

How Race effects Progression of Multiple Sclerosis

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Introduction

Background: In this study, we used cognitive tests to investigate the rate of progression of MS depending on the race of participants. MS is an autoimmune disease of the central nervous system in which nerve damage disrupts information flow between different brain regions and the brain and the body. Symptoms vary, but may include pain, vision loss, fatigue, impaired strength and coordination, and cognitive decline. Race of patients can matter in the progression of MS. Demographics of MS have changed so that African Americans have an increased risk of developing the disorder, followed by Hispanic Americans, Asian Americans, and White Americans.

Methods: The cohort in this study are adults with MS. Of the three tests we use, the MoCA screens for mild cognitive dysfunction through assessing cognitive domains such as attention, executive functions, and memory. The SDMT measures information processing speed. Finally, the KD test evaluates saccadic eye movements, processing speed, and visual tracking. We compare the participants within the MS cohort across racial groups to determine if they have different cognitive profiles.

HYPOTHESIS: To investigate the effect of race on the severity of Multiple sclerosis (MS), we analyzed different groups of patients with MS at the LSUHSC neurology clinic using the Montreal Cognitive Assessment (MoCA), Symbol Digit Modalities Test (SDMT), and King-Devick Test (KD test) to assess cognitive decline.

Cognitive Test

Baseline		N	Mean	Std. Deviation	P score
MoCA	Black	36	23.42	3.350	0.057
	White	57	24.79	3.347	
SDMT	Black	35	45.40	10.441	0.391
	White	57	47.54	12.221	
SDMT T-score	Black	36	36.31	9.712	0.059
	White	57	40.53	10.731	
KD	Black	34	68.9226	24.20279	0.645
	White	56	66.7511	19.92157	

This table represents how race impacts scores on cognitive test through the evaluation of mean, standard deviation, and p scores.

Demographics

		Mean	Std. Deviation	p score
Age	Black	40.0	13	<0.001
	White	50.3	11	
Highest level of education	Black	13.8	2.4	0.016
	White	15.21	2.8	
Sex	Black	31 Females	5 Males	0.389
	White	45 Females	12 Males	
Disease duration	Black	102.83 months	100.82 months	0.041
	White	153.25months	120.55 months	

This table represents the mean, standard deviation, and p scores depending upon demographic factors including: age, education, sex, & disease duration.

Results

Cohort: 38% African American and 61% White. In the ANOVA we look at demographic variables including: sex, education, age, and disease duration. The groups did not differ by sex, however, they did differ in regard to education White (mean:15.2 years, SD: 2.833) vs. Black (mean: 13.8 years, SD: 2.5, p=0.059), age White (50 y/o) vs. Black (40 y/o). We would expect based on education that the White cohort would perform better on the cognitive test, however, based on age we would expect white cohort to perform worse because they are 10 years older at the baseline assessment. The SDMT T- score takes into account age and education so it levels the playing field between groups in regard to these factors. The groups don't significantly differ in terms of their scores on the MoCA (White- \bar{x} :24.8, SD:3.4; Black- \bar{x} :23.4, SD:3.4, p=0.057), SDMT (White- \bar{x} :47.5, SD:12.2; Black- \bar{x} :45.4, SD:10.4, p=0.391),SDMT T-score (White- \bar{x} :40.5, SD:10.7; Black- \bar{x} :36.31, SD:9.7, p=0.059),KD (White- \bar{x} :66.8, SD:19.9; Black- \bar{x} :68.9, SD:24.2, p=0.645). The two groups don't perform differently, however, the average T-score: White (40) vs. Black (36) are both considered mildly impaired.

Conclusion

These results show while the Black cohort had MS for a significantly shorter period of time compared to the White cohort, both groups showed a similar level of cognitive impairment, suggesting the Black cohort has a faster rate of cognitive decline.

Given that the years of education for the Black cohort in our study, are significantly lower, I have partnered with Upward bound New Orleans, an organization focused on furthering education, in efforts to promote education in the minority community. Please Scan the QR code to learn more about the organization!



