From Early Risk to ADHD Phenotype: The Protective Role of Enriched Home Environment

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Background

- Within a prospective high-risk longitudinal study, we examined the interplay between familial risk for attention-deficit hyperactivity disorder (ADHD) and the quality of the home environment in the development of child executive functions (EF) and intra-subject variability (ISV), which are the core cognitive deficits in ADHD (Kofler et al., 2013; Lin & Gau, 2019).
- Then, we examined the intermediated role of this cognitive functioning in the relation between the early risk factors and the later manifestation of ADHD symptoms.

Method

- 99 boys (*M* = 7.34 years, *SD* = 0.23) who have been followed since birth as part of a prospective longitudinal study.

Parental ADHD

Conners Adult ADHD Rating Scale (Conners et al., 1999). Parents completed the questionnaire regarding themselves and their spouses. The total ADHD symptoms subscale was used.

Home Environment

The Early Childhood Home Observation of the Environment (Bradley & Caldwell, 1979) assesses the quality and the quantity of cognitive stimulation and emotional support available in the home environment.

Cognitive Functioning

Child EF was measured with:

- **The Behavior Rating Inventory of Executive Function** (Gioia et al., 2000).
- **The Digit-Span Subset** from the Wechsler Intelligence Scale for Children (Wechsler, 1974)
- **The Stop-Signal Task** (Berger et al., 2013).
- **The Developmental Neuropsychological Assessment** (Korkman et al., 1998)
- An aggregated score was calculated using factor analysis

Child ISV was measured with the standard deviation of Reaction time in:

- **The Stop-Signal Task** (Berger et al., 2013).
- **Kiddie Continuous Performance Test** (Conners, 2006).

ADHD Symptoms

The Conners' Parent Rating Scale-Revised (Conners, 1997) was used to assess child ADHD symptoms

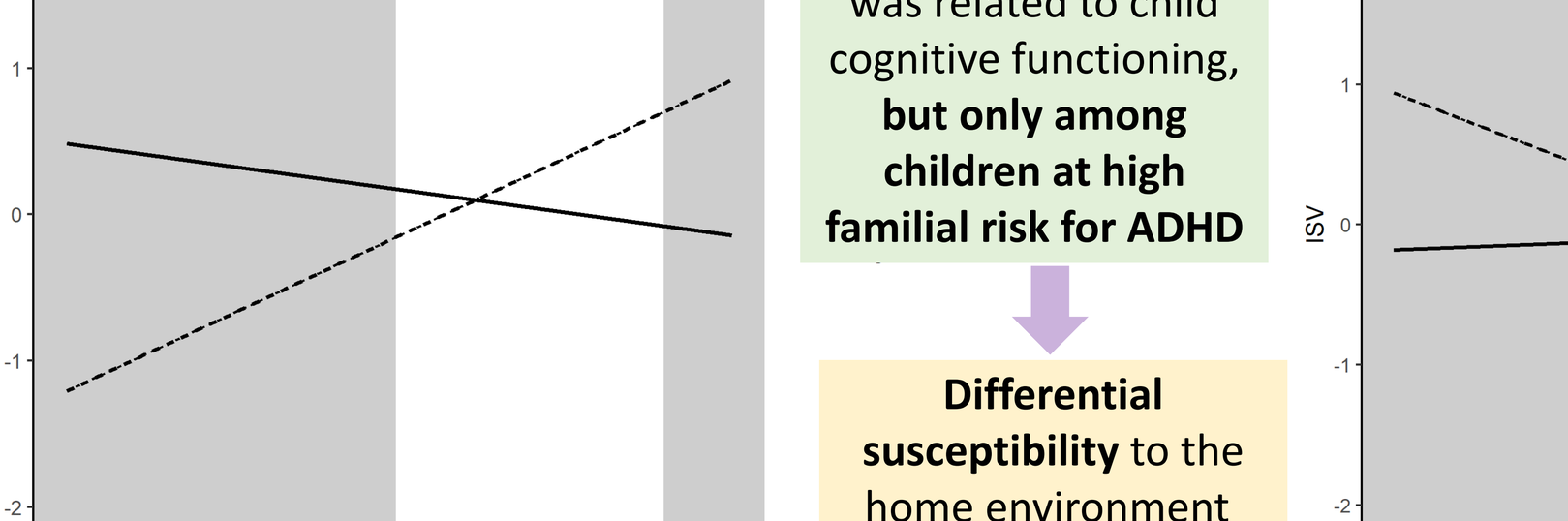
Results

Familial Risk Moderates the Correlation Between Home Environment and Child Cognitive Functioning

The quality of the home environment was related to child cognitive functioning, **but only among children at high familial risk for ADHD**

Differential susceptibility to the home environment (Belsky et al., 2007)

From Early Childhood Risk, Through the Cognitive Functioning of EF and ISV, to ADHD Symptoms



Child EF **mediated** the relation between the early risk level and child concurrent ADHD symptoms ; *β* = -.12, *t* = -2.08, *p* < .05, 95% CI [-.23, -.01].

A similar pattern of results was found with age 13 symptoms

Conclusions

- Our findings support the idea that children show differential susceptibility to the quality of their home environment in childhood as a function of their familial risk. The cognitive functioning of children, and specifically their EF levels, may lead to the manifestation of an ADHD phenotype, particularly in the context of a poor-quality home environment.

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