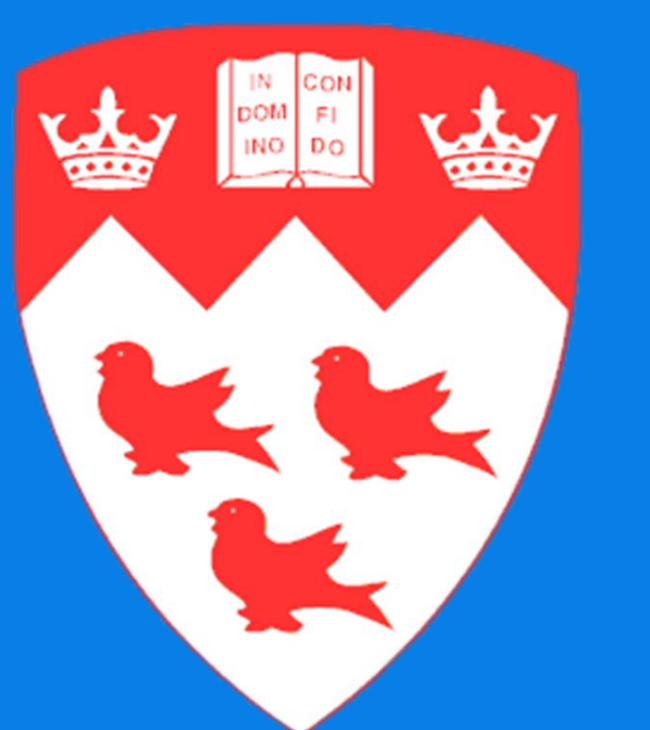




A Rasch Model Analysis of the Montreal Cognitive Assessment within a Cancer Population



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Background

- It has been well established that cognitive deficits are prevalent in many end-stage diseases such as HIV/AIDS and cancer.
- However, the specific aspects of cognition affected by cancer are still imprecise.
- Although the Montreal Cognitive Assessment has been validated in a geriatric population, studies have not yet shown its application to the cognitive deficits experienced by individuals affected by cancer.

Objectives

- To determine the dimensionality of the Montreal Cognitive Assessment (MoCA®) within a cancer population using statistical Rasch modeling.

Methods

- Data from 54 consecutive patients was collected retrospectively from patients enrolled in the Cancer Nutrition-Rehabilitation Program at the McGill University Health Centre - Montreal General Hospital.
- The patients' scores on each item of the MoCA® were analyzed using Rasch modeling on RUMM 2020.
- Tests of fit statistics were used to determine items which did not fit the model.

Inclusion Criteria:

- All cancer types/sites
- All stages

Exclusion Criteria:

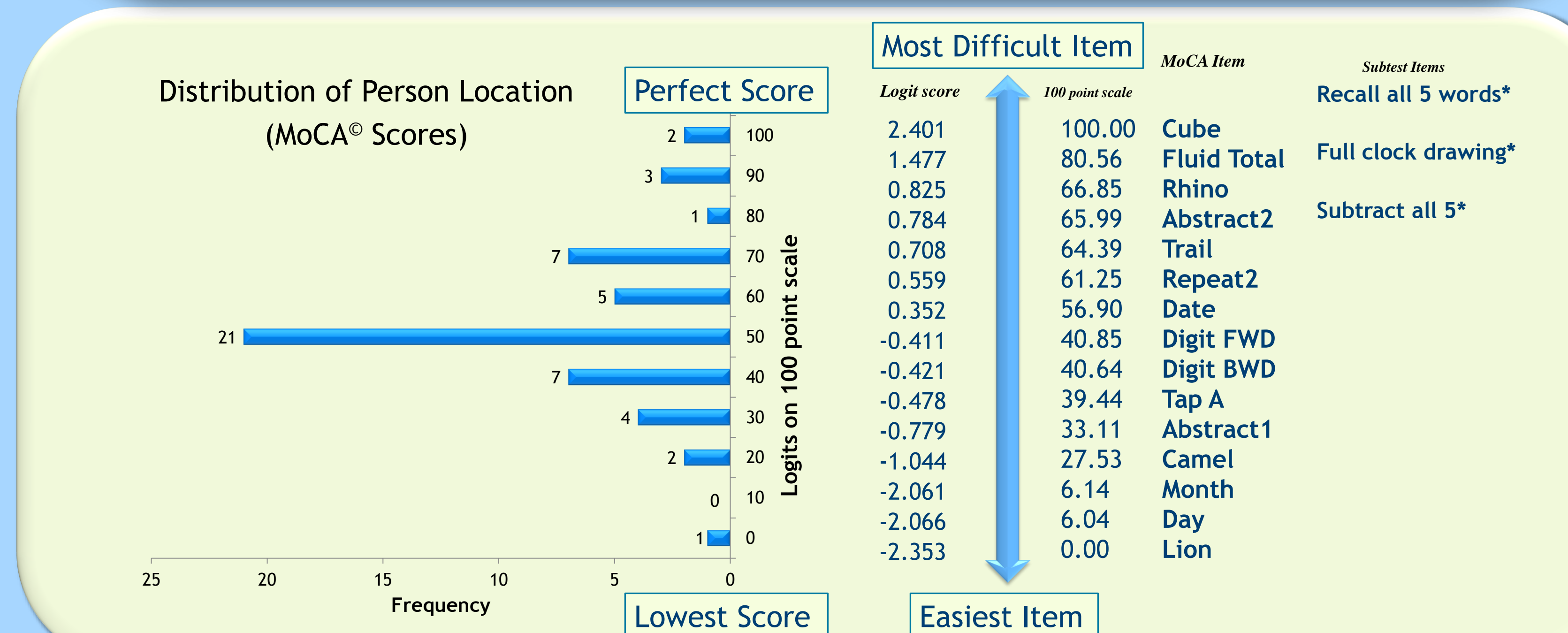
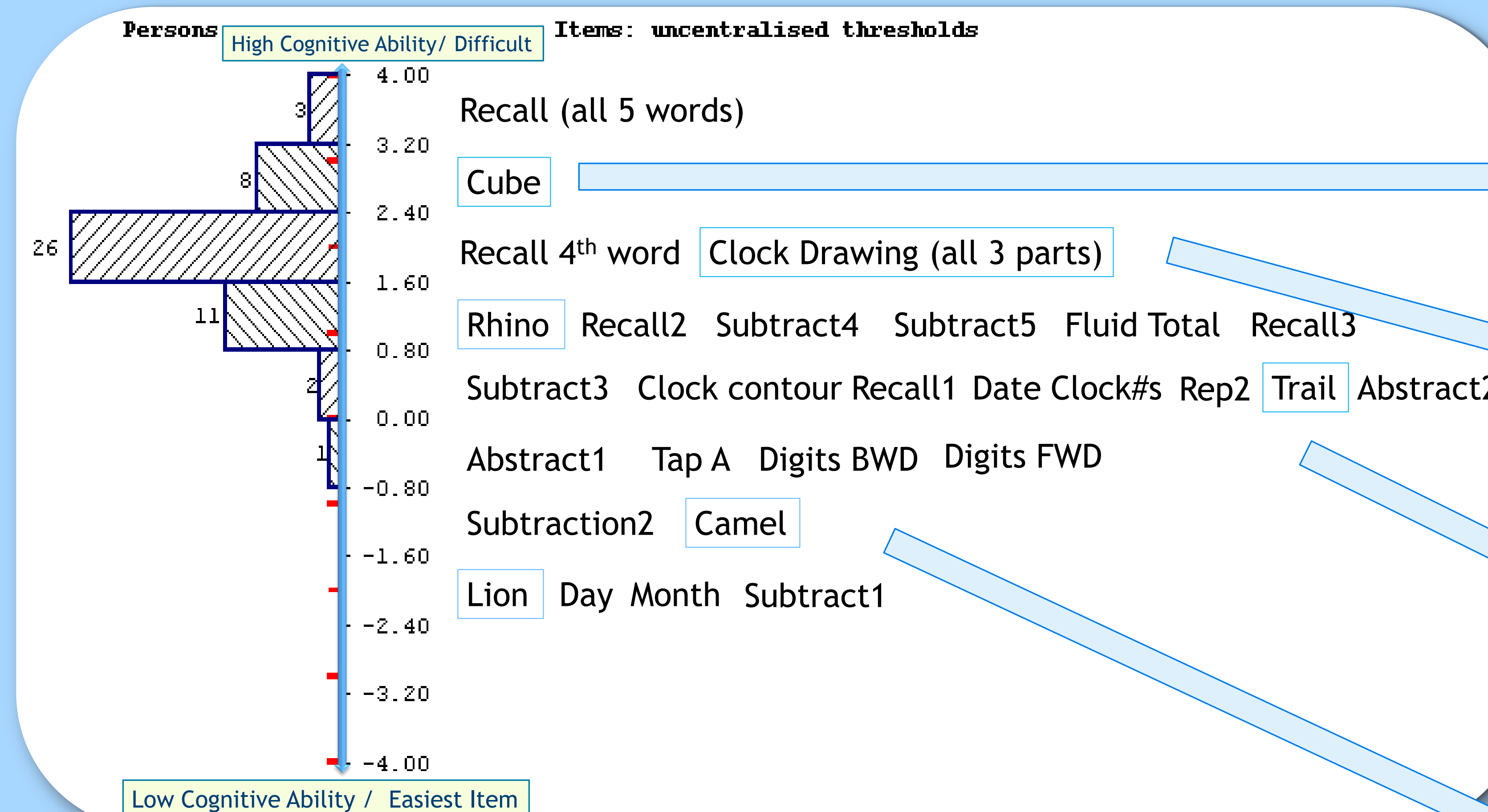
- Brain-related cancer or metastasis