Figures

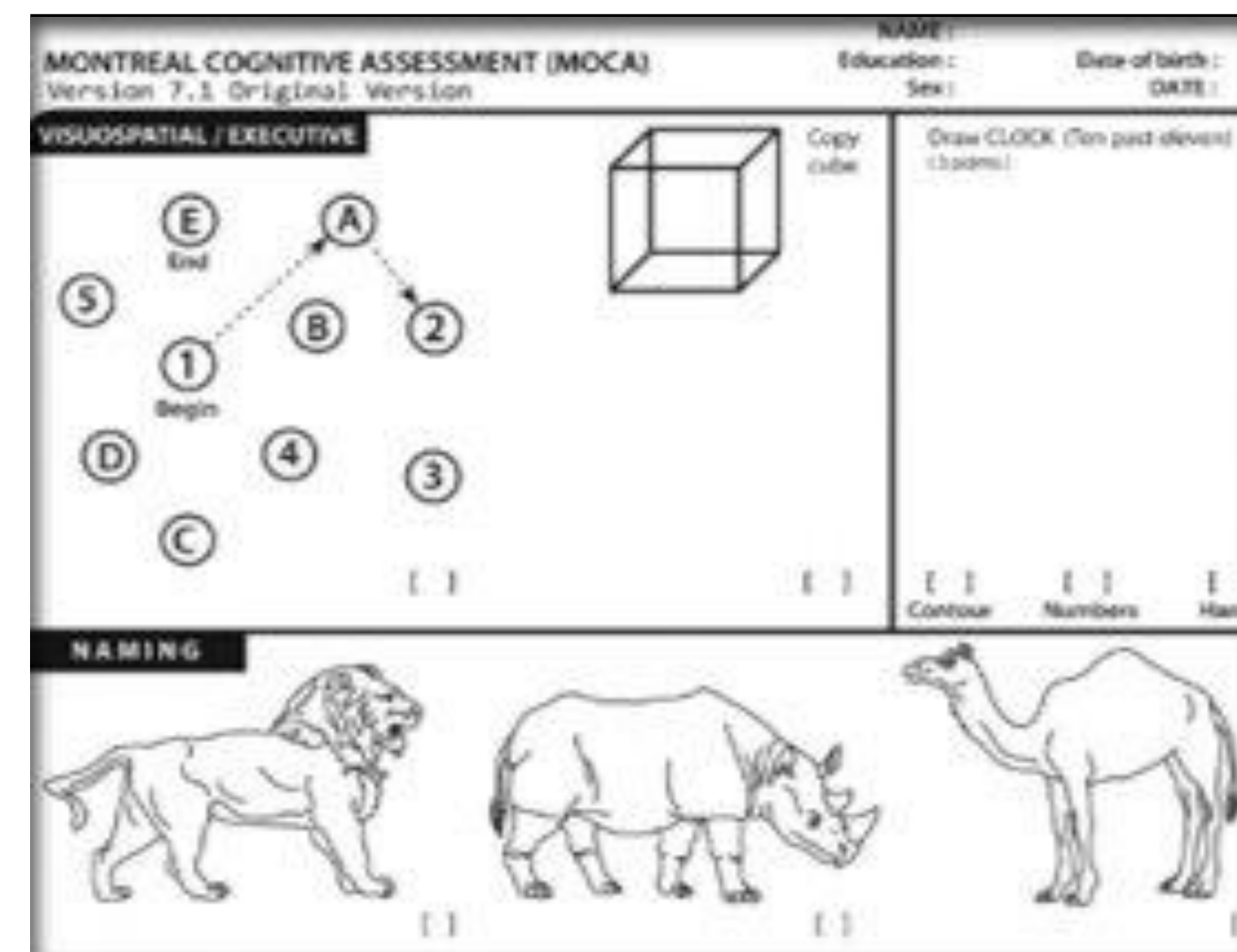


Figure 1. Montreal Cognitive Assessment

