Depression in Autism & ADHD: What do we Know?

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44% of people with ADHD experience depression before age 30

48% of autistic people report lifetime depression symptoms

Hudson et al. (2019); Meinzer et al. (2014)
1) Symptom Overlap

Core diagnostic criteria for ADHD, Autism & Depression

Overlapping diagnostic criteria between ADHD/Autism & Depression

ADHD/Autism associated symptom(s) overlapping with Depression symptom(s)

ADHD medication side effect(s) mimicking Depression symptom(s)

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2) Shared Genetic & Environmental Factors

Shared Genetic & Environmental Factors

Third Condition

Family, twin & molecular studies suggest shared genetic aetiology

e.g., Demontis et al. (2019); Wang et al. (2022)

Possible gene-environment correlations

e.g., Ratanatharathorn et al. (2021); Zwicker et al. (2020)

Social-Environmental Stressors

Direct causal effects

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3) Direct Causal Effects

- Shared Genetic & Environmental Factors
- Third Condition
- Social-Environmental Stressors

**Lower Depression in individuals with ADHD when on ADHD medication**

Chang *et al.* (2016)

**Mendelian randomisation study suggests causal effect of ADHD on Depression**

Riglin *et al.* (2020)

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4) Social-Environmental Stressors

Mediating roles of stressful family environment, bullying & trauma

- e.g., Meinzer et al. (2020); Rai et al. (2018)

School difficulties in ADHD

- e.g., Powell et al. (2020)

Loneliness in Autism

- e.g., Hedley et al. (2018)

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5) Third Co-Occurring Condition

Multiple conditions co-occur with both Autism/ADHD & Depression

- e.g., Copeland et al. (2013)

Mediating roles of emotional dysregulation, irritability & alexithymia

- e.g., Eyre et al. (2019); Seymour et al. (2014)

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How Effective are Assessments & Treatments?

- Problems of symptom overlap & lack of validation of Depression measures

- **Psychological Therapies** – family-based approaches in ADHD & modified CBT in Autism

- **Medication** – No RCTs on medication for depression in Autism/ADHD

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Ongoing Issues & Future Directions

Cross-sectional evidence – what about development?

Resilience & compensatory strategies?

e.g., Livingston et al. (2019) Lancet Psychiatry

Autism & ADHD co-occur highly – time to study them together?

e.g., Thapar et al. (2017) Lancet Psychiatry
Autistic Versus ADHD Traits?

Nationally representative sample of UK adults
\((N = 504; 49\% \text{ male}; \text{18-79 years}; M_{\text{age}} = 45.03, SD_{\text{age}} = 15.41)\)

<table>
<thead>
<tr>
<th>Autistic Traits</th>
<th>ADHD Traits</th>
</tr>
</thead>
<tbody>
<tr>
<td>Autism-Quotient Short (AQ-28)</td>
<td>Adult ADHD Self-report Scale (ASRS-18)</td>
</tr>
<tr>
<td>Depression Symptoms</td>
<td>Anxiety Symptoms</td>
</tr>
<tr>
<td>Patient Health Questionnaire (PHQ-9)</td>
<td>Generalised Anxiety Disorder Scale (GAD-7)</td>
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Hargitai, Livingston … & Shah (2023) *Sci. Reports*
Autistic Versus ADHD Traits?

**Regression, Dominance Analysis & Bayesian Regression**

<table>
<thead>
<tr>
<th>Predictor</th>
<th>$B$ [95% CIs]</th>
<th>$SE(B)$</th>
<th>$\beta$</th>
<th>$p$</th>
<th>$sr^2$</th>
<th>GDW*</th>
<th>BF$_{10}$ **</th>
</tr>
</thead>
<tbody>
<tr>
<td>Autistic traits</td>
<td>0.01 [0.01, 0.02]</td>
<td>0.00</td>
<td>.17</td>
<td>&lt; .001</td>
<td>.024</td>
<td>.063</td>
<td>2160.73</td>
</tr>
<tr>
<td>ADHD traits</td>
<td>0.04 [0.03, 0.05]</td>
<td>0.00</td>
<td>.49</td>
<td>&lt; .001</td>
<td>.201</td>
<td>.268</td>
<td>$1.05 \times 10^{29}$</td>
</tr>
<tr>
<td>Age</td>
<td>-0.01 [-0.02, -0.01]</td>
<td>0.00</td>
<td>-.17</td>
<td>&lt; .001</td>
<td>.027</td>
<td>.053</td>
<td>-</td>
</tr>
<tr>
<td>Sex (0=F, 1=M)</td>
<td>-0.06 [-0.19, 0.08]</td>
<td>0.07</td>
<td>-.03</td>
<td>.390</td>
<td>.001</td>
<td>.003</td>
<td>-</td>
</tr>
<tr>
<td>Education level</td>
<td>-0.02 [-0.06, 0.01]</td>
<td>0.02</td>
<td>-.05</td>
<td>.193</td>
<td>.002</td>
<td>.003</td>
<td>-</td>
</tr>
</tbody>
</table>

Overall Model Fit: $F(5, 498) = 63.56, p < .001, R^2 = 0.39$

* **General Dominance Weights** from the Dominance Analysis (higher GDW values indicate a more important predictor).

**Bayes Factor** (higher values indicate greater predictive quality over the null model containing all other variables).

Hargitai, Livingston … & Shah (2023) *Sci. Reports*
Depression in Autism/ADHD is **common**

**Family history** of depression, **social stressors** & other **co-occurring conditions** may heighten depression risk

**Challenges with assessment** & evidence base for **treatment is limited**

**ADHD** may be a **more important predictor** than autism