Sensorimotor deficits in children with neurodevelopmental risk copy number variants

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Introduction

Background

A number of copy number variants are associated with risk for neurodevelopmental disorders. Little research has investigated the role these neurodevelopmental risk CNVs (ND-CNVs) have in difficulties with motor skills, despite the profound effect motor skill problems can have on daily functioning. Basic sensorimotor difficulties could underlie functional motor skill deficits.

Aims

- Investigate the effect of having an ND-CNV on tracking, aiming and steering performance.
- Investigate if IQ is associated with sensorimotor performance in children with an ND-CNV.
- Investigate if psychopathology is associated with sensorimotor performance in children with an ND-CNV.

Sample

- 138 participants with an ND-CNV (Aged 6-18), mean age 10 years
- 43 unaffected sibling controls (Aged 7-18, mean age 11 years)
- Recruited via UK Medical Genetics clinics, word of mouth and advertisements through charities.
- ND-CNV genotypes included: 15q11.2 del, 15q13.3 del, 16p11.2 del, 16p11.2 dup, 1q21.1del, 1q21.1 dup, 22q11.2 del and 22q11.2 dup.

Assessments

Clinical Kinematic Assessment Tool (CKAT)³
- With three tasks: tracking, aiming, steering

Child and Adolescent Psychiatric Assessment ⁴: ADHD and anxiety symptoms

Social Communication Questionnaire ⁶: ASD symptoms

Weschler Abbreviated Scale of Intelligence ⁶

Discussion

From these plots we can see:

- Having an ND-CNV was associated with lower overall sensorimotor performance, along with lower tracking, aiming and steering performance.
- Older children performed better on all tasks than younger children.
- Gender had little effect on sensorimotor performance.
- Higher FSIQ was associated with better overall performance along with better tracking and steering performance in children with an ND-CNV.
- Psychopathology was not associated with sensorimotor performance in children with an ND-CNV.

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