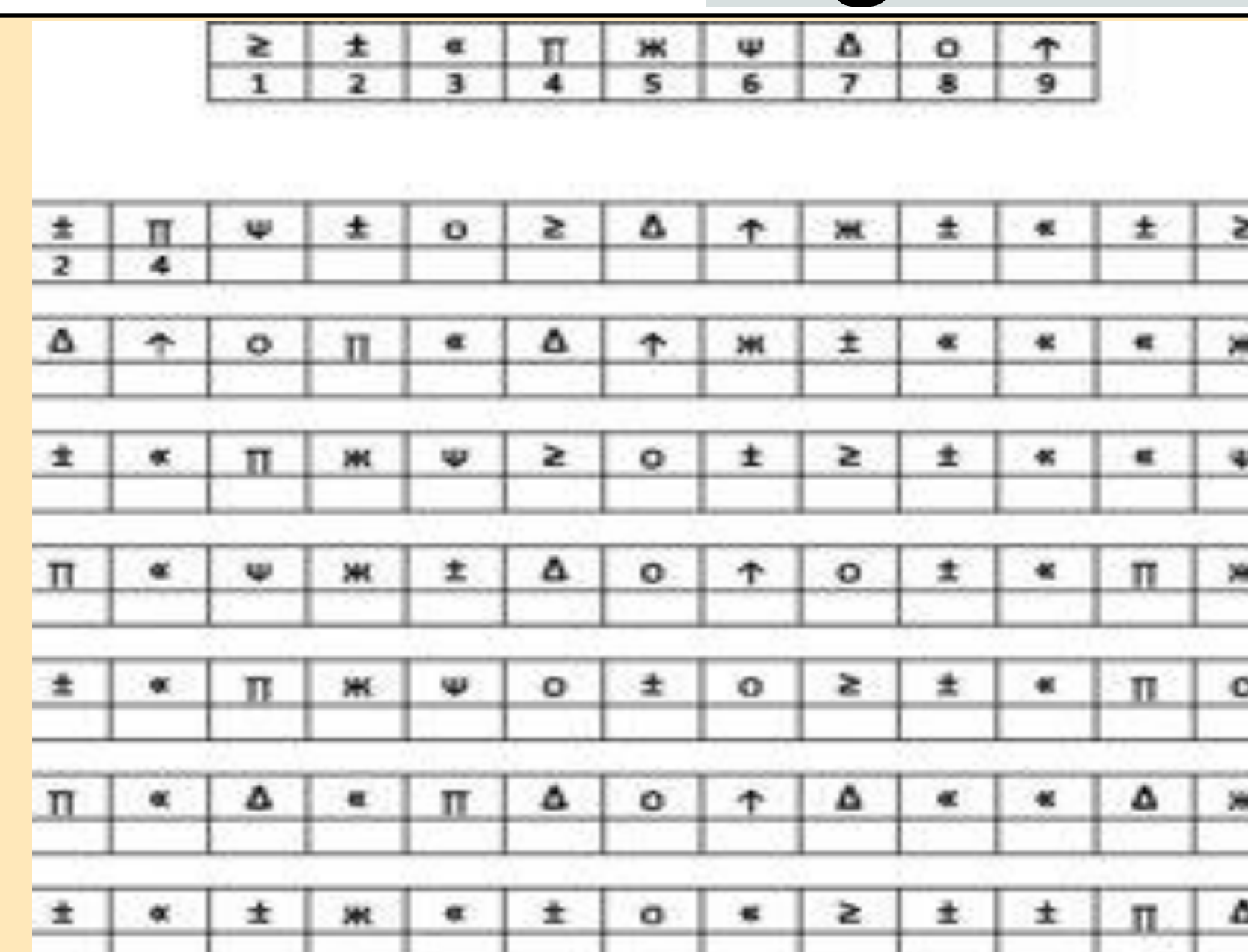


Figure 2. Symbol Digit