive Assesments (MoCA) or neuropsychiatric scales of depression and anxiety. Regardless of treatment type, 63.33% of the patients had high treatment adherence. Significant differences between groups were found in the Global Index of Social Support (p=0.016, Cohen's d= 0.73) and the responsibility factor of the NEO-FFI (p=0.048, Cohen's d= 0.20). Conversely, no significant differences were found in executive functions (p=0.8), Openness (p=0.062), Extraversion (p=0.5), Neuroticism (p=0.4) and Agreeableness (p=0.8).
Conclusions: Social support and the responsibility factor of personality are significantly different between MS patients with high and low adherence to medical treatment. The study of social support and personality may be a key component in improving adherence strategies.

Categories: Multiple Sclerosis/ALS/Demyelinating Disorders
Keyword 1: multiple sclerosis
Keyword 2: treatment outcome
Keyword 3: cognitive functioning
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38 Cognitive and Affective Theory of Mind in Young and Elderly Patients with Multiple Sclerosis

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Objective: Theory of mind (ToM) deficits have been reported in patients with multiple sclerosis (pwMS). However, most studies have used pictures or written scenarios as stimuli without distinguishing between cognitive and affective ToM, and no studies have investigated older pwMS. The aims of this study were to determine the impact of MS and age on cognitive and affective ToM using a more ecological video-based task. We also aimed to investigate the relationships between ToM, cognition and emotion reading to understand the nature of ToM deficits in pwMS.
Participants and Methods: We recruited 13 young healthy controls (HC), 14 young pwMS, 14 elderly HC and 15 elderly pwMS. ToM was measured using an adaptation of the Conversations and Insinuations task (Ouellet et al. 2010). In this task, participants watch four 2-minutes videos of social interactions, which are interrupted by multiple choice questions about either the emotional state (affective ToM; 14 questions) or the intention (cognitive ToM; 14 questions) of the characters. They also underwent a short neuropsychological battery including cognitive tasks (Montreal Cognitive Assessment (MoCA), DKEFS Color-Word Interference Test) and an experimental multimodal emotion recognition task.
Results: We found significant effects of group (pwMS < HC), age (older < younger) and condition (cognitive ToM < affective ToM) on the ToM task. Although no interaction effect was found, the elderly pwMS group showed the largest discrepancy between their cognitive and affective ToM, the cognitive subtask being significantly more affected. ToM significantly correlated with general cognition (MoCA) in all participants, while cognitive inhibition (DKEFS Color-Word Interference Test) correlated with ToM only in elderly pwMS. No significant correlation was observed between ToM and emotion reading.
Conclusions: This study highlights both cognitive and affective ToM deficits in pwMS, and particularly in cognitive ToM in elderly pwMS. These impairments could be underlied by cognitive and executive difficulties, but not by core social cognitive impairments, as observed in the correlation analyses. Future studies should investigate the relationships between ToM impairments and impairments in real-life empathy and social behavior in pwMS.

Categories: Multiple Sclerosis/ALS/Demyelinating Disorders
Keyword 1: multiple sclerosis
Keyword 2: theory of mind
Keyword 3: aging (normal)

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39 Co-Occurring Depression and Anxiety is Associated with Greater Cognitive Variability in Persons with Multiple Sclerosis

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Objective: Research examining co-occurring anxiety and depression in persons with multiple sclerosis (PwMS) is scarce, though an estimated 20% of PwMS experience clinically significant anxiety and depression (Gascoyne et al., 2019). Recent work by Hanna & Strober (2020) found that PwMS with comorbid anxiety and depression reported worse outcomes in all constructs of symptomatology, disease management, psychological well-being, and quality of life. However, it is unclear how co-occurring anxiety and depression symptoms may influence or exacerbate cognitive difficulties in PwMS. Further, considering there are high levels of comorbidity between depression, anxiety, and fatigue in PwMS, this study aims to examine the unique variances of depression, anxiety, co-occurring depression and anxiety, and fatigue on cognitive functioning.
Participants and Methods: 86 PwMS (F=65,M=21) completed a comprehensive neuropsychological battery that included self-report measures of anxiety, depression, and fatigue. An intraindividual variability (IIV) composite score was calculated by combining standardized intraindividual standard deviation and maximum discrepancy scores on measures of attention/processing speed and memory for each participant. Lower scores indicate *worse* performance (i.e., greater variability). A hierarchical regression was conducted with IIV as the outcome variable and with depression, anxiety, cognitive fatigue, physical fatigue, and the interaction between depression and anxiety as predictors. Expanded Disability Status Scale (EDSS) scores were included as a covariate.
Results: The only model that included a statistically significant predictor of IIV was the final model, which included EDSS, depression, anxiety, cognitive fatigue, physical fatigue, and the interaction between depression and anxiety, $F(6,77)=2.97$, $p=.01$, $\Delta R^2=.08$.
While the main effects of depression and anxiety were not significant, the interaction between depression and anxiety was significant, $F(6,77)=7.20$, $p=.01$, $\eta^2=.09$. Simple effects tests revealed that the relationship between IIV and anxiety was marginally significant for those at the cutoff for clinical depression (square root BDI-FS=2; BDI-FS=4), $F(6,77)=3.52$, $p=.07$, $\eta^2=.04$. However, the effect of anxiety on IIV increased as depression increased. For example, in those with high levels of depression (1.5 SD above the mean), there was a significant relationship between anxiety and IIV, $F(6,77)=4.16$, $p=.04$, $\eta^2=.05$, though this was not the case for those with low levels of depression (1.5 SD below the mean), $F(6,77)=0.01$, $p=.92$, $\eta^2=.00$.
Conclusions: The interaction between depression and anxiety predicted variability in performance such that those with high levels of depression and anxiety demonstrated significantly greater IIV. Since dispersion is considered a marker for neurocognitive integrity, this may suggest that co-occurring psychological disturbances are associated with poorer cognitive integrity, an important consideration for interventions and outcomes. While interventions aimed at treating co-occurring depression and anxiety have been largely overlooked within the MS literature (Butler et al., 2016), transdiagnostic interventions have been beneficial for general adult populations with co-occurring anxiety and depression (McEvoy et al., 2009). Future work should examine the efficacy of interventions aimed at addressing co-occurring depression and anxiety in PwMS, as this may help to improve cognitive functioning, as well as perception of functioning, which will likely further improve quality of life and overall well-being.

Categories: Multiple Sclerosis/ALS/Demyelinating Disorders
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Keyword 3: depression
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