Table 1: Patient Characteristics (n: 54)

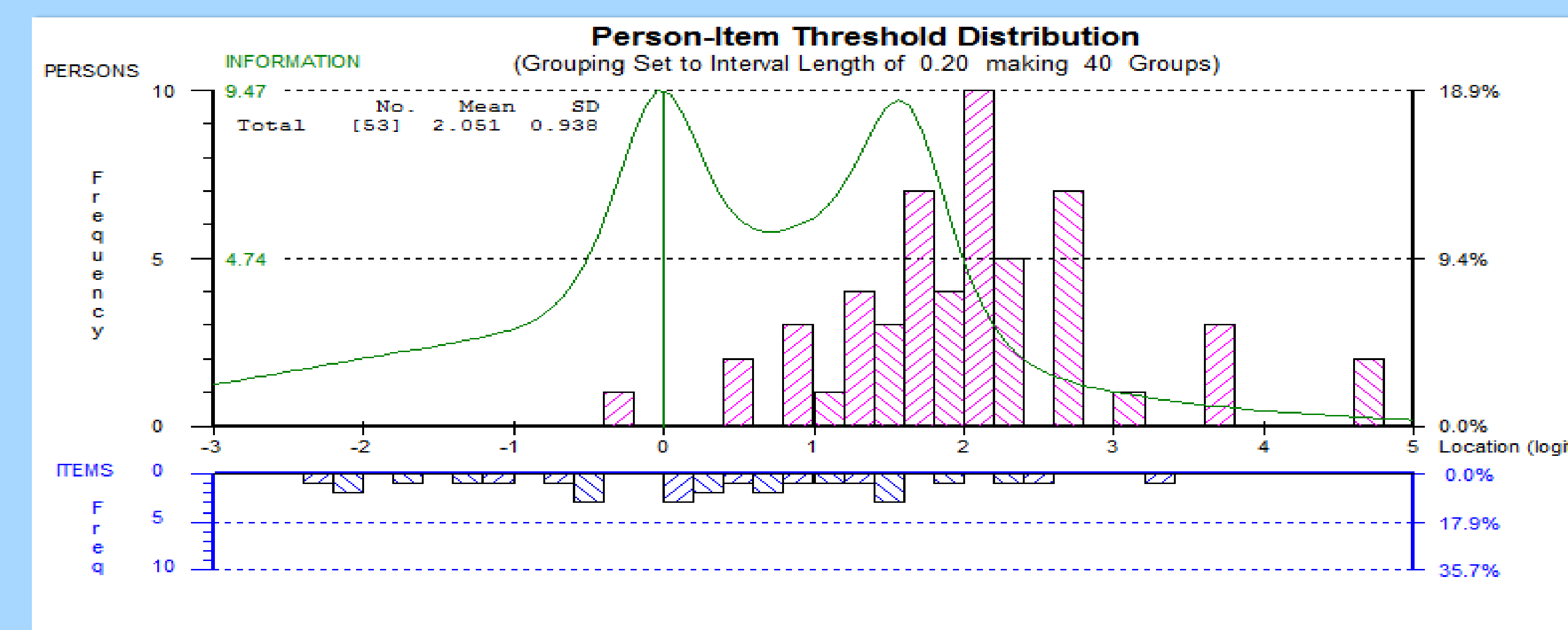
Age (years) [mean (SD)]	58.78 (12.56)
Male [n (%)]	23 (42.59)
Female [n (%)]	31 (57.41)
During Chemotherapy Treatment [n (%)]	26 (48.15)
Post Chemotherapy Treatment [n (%)]	28 (51.85)
≥12 years education [n (%)]	46 (85.19)
<12 years education [n (%)]	8 (14.81)

