ADHD Medications' Connection to Sleep Problems and Puberty

the learning brain lab.

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Introduction

- ADHD is a neurodevelopmental disorder affecting ~10% of children ages 2-17
  - Symptoms include: inattention, hyperactivity, impaired functioning, & impulsivity[1]
- Nearly 3 in 4 adolescents with ADHD have comorbid sleep disorders (CHADD)[2]
  - Sleep disorders can worsen ADHD symptoms leading to worsened mood, attention, behavior, and overall daytime functioning[3]
    - How are the sleep problems of adolescents with ADHD related to medication usage?
- Stimulants improve ADHD symptoms, by reducing emotional reactions to frustration, improving the ability to detect errors, and improving concentration.
  - Stimulant usage and physical development are associated with one another[4]
    - How is pubertal status related to medication usage?

Data and Funding

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Methods

Data

Analysis will be conducted using data from the Adolescent Brain Cognitive Development (ABCD) study[5] containing ~1,000 youth with ADHD ages 9-11. Parent reported sleep problems, and pubertal development status (PDS) scale[6] 1.0 - 4.0 will be related to medication use provided by the parent-reported medication inventory. Medications will be coded into five categories: ADHD Stimulant, ADHD Non-Stimulant, Antidepressants, no medication, & other (vitamins, allergy, asthma medication, etc.)

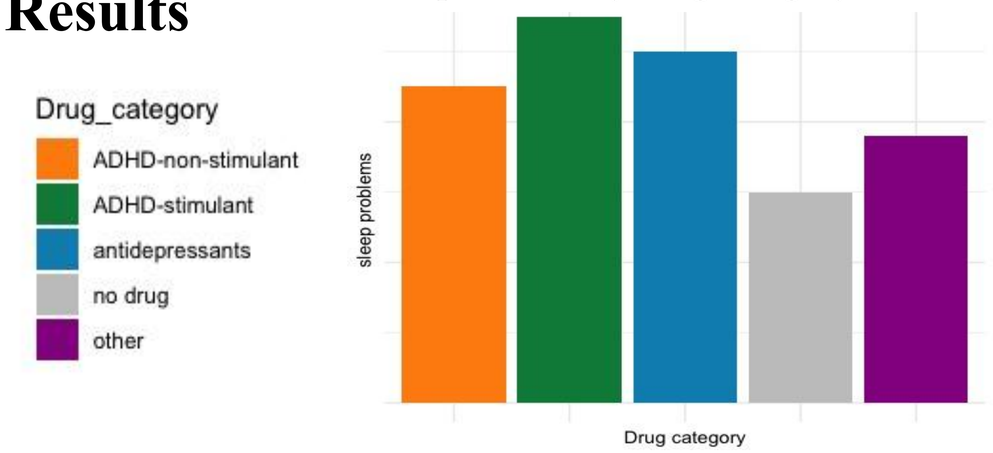
Analyses

1. **How are sleep problems among adolescents with ADHD related to medication use?** ANOVA - sleep problems predicted by drug category
2. **What is the connection between pubertal status and medication use** -ANOVA - pubertal development stage (PDS) predicted by drug category.

Implications

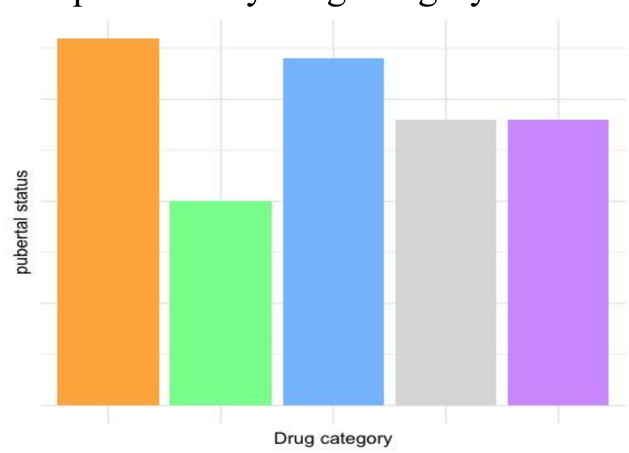
- Our hypothesized results suggest that that the type of drug taken (or no drug) is related to the sleep problems and pubertal status of youth with ADHD.
- These results will help design future studies focusing on pubertal status and medication intake, dosage and frequency.
- This work can help improve families' understanding of how medication use could affect sleep, or change throughout development

Hypothesized Results



Analysis 1: Sleep problems predicted by drug category

We predict that sleep problems will be most severe among adolescents on ADHD stimulants, and least severe among the "no drug" category because stimulants have been linked to sleep problems[7].



Analysis 2: Pubertal status predicted by drug category

We expect youth taking ADHD med-stimulants will be earlier in puberty in comparison to those taking antidepressants and ADHD non-med stimulants as ADHD symptoms and related mental health problems change with puberty.

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