Autistic Traits & Executive Functioning

Meagan Smith and Dr. Cushen
Autism Spectrum Disorder (ASD)

- Asperger’s Syndrome
- Pervasive Developmental Disorder (PDD)
- Autism

• Continuum
  • Low Functioning ➔ High Functioning

• Deficits in Executive Functioning:
  • Working memory, verbal fluency, complex problem solving, cognitive flexibility, etc.
Research Question(s)

- Can the Autism spectrum continuum extend outside of the diagnostic range?
- Do typically functioning individuals with Autistic-like characteristics experience similar deficits in executive functioning?
  - If so, what specific areas?
Measurements/ Tasks

- The Autism Quotient (Baron-Cohen et al., 2001)
- Rey Osterrieth Complex Figure (ROCF) (Osterrieth, 1944; Rey, 1941)
- Fluency Tasks (Kleinhans et al., 2005)
- Tower of Hanoi (Lucas, 1894)
- Memory Span Tests
Autism Quotient
(Baron-Cohen et al., 2001)

- Measures adults’ level of Autistic traits
  - Social skill, attention-switching, attention to detail, communication, & imagination

- Score of 0-50
  - 32+ → clinically significant levels of Autistic traits

- **E.g:**

I find it easy to do more than one thing at once.

- Definitely Agree  Slightly Agree  Slightly Disagree  Definitely Disagree
Rey-Osterrieth Complex Figure (ROCF)
(Osterrieth, 1944; Rey, 1941)

- Copy, Immediate Recall, & Delayed Recall
- Boston Qualitative Scoring System (Stern et al., 1994)
- Summary scores:
  - Copy Presence & Accuracy
  - Immediate Presence & Accuracy
  - Delayed Presence & Accuracy
  - Immediate Retention
  - Delayed Retention
Fluency Tasks
(Kleinhans et al., 2005)

- 60 seconds

1) **Letter Fluency**
   - Generate words starting with the letter “S”

2) **Category Fluency**
   - “Animals”

3) **Category-Switching Fluency**
   - Generate a “furniture” word followed by a “fruit” word (alternating)
Tower of Hanoi

- Complex problem solving task
- Move discs from one peg to another, one at a time
- A larger disc cannot be placed on top of a smaller disc
- A disc cannot be moved if it is below another disc
- Task: reach the goal image in the fewest “moves”
Memory Span Tasks

- Running Span
  - Recall last letters from a series

  ABCXYZ $\rightarrow$ X Y Z

- Backwards Digit Span
  - Recall all numbers in reverse order of presentation

  1-2-3-4 $\rightarrow$ 4-3-2-1
Hypotheses

- There will be a relationship between Autism Quotient score and scores on cognitive tasks

- Individuals with higher AQ scores will . . .
  - Correctly solve fewer Tower of Hanoi problems
  - Have a greater number of errors on Memory Span tasks
  - Lower T scores for each summary score of the ROCF
  - Fewer responses generated during fluency tasks
Directions

- Currently collecting data
- Have not conducted any analyses
  - Possibly correlation & regression analyses
- If there is a relationship between AQ score and any cognitive tests:
  - EF deficits associated with ASD may extend outside of the diagnostic range
  - Better understanding of the continuum
Questions?