Trajectories of Depression Symptoms According to Childhood ADHD: a Study Using a UK-Based Pregnancy Cohort

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CHILDREN OF THE 90s

A **higher mean depression score** from age 10 to age 28 was consistently observed for those who experienced childhood ADHD. Females with childhood ADHD reported the **highest mean depression scores** from age 12 to 28.

BACKGROUND

- Attention Deficit Hyperactivity Disorder (ADHD) has a global prevalence of 7.6% in children [1].
- Riglin et al. [2] observed a causal relationship between childhood ADHD and recurrent depression in young adulthood.
- The strength of association between childhood ADHD and depression in young adulthood is different between sex [3].
- This study aims to explore the trajectories of subclinical depression scores according to childhood ADHD status and sex, from preadolescence to adulthood.

METHODS

Population:
- 7135 individuals from The Avon Longitudinal Study of Parents and Children (ALSPAC).
- Participants must have exposure measured and at least one measure of the outcome to be eligible for this study.

Exposure:
- Parent-rated Hyperactivity-Inattention subscale of the Strengths and Difficulties Questionnaire (SDQ) (range 0-10) at age 81 months was used for ADHD assessment.
- A binary indicator of ADHD was created using a cut-off score of ≥7.

Outcome:
- The short Moods and Feelings Questionnaire (sMFQ) was used for assessing depression scores.
- Measured at eleven time-points in ALSPAC: at ages 10, 12, 13, 16, 17, 18, 21, 22, 23, 25, and 28 years

Covariates:
- Sex, Parity, Maternal Education, Maternal Age at Last Menstrual Period before Pregnancy, Maternal Postnatal Anxiety and Depression.

Analysis:
- We used mixed-effects linear models to examine the association. Random effects for both the intercept and the slope were included.
- Three models were implemented for this study, base model, confounder-adjusted model and sex-combination model (a sex-combined four-factor exposure is used).
- Standardisation over confounder distributions was used to calculate predicted depression score for trajectories in the confounder-adjusted model.

FUTURE ANALYSES

- Sensitivity analysis using GP diagnoses instead of current ADHD measure.
- Look at diagnoses of depression an outcome, calculate incidence over time using marginal structural models with inverse probability weighting for treatment (ADHD) and censoring from GP follow up.

REFERENCES

(1) Salari N, 2023 Apr 20;49(1):48.
(2) Riglin L, 2021 Aug;51(11):1890–7.
(3) Powell V, 2020;29:1581–91.
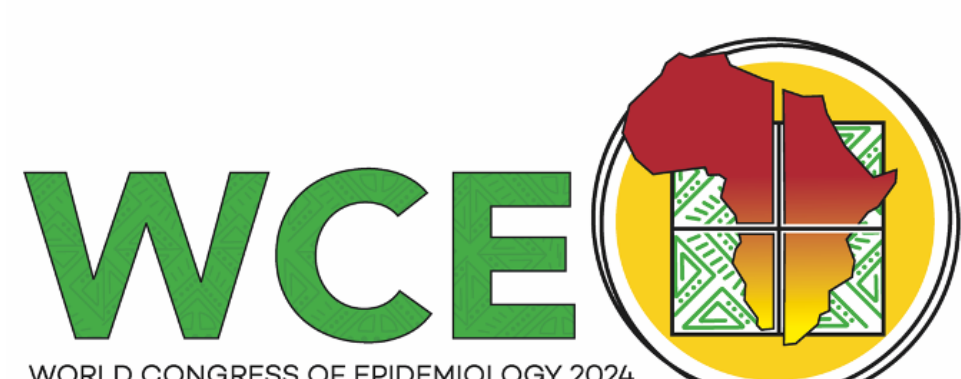
RESULTS

- Participants with childhood ADHD had higher mean sMFQ scores than those without.
- The highest difference in mean sMFQ scores between the two groups was observed at age 10, a similar difference was seen again at age 24 (Fig.1). However, the divergence in mean scores at 24 is mainly experienced by females, the difference in mean sMFQ scores between males with and without ADHD converges from age 10 to 28 (Fig. 2).
- Females with ADHD exhibited the highest mean sMFQ scores among all groups from age 12 onwards.