Modalities Test

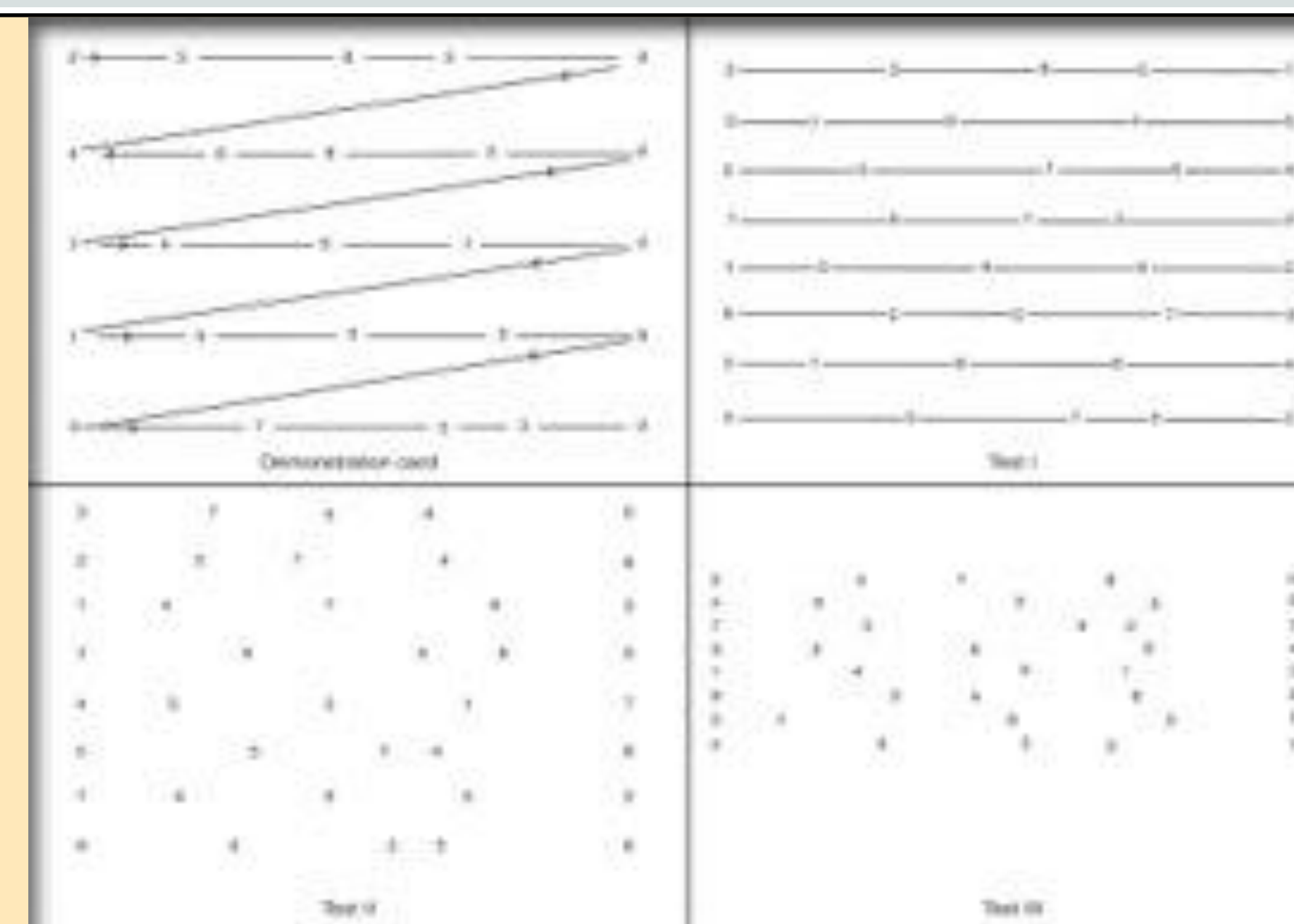


Figure 3. King-Devick Test