Stage 1-2 [n (%)]	8 (14.81)
Stage 3-4 [n (%)]	36 (66.67)
Other [n (%)]	10 (18.52)
Colorectal [n (%)]	15 (27.78)
Breast [n (%)]	10 (18.52)
Lung [n (%)]	5 (9.26)
Upper GI [n (%)]	4 (7.41)
Pancreatic [n (%)]	3 (5.56)
Ovarian [n (%)]	3 (5.56)
Hematological [n (%)]	9 (16.67)
Other [n (%)]	5 (9.26)

Results

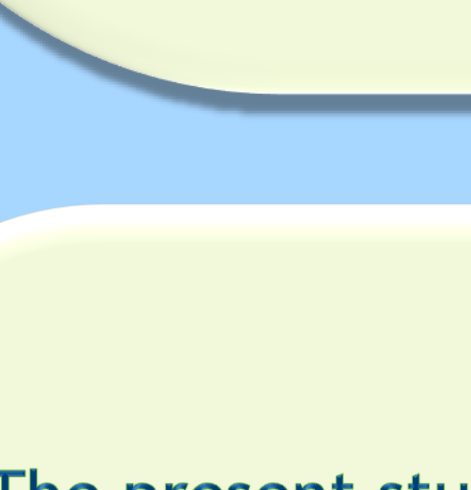
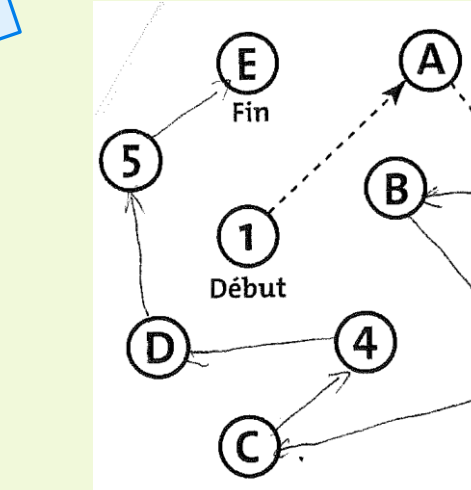
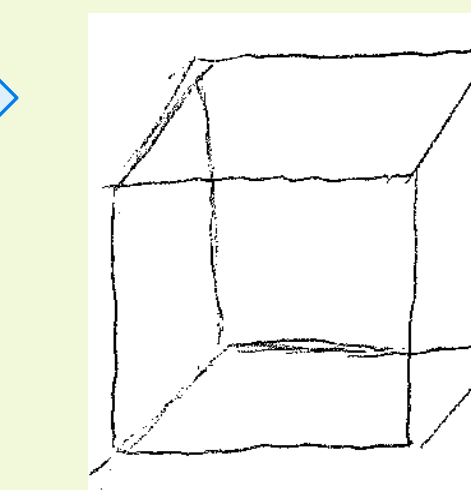


Person Location		Item Location		Item Fit Residual		Person Fit Residual		Chi Square Interaction			PSI
Mean	SD	Mean	SD	Mean	SD	Mean	SD	Value	df	p	
2.05	0.94	0	1.3	0.09	0.78	0.23	0.68	24.99	18	0.12	0.68

