Stimulus and Decision Type Influence Go/No-go Performance and Relationship to Working Memory Capacity

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Introduction

• Tasks are modified for many reasons, only some of which are theory-driven
• What types of task manipulations alter performance on a go/no-go task?
• Do those manipulations affect relationships between performance on go/no-go and WMC?

Method

Operation & Symmetry Span Tasks

Go/No-go Tasks

E1: Upper/Lower case (Perceptual)
Non-Living (Semantic)

DOCTOR
SCHOOL

giraffe ambulance

E2: Non-3 (Perceptual) 7 1 3
Non-X (Perceptual) X

E3: Living (Semantic)

DOCTOR
SCHOOL

giraffe ambulance

Only 3 (Perceptual) 7 1 3

E2: Non-3 Short ISI (900ms)
Non-3 Long ISI (2900ms)

E4A: Non-3 Short ISI (900ms)
Non-Living Long ISI (2900ms)

E4B: Non-Living Short ISI (900ms)
Non-Living Long ISI (2900ms)

E1-E3 Results

E1: Upper case Non-Living Non-3 Non-X Only-3 Living
Non-go ACC .32 .09 .39* .33* .11 .31* -.01
d’. .38* .14 .33* .35* .16 .31* .05
Mean RT .15 -.04 .28* .17 .07 .06 -.15
RT ISD .06 -.34 -.31* -.03 -.17 -.28* -.20

E2: Upper case Non-Living Non-3 Non-X Only-3 Living
Non-go ACC .16 .11 .14 .25 .06 .15
No go ACC .14 .11 .33* .35* .16
Mean RT .17 .07 .28* .17 .07
RT ISD .03 .02 .01

E3: Upper case Non-Living Non-3 Non-X Only-3 Living
Non-go ACC .19 .14 .17 .19 .07
No go ACC .14 .17 .33* .35* .16
Mean RT .17 .07 .28* .17 .07
RT ISD .03 .02 .01

Results Summary

• E1-3: Perceptual vs. Semantic
  • Higher no-go accuracy, greater d’
  • Faster and less variable RTs
• E1-3: Between-subjects
  • Mean RT and d’ difference in semantic only
• E1-3: Working memory correlations
  • Related to no-go’s, d’ and RT ISD
  • Not related to mean RT
  • Do not vary by Perceptual vs. Semantic
• E4: Perceptual vs Semantic
  • Higher no-go accuracy, greater d’
  • Faster and less variable RTs
• E4: Long vs Short ISI
  • Higher no-go accuracy, greater d’
  • Slower and less variable RTs*
• E4: Working memory correlations
  • Very similar to E1/E2 for Short ISI
  • Lacking relationships for Long ISI

Conclusion

• E1-E3 failed to find the pattern of Perceptual vs Semantic relationships with WMC present in the literature
• Increasing the ISI introduced these variations in WMC relationships in E4
• Perceptual and Semantic behavioral differences were still present when ISI was increased
• While ISI is important, other factors may affect relationships with WMC

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