

Ecological Assessment of Executive Functions in Grocery Shopping: A Pilot Study for ABI Training

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INTRODUCTION

Executive Functions (EFs) refer to a repertoire of cognitive and behavioral processes responsible for the control and regulation of actions and the performance of complex or non-routine tasks (Borgnis, 2022). However, some acquired brain injury (ABI) patients exhibit normative performance on standardized tests, such as the Trail Making Test, while facing significant difficulties on daily life activities. In response to this issue, there has been increasing efforts to the development and use of ecologically valid neuropsychological assessment tests that provide complementary information to that offered by traditional psychometric tests.

OBJECTIVE

The objective is to adapt an ecological assessment method for individuals with ABI and subsequently design an EF training program tailored to this task. In addition, it is intended to adapt the task to a more computerized method to facilitate the work of the evaluators.

METHOD

Materials

Two tablets, a shopping task (list with 16 products), a supermarket map and the purchase record were used.

Participants

27 healthy adult subjects (with no neurological conditions or ABI) between 18 and 65 years old.

Procedure

An ecological shopping task was designed to assess the cognitive functioning while doing groceries on a real supermarket. Both participants and evaluators move to the supermarket to run the experiment.

The shopping task required the participants to face the following challenges:

- 16 products had to be found within 5 different store aisles sections.
- 6 out of 16 products were not available at that specific store which required the participants to find alternative products to achieve the goals.
- All the products had to be found in a maximum time of 60 minutes.
- No other indications were facilitated to the participants beyond the products list

Furthermore, time spent to accomplish the grocery, number of products found and all the actions taken by the subjects were registered in an *Adhoc* questionnaire. In addition, the participants path was tracked in the store's map by the evaluators.



Fig.1. Map

RESULTS

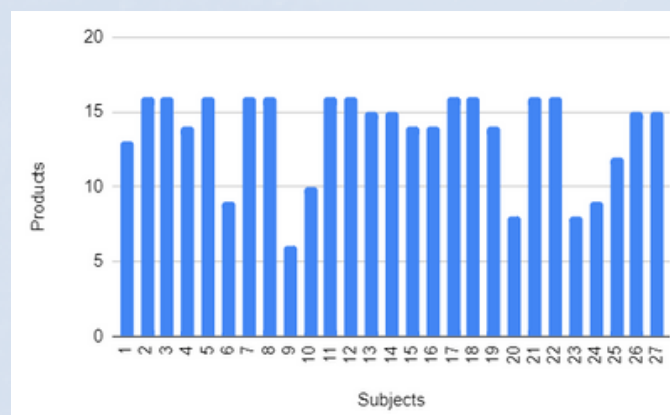


Fig.2. Number of products acquired

The average number of products purchased by the participants was 12.62 and the standard deviation was 3.10.

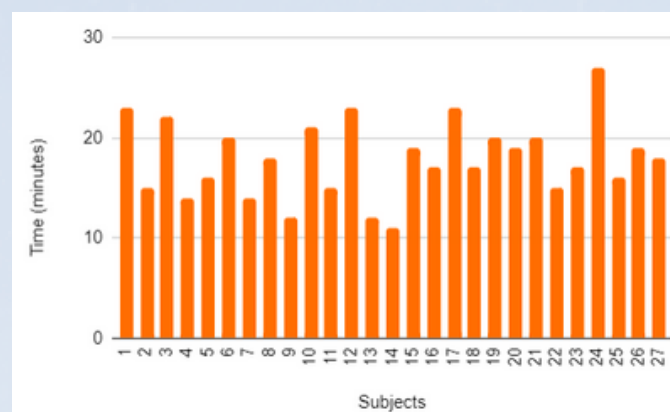


Fig.3. Time spent on the shopping task

The average time in minutes spent on the task by the subjects was 17.03 and the standard deviation was 3.85.

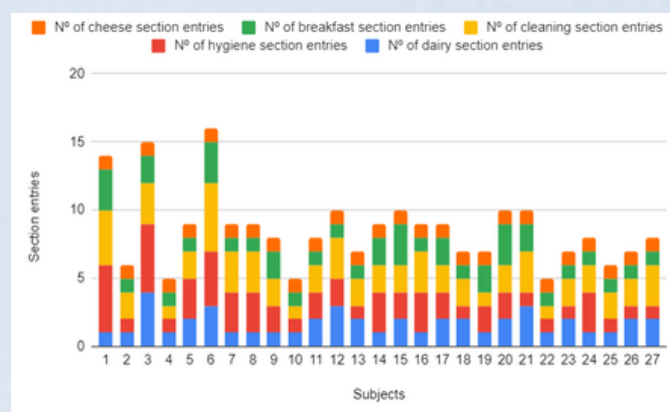


Fig.4. Number of entries on each store aisle section

The average number of entries in the section was:

- Cheese: 1
- Breakfast: 1.26.
- Cleaning: 1.96.
- Hygiene: 1.57.
- Dairy: 1.4.

The standard deviation of entries in the section was:

Cheese: 0; Breakfast: 0.75; Cleaning: 0.91; Hygiene: 1.22; Dairy: 0.82.

CONCLUSION

The data collection process was computerized during the task. The use of these tools enabled precise tracking of participant actions, confirming the feasibility of the method. It remains pending for future work to design an app that records routes inside buildings.

References

Borgnis, F., Baglio, F., Rossetto, F., Riva, G., & Cipresso, P. (2022). An innovative solution for an integrated evaluation of Executive Dysfunctions. *Annual Review of CyberTherapy and Telemedicine*, 20, 91–95.