

# The effect of bilingualism or multilingualism on executive functioning

Parmin Rahimpoor-Marnani, Assel Al-Bayati, Ryan Cortez, B. Marius 't Hart, Denise Y.P. Henriques

Centre for Vision Research, York University, Toronto, ON, Canada



## Introduction

While multilingualism being the norm rather than the exception in our societies, studying cognitive processes of non-English monolingual subjects has become more important than ever. While some studies have shown some cognitive performance advantages with bilingualism and multilingualism, the results of studies in this field are overall ambiguous and specific multilingual subjects such as English as Second Language (ESL) tend to be underrepresented.

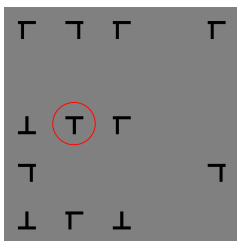
## Does bilingualism or multilingualism affect executive functioning performance?

Online browser study. Participants completed a questionnaire and a battery of tasks such as a visual search (N=657; M<sub>age</sub>= 21.88, SD<sub>age</sub>= 6.0; M=174, F=481, Other=2) and a Go/No-Go task (N=669; M<sub>age</sub>= 21.78, SD<sub>age</sub>= 5.93; M=179, F=488, Other=2) assessing the main components of executive functioning.

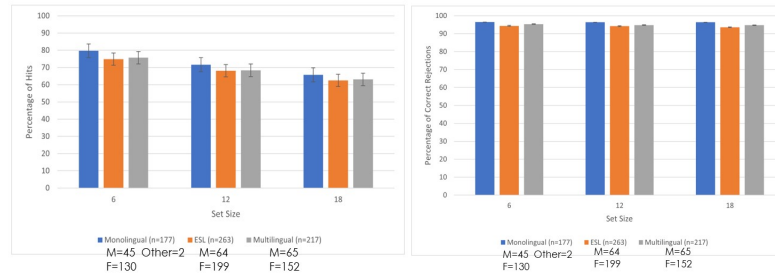
**Monolinguals:** Only speak English fluently  
**English as a Second Language (ESL):** English in not their first language  
**Non-users:** English is one of the multiple languages spoken fluently

## Selective Visual Attention

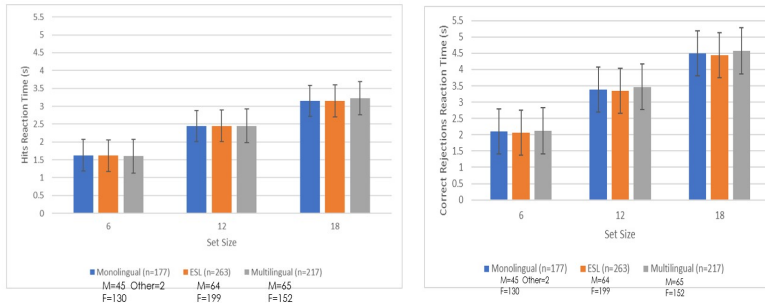
Participants searched for a target (regular, upright 'T') through sets (6,12, or 18) of irregularly shaped 'T's. Responses were a button press of 'X' when target was present and 'M' when target was absent.



## Bilingualism or multilingualism and Selective Visual Attention



No language based differences in accuracy of selective visual attention!

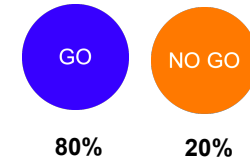


No language based differences in speed of selective visual attention!

- **Bilingualism or monolingualism does not improve selective visual attention or response inhibition as measures of executive functioning**
- **Future work: The effects of bilingualism or monolingualism on other cognitive processes that might be affected, such as multitasking.**

## Response Inhibition

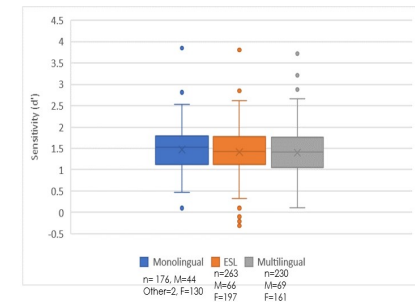
Participants made a response when presented a 'Go' stimulus, and inhibited a response when presented a 'No-Go' stimulus.



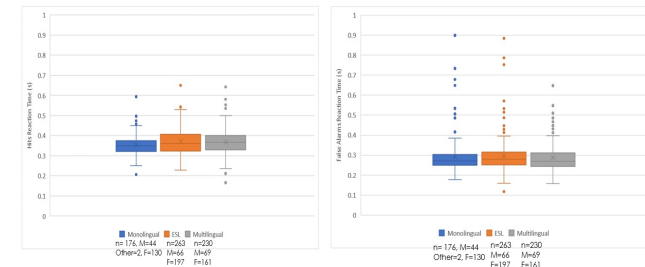
80%

20%

## Bilingualism or multilingualism and Response Inhibition



No language based differences in accuracy of response inhibition!



No language based differences in speed of response inhibition!

List of References can be accessed through the following QR Code



Contact:  
parmin79@my.yorku.ca