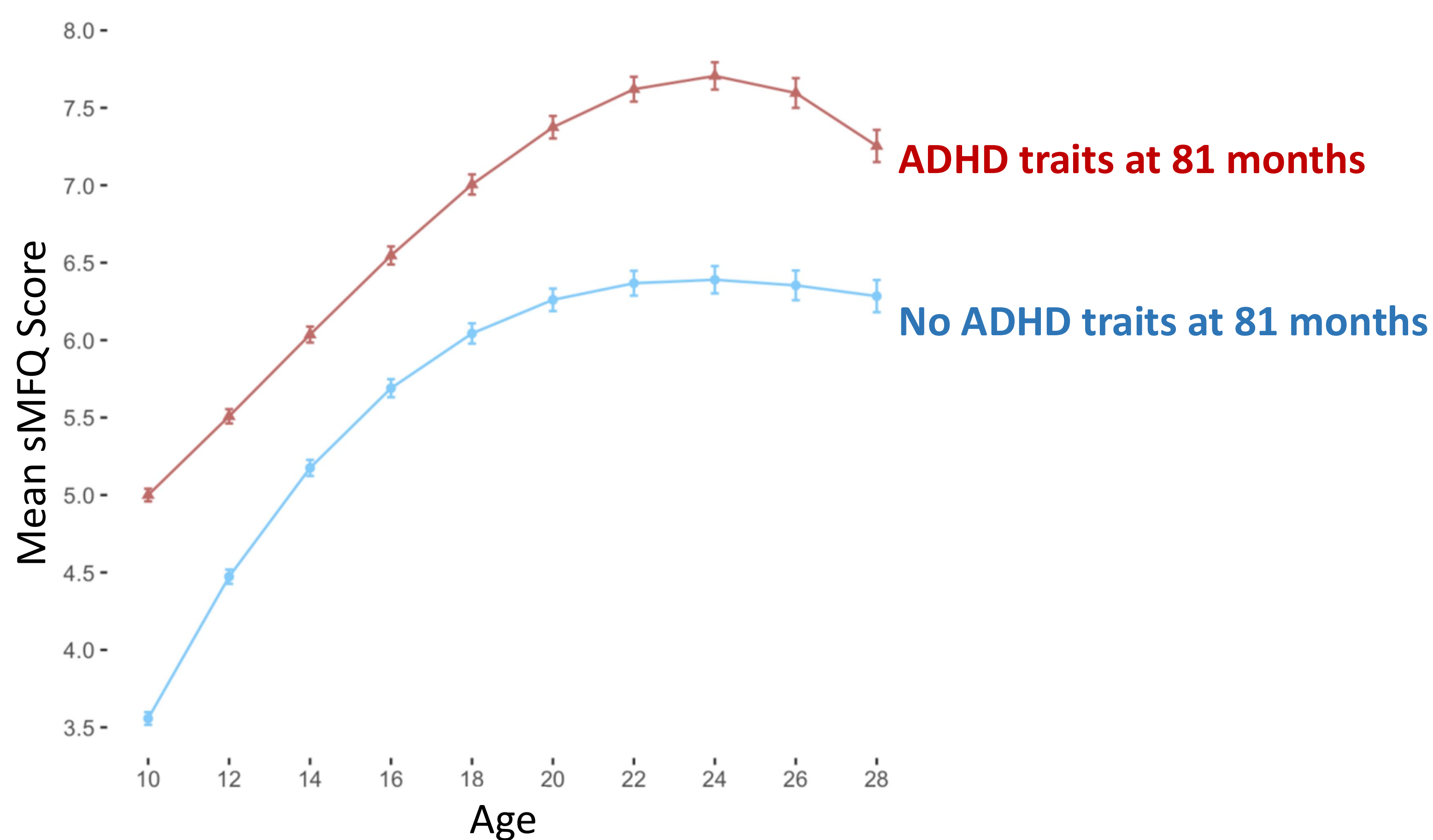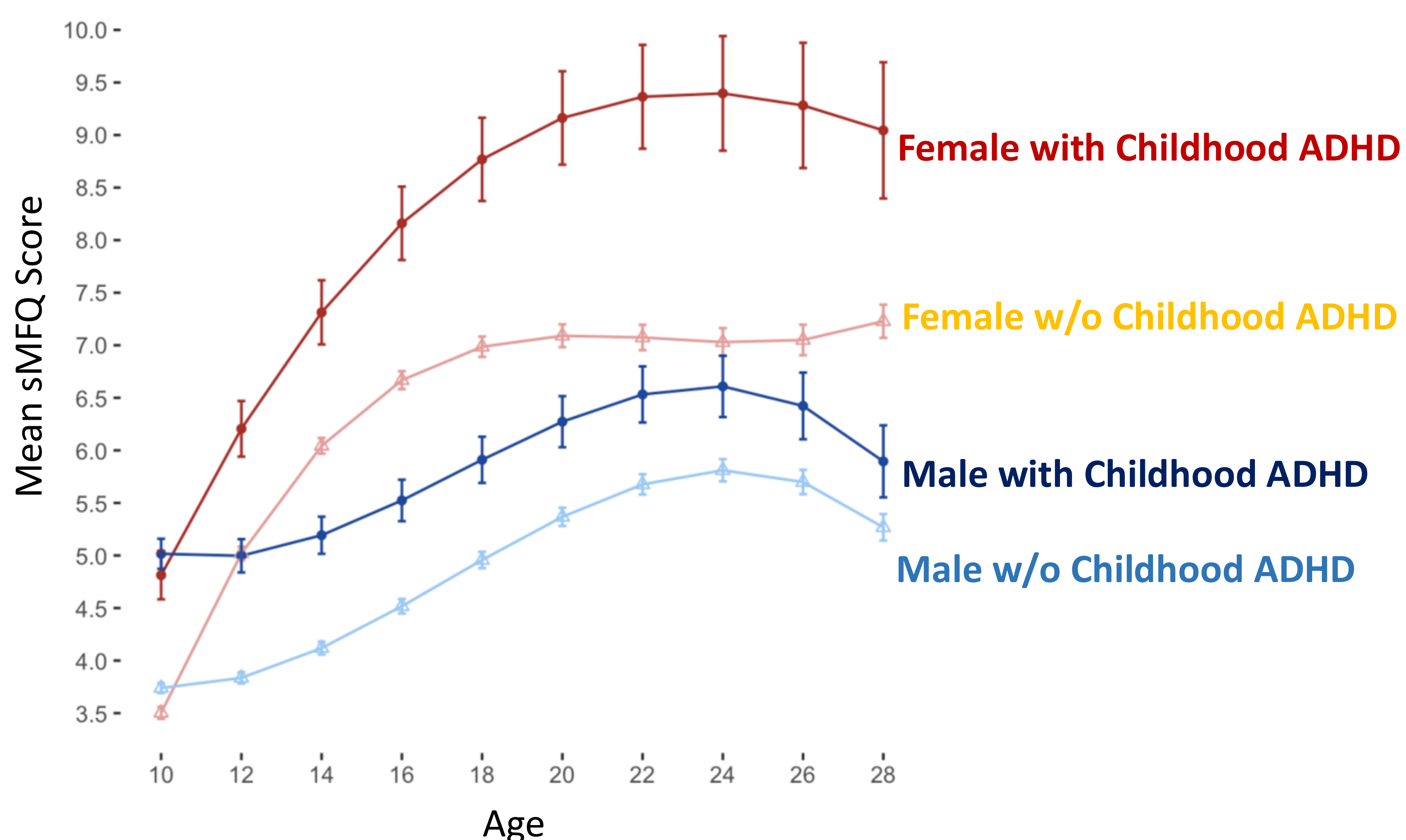### Figure 1. Depression trajectories from confounder-adjusted model

ADHD traits at 81 months
No ADHD traits at 81 months

Figure 2. Depression trajectories from sex-combination model

Female with Childhood ADHD
Female w/o Childhood ADHD
Male with Childhood ADHD
Male w/o Childhood ADHD

CONCLUSIONS

Childhood ADHD was observed to have a greater impact on females' depression scores later in life. Sex, within the context of ADHD, emerged as an important influencing factor in the depression trajectories. Understanding these sex and time specific patterns could be crucial in tailoring interventions.

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