Adapted Cognitive Assessment Lab
Assessing Working Memory in CP

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Working Memory (WM)

- Refers to retention of information in conscious awareness in the absence of the continued presence of the information.
- Multiple models of WM; we are exploring visual-spatial memory and phonological memory separately.
- Anatomically distributed widely and underlies many cognitive processes.
  - Language acquisition (related to phonological loop)
  - Predicts reading and math skill development
  - Developmental and academic risks associated with impaired WM (math, reading, writing, remembering and following complex multi-step directions).
- Given individuals with CP already at risk for these concerns, WM presents as an important target.
What we don’t know

Need to explore

- Neuropsychological tests have not been characterized for their performance with this population.
- Existing studies of neuropsych findings in CP are in absence of understanding of basic WM processes in CP.

Why it’s important

- Medical management of children with CP
- Cognitive interventions
Study Aims and Participants

Aim 1
 Develop accessible dichotomous choice measure of WM to use in place of traditional measures

Aim 2
 Examine visual-spatial and auditory WM accuracy in children w/CP and TD peers.

Aim 3
 Explore additional performance patterns for children with CP on WM tasks (load x delay interactions, visual vs. phonological performance)

Exploratory Aim
 Level 2 modification (recognition recall strategy)

Participants (ages 6-16:11)
 85 children with diagnoses of CP (60 CP group & 25 CPLC group)
 60 TD children
Visual Spatial WM Task (level 1)

Load totals range from 1-7 dot locations and delays vary between 1000, and 5000ms.

6 memory load x 2 delay x 10 iterations
Total of 120 trials
est. 25-30 min
Figure 4. A match between the stimulus trial and probe trial is indicated in 4A above, thus an affirmative response is indicated. Similarly in 4B, the probe trial indicates a location that was shown during the stimulus trial and an affirmative response is indicated. Figures 4C and 4D are examples of lures in which probe trials reflect stimulus locations that were not presented during the stimulus trials thus a negative response is indicated.
Phonological WM Task (level 1)

Load totals range from 1-7 CV combos and delays vary between 1000 and 5000ms.

6 memory load
2 delay
10 iterations
Total of 120 trials
est. 25-30 min

NOTE: letters will not be shown on the screen – for illustrative purposes only
Figure 5
A match between the stimulus trial and probe trial is indicated in 5A above, thus an affirmative response is indicated.
Similarly in 5B, the probe trial indicates a location that was shown during the stimulus trial and an affirmative response is indicated.
Figure 5C is an example of a probe with a phonemically similar lure stimulus thus a negative response is correctly indicated.
Figure 5D shows a probe trial with a phonemically dissimilar lure stimulus that was not presented during the stimulus trial thus a negative response is correctly indicated.
In early stages of data collection for CP and TD groups.

Full scaffold training not required for most participants.

Youngest participants struggling to complete testing (cognitive fatigue/boredom).

Working with engineering/computer science group to develop more ‘engaging’ game-based strategies to assess cognition including WM.

Challenge – develop accessible tool to assess impulse control