The Relationship of Anxiety on Visual Learning in Multiple Sclerosis

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Abstract

Objectives: This study tested the relationship of anxiety on three trials of visual learning.

Methods: Data was collected from MS patients (N = 134) who underwent full neuropsychological. Anxiety was measured using the self-report measure, Hospital Anxiety and Depression Scale (HADS), a well-validated measure in the MS population. Patients were also administered the Brief Visuospatial Memory Test Revised (BVMTR), a neuropsychological measure of visual learning and memory. A multivariate general linear model was conducted using SPSS 24.0 to test the hypothesized relationship

Results: When controlling for gender, age, and years of education, there was a significant effect of anxiety on visual learning (Wilks' Lambda= .931 , $F(3,126)=3.093, p=.029$). Anxiety had a significant effect on BVMT Trial 1 ($F=8.813$, $p=.004$) and BVMT Trial 2 ($F= 5.714$, $p=.018$); whereas there was not a significant effect on Trial 3 ($F= 3.249$, $p=.074$).

Conclusions: Anxiety has an effect on MS patients' visual learning, such that anxious patients, on average, scored lower on trials of visual learning that non-anxious patients. This is significant for Trials 1 to 2, but is no longer significant for Trial 3.

Background

Anxiety is common among individuals living with MS, with prevalence rates ranging from 19% to 57%. Anxiety in the MS population has been found to be associated with depression, pain, fatigue, stress, and lower self-efficacy and quality of life. Research has shown that anxiety in the general population is also associated with impairment in cognition, particularly in processing speed, attention, and visual memory. Few studies have yet examined the effect of anxiety in visual learning in the MS population. The present study wishes to address this gap, and hypothesizes that anxiety is associated with impairment in visual learning in patients with multiple sclerosis.

Methods

Sample: Data was collected from 134 patients with confirmed MS who had been referred by physicians for neuropsychological testing within the context of general MS care at the MS Center at Holy Name Medical Center in Teaneck, NJ.

Materials: Anxiety was measured using the self-report measure, Hospital Anxiety and Depression Scale (HADS), a well-validated measure in the MS population. Patients were also administered the Brief Visuospatial Memory Test Revised (BVMTR), a neuropsychological measure of visual learning and memory.

Statistics: A multivariate general linear model was conducted using SPSS 24.0 to test the hypothesized relationship. Analysis controlled for gender, age, and education.

Results

There was a significant effect of anxiety on visual learning (Wilks' Lambda= .877, $F(3,104)=4.870, p=.003$).

- ➤ **Trial 1:** significant effect ($F=8.813$, $p=.004$)
- ➤ **Trail 2**: significant effect ($F= 5.714$, $p=.018$)
- ➤ **Trial 3:** no longer significant effect ($F= 3.249$, $p=.074$)

Characteristic	N (M)	% (SD)
Gender		
Female	101	75.4%
Male	33	24.6%
Age	48.85	12.15
Education	14.62	3.15
BVMT Trial 1	38.28	11.98
BVMT Trial 2	37.09	12.73
BVMT Trial 3	39.31	13.74
HADSA	8.66	4.48
Anxiety	58	43.3%
No Anxiety	76	56.7%

Conclusions
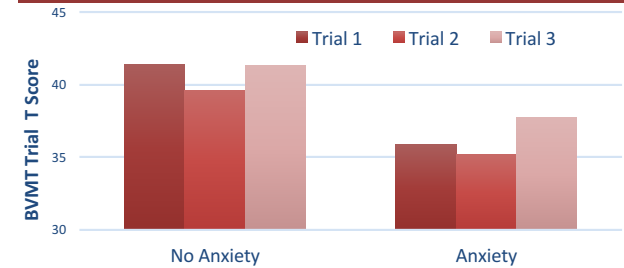
- Anxiety was found to have an effect on MS patients' visual learning.
- Specifically, anxiety had an effect on patient's learning for Trials 1 and 2, whereas there was not a significant effect of anxiety on Trial 3.
- Anxious MS patients on average scored lower on all three visual learning trials than non-anxious patients.

References

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