Impaired Cognitive Control and Its Relationship to Anxiety, Adaptive Function, and Risk for Psychopathology in Children with 22q11.2DS

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Cognitive Control and Anxiety in 22q

• Impairments in cognitive control are generally predictive of schizophrenia.

• Previous studies indicate that children with 22q are impaired on tasks that measure cognitive control.

• Anxiety and negative mood are also elevated in children with 22q.

• How might stress/anxiety modulate the etiopathology of schizophrenia? What might be the relationship / possible interactions of anxiety and cognitive control?
Methods  Go/No-Go Response Inhibition

45 children with 22q11.2DS (7-14 years old, mean = 11.4) - data from 25 here
36 typical children (7-14 years old, mean = 10.6)

- “Go” trials (75%): press a button as quickly as possible to “whack” the mole
- “No-Go” trials (25%): do NOT press button to not “squash” the vegetable
  - Preceded by 1, 3, or 5 “Go” trials

- Outcome measure: Percent accuracy on No-Go trials

Results: Response Inhibition

Response inhibition:

TD (r=0.35, p=0.04)*
22q (r=-0.05, p=0.72)
Results: Response Inhibition

Inhibition is impaired in children with 22q11.2DS, and performance is more variable relative to typical children, especially in teenagers.

Response inhibition:

- TD \((r=0.35, p=0.04)\) *
- 22q \((r=-0.05, p=0.72)\)

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<th>Age</th>
<th>7  8  9  10 11 12 13 14 15</th>
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<td>No-Go Accuracy (%)</td>
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Methods

Clinical/behavioral measures (n=25 in 22q group)

Anxiety

- Spence Children’s Anxiety Scale
  - separation anxiety, social phobia, obsessive compulsive, panic/agoraphobia, physical injury fears, generalized anxiety

Adaptive Function

- Adaptive Behavior Assessment System (ABAS) -- addresses 10 adaptive skills covering 3 domains:
  - Conceptual:
    - communication skills, functional academics, self-direction
  - Social:
    - social skills, leisure skills
  - Practical
    - self-care, home or school living, community use, work, health and safety
Results: Anxiety & Adaptive Function

Anxiety in ~60% of children with 22q are at significant levels. Adaptive functioning is unrelated to intelligence but strongly related to anxiety.

Does Cognitive Control follow the Adaptive functioning/Anxiety pattern?
Results: Go/No-Go and Anxiety

No-Go accuracy correlates negatively with fear anxiety and correlates positively with Scz prodome-relevant adaptive function measure.
Conclusions

• These results suggest that cognitive control and anxiety in 22q11.2DS might be related in a way that is functionally significant for adaptive outcomes.

• “Copers” with lower anxiety and higher adaptive scores perform better on tasks in the schizophrenia endophenotype.

• As part of a larger study, this investigation might help identify Allostatic Load risk factors for conversion to schizophrenia and lead to early diagnosis and preventive intervention.

Thank You!

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