

Executive Function in Preschool and Early School Aged Children with Sex Chromosome Trisomy

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Background:

- Sex chromosome trisomies (SCTs) are among the most common chromosomal variations.
- Children with these genetic differences are at increased risk for deficits in neurocognition such as executive functioning (EF).

Methods:

- Behavior Rating Inventory of Executive Function (BRIEF) Preschool Version surveys were completed by parents at 2, 3, 4, and 5 year visits and BRIEF-2 surveys were administered at 6 and 8 year visits
- T-scores from the overlapping domains of the BRIEF-P and BRIEF-2 surveys were compared. Counts and percentages for elevated scores (t-score >60) were calculated. Logistic regressions adjusted for SCT condition were modeled for each domain to determine the odds of an elevated BRIEF-2, given an elevated BRIEF-P.

Results and Conclusion:

- A total of 55 participants had both BRIEF-P and BRIEF-2 assessments (38 47,XXY, 10 47,XXX, and 7 47,XYY). Table 1 presents a summary of elevated BRIEF scores by domain and BRIEF version. Specifically, 12.7–20.0% of participants were elevated on both instruments across domains (Figure 1).
- Elevated scores in preschool-age children strongly predict later EF concerns in early school age.

Tables and Figures

Table 1. Elevation Counts by Domain and BRIEF version

	At Least One Elevated BRIEF-P (N = 55)	At Least One Elevated BRIEF-2 (N = 55)	Elevated on Both BRIEF-P and BRIEF-2 (N = 55)	Odds Ratio (95% CI) ¹ Elevated BRIEF-2 Given Elevated BRIEF-P
Inhibition	13 (23.6%)	12 (21.8%)	7 (12.7%)	12.4 [2.7, 73.8]; p = 0.002
Shifting	12 (21.8%)	15 (27.3%)	8 (14.5%)	9.9 [2.2, 55.6]; p = 0.004
Emotional Control	16 (29.1%)	18 (32.7%)	11 (20.0%)	11.1 [2.9, 50.2]; p < 0.001
Working Memory	21 (38.2%)	17 (30.9%)	11 (20.0%)	4.9 [1.5, 18.2]; p = 0.012
Planning/Organization	22 (40.0%)	11 (20.0%)	8 (14.5%)	5.4 [1.3, 28.4]; p = 0.027
Global Executive Composite	15 (27.3%)	16 (29.1%)	10 (18.2%)	10.9 [2.9, 47.9]; p < 0.001

¹Adjusted for SCA diagnosis

Figure 1. Maximum BRIEF T-Scores Trajectories between BRIEF Versions