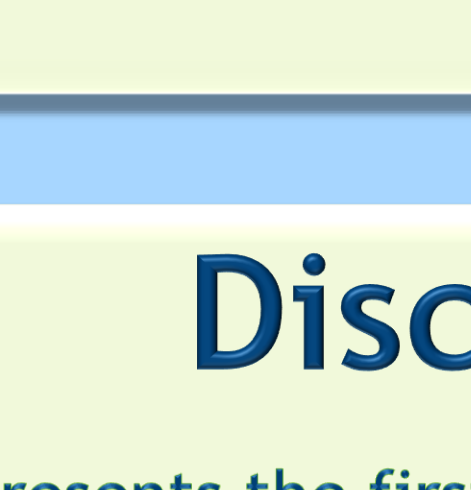
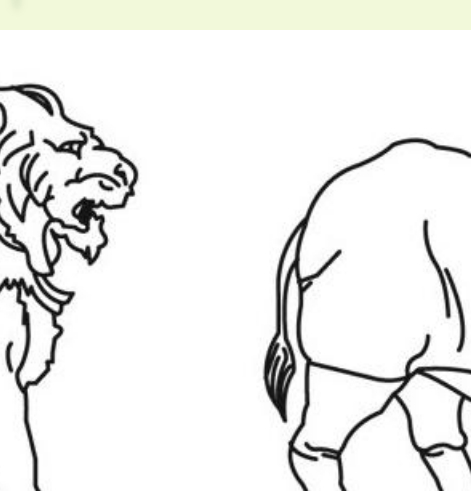
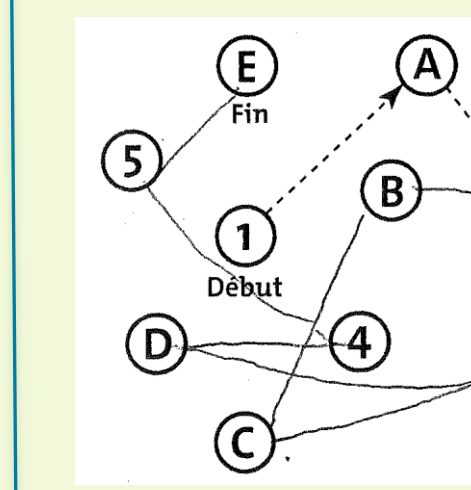
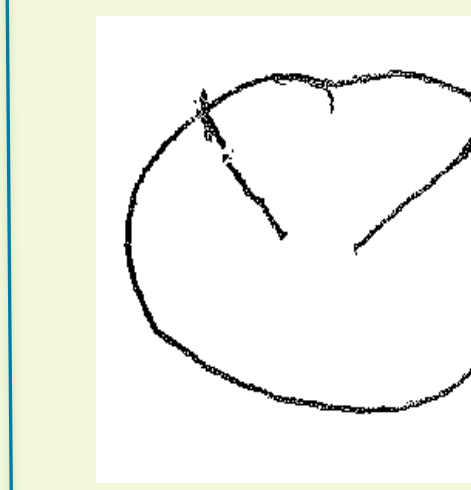
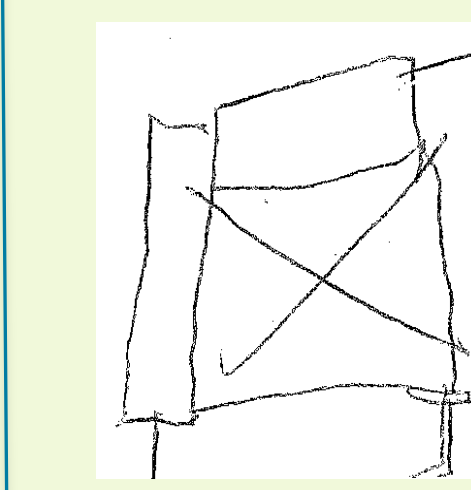


MoCA® Items

Perfect Score



Mild Cognitive Deficits



Discussion

- The present study represents the first application of Rasch Analysis to the MoCA® within a cancer population.
- The results suggest that the MoCA® may be testing a unidimensional construct such as cognition or cognitive deficits.
- The only exceptions are the items *abstraction1* and *subtraction*. *Abstraction1* was removed from the model due to local dependency on *abstraction2*. Whereas, *subtraction* was removed due to differential item functioning. We speculate that this may be a result of person factors.
- This study was limited by its small sample size.
- Further research is required to explore testing over multiple time points.

Conclusion

- The results of this Rasch analysis begin to indicate that the MoCA® may be used as a measure of cognition in patients with cancer.

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