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Cognitive determinants of visual search in patients with Parkinson's disease

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BACKGROUND

- ✓ Visual search impairments in patients with Parkinson's Disease (PD) (Archibald et al., 2013, Horowitz et al., 2006)
- ✓ They may affect activities of daily living (Devos et al., 2013, Uc et al., 2006)
- ✓ Few studies explored the cognitive deficits that contribute to impaired visual search in PD

OBJECTIVE

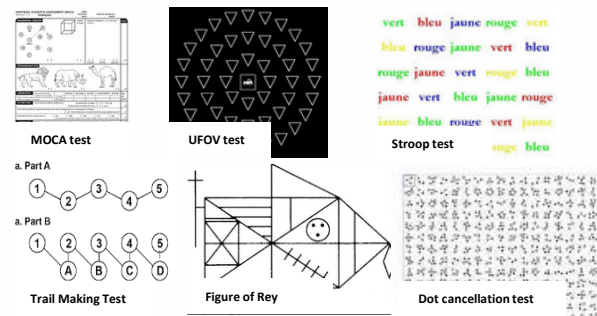
- ✓ To investigate the relationship between visual search performance and cognitive functions in PD

METHODS

Participants

- ✓ 20 patients with PD (69 yrs-old ± 8; 16 Male) and 15 controls (61 yrs-old ± 11; 8 Male)









Neuropsychological tests



RESULTS

- ✓ PD patients were slower than controls to detect correctly the target (7s. ± 2 vs 5 s. ± 1, p = 0.004)
- ✓ PD patients missed more targets than controls (median (Q1-Q3) : 0(0-2) vs 0(0-0), p = 0.04)

Table 1. Partial correlations between cDT and neuropsychological performance

	PD patients	Controls
MOCA score 	-0.68***	0.27
UFOV divided attention 	0.60**	0.41
Stroop test – interference condition 	-0.64**	0.21
Dot cancellation test - times 	0.60*	0.86***
Dot cancellation test - errors 	0.84***	0.04
TMT part A, s. 	0.58**	0.06
TMT part B, s. 	0.64**	0.03
Figure of Rey, score 	-0.76***	-0.17

* p < 0.05, ** p < 0.01, *** p < 0.001

CONCLUSION

- ✓ Strong associations between cognitive functions and visual search performances in PD patients
- ✓ A visual search task may be a good tool to assess a wide range of cognitive functions in PD patients
- ✓ Implications for the assessment of cognitive functions and the development of training programs in patients with PD
- ✓ Further study in PD will develop dynamic visual search task in driving conditions to better understand cognitive functions that may affect real-world activities.

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Visual search task

- ✓ Participants were instructed to search for a target stimulus (road sign) among distractor stimulus (other road signs).
- ✓ The visual search task consisted of 42 trials. In half of the trials (Figure 1), the target was present (target-present trials).



Figure 1. Example of a target-present trial. Gray circle represents the pre-identified target and the gray square represents the target.

- ✓ Main outcome: correct detection times (cDT) Response times when the target is present

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