Project DyAdd compares adults with dyslexia, ADHD, their comorbid combination, and healthy controls. The aim is to define shared and differentiating characteristics at different levels of analysis.

**Project DyAdd**

Adult dyslexia and attention deficit disorder in Finland

**INTRODUCTION**

Each developmental and learning disability is suggested to affect at least 5% of a population. Although most of the cases are diagnosed in childhood, the difficulties do not always improve in adulthood. Developmental disabilities may also coexist in an individual. Frequent examples are dyslexia and ADHD.

Previous research on developmental and learning disabilities emphasizes the following:

- The impairments should be assessed in adults in addition to children.
- Research should be conducted in different (language) environments.
- One should acknowledge the possible coexistence of multiple developmental and learning disabilities in one individual.
- The research should be conducted simultaneously at multiple levels.

To address the above, we have launched project DyAdd. Our main objectives are to investigate:

- The neurocognitive profiles of the disabilities with clinical neuropsychological methods.
- The basic cognitive processes of the disabilities with experimental methods. These include learning and memory, attention, and temporal processing.
- The relations between neuropsychological, experimental, and biological measures. These include serum lipid fatty acids and the role of the cerebellum.

This poster presents the current results of the project DyAdd.

**PARTICIPANTS**

Participants were 119 adults (18-55 years) in the groups of controls (n=40), those diagnosed with dyslexia (n=40), ADHD (n=30), or their comorbid combination (n=29). The groups did not differ in their age, F(2,107) = 2.53, n.s., gender, χ²(4) = 1.85, n.s. (see Table 1).

**RESULTS**

WAIS-III profiles

WAIS-III does not differentiate between adult dyslexia and ADHD. The clinical groups performed well compared to the norms but shared a relative difficulty in the processing speed factor, F(3,115) = 7.45, p < 0.001, partial ω² = 0.6; post hoc: all clinical groups compared to the controls, p < 0.01 (see Figure 1 and reference [1]).

Phonological processing and achievement

Adult ADHD is not related to large or significant difficulties in phonological processing or achievement, that is, reading, writing, and arithmetic. The difficulties of the ADHD group reflected less accurate performance and all their observed impairments became non-significant when intelligence quotient was controlled for (see Figure 2 and reference [2]).

**Fatty acid profiles**

ADHD and dyslexia are not associated with total saturated fatty acids (SFA), monounsaturated FAs, or n-3 polyunsaturated FAs (PUFAs) in serum phospholipids. However, those with ADHD had elevated proportions of total n-6 PUFAs and dyslexia was related to a higher ratio of n-6/n-3 PUFAs. Among females none of the associations were significant. However, in males, all the associations above were significant and ADHD was associated with elevated n-6/n-3 PUFA ratio like dyslexia. dyslexia: F(1,47) = 6.17, p < 0.05; partial ω² = 0.116; ADHD: F(1,47) = 5.87, p < 0.05; partial ω² = 0.111 (see Figure 3 and reference [3]).

**CONCLUSIONS**

Future work of the project DyAdd will concentrate on group comparisons in questionnaires, visuo-spatial, constructive, and motor functions together with various aspects of learning and memory, executive functions and attention, and temporal processing.

**REFERENCES**


**TABLE 1**

<table>
<thead>
<tr>
<th>Demographic Characteristics of the Participants</th>
<th>Control</th>
<th>Dyslexia</th>
<th>ADHD</th>
<th>Comorbid</th>
</tr>
</thead>
<tbody>
<tr>
<td>Age (years)</td>
<td>37.15 (11.70)</td>
<td>36.65 (12.17)</td>
<td>35.45 (10.27)</td>
<td>32.56 (10.31)</td>
</tr>
<tr>
<td>Gender</td>
<td>Female</td>
<td>20 (50%)</td>
<td>12 (40%)</td>
<td>21 (53%)</td>
</tr>
<tr>
<td>Male</td>
<td>20 (50%)</td>
<td>18 (60%)</td>
<td>19 (48%)</td>
<td>3 (33%)</td>
</tr>
<tr>
<td>Handedness</td>
<td>Right</td>
<td>34 (85%)</td>
<td>26 (87%)</td>
<td>37 (93%)</td>
</tr>
<tr>
<td>Left</td>
<td>5 (13%)</td>
<td>3 (10%)</td>
<td>3 (8%)</td>
<td>0 (0%)</td>
</tr>
<tr>
<td>Middle</td>
<td>12 (30%)</td>
<td>4 (14%)</td>
<td>13 (33%)</td>
<td>2 (22%)</td>
</tr>
<tr>
<td>Basic</td>
<td>14 (35%)</td>
<td>18 (62%)</td>
<td>18 (45%)</td>
<td>6 (67%)</td>
</tr>
<tr>
<td>High</td>
<td>15 (30%)</td>
<td>12 (40%)</td>
<td>12 (32%)</td>
<td>2 (22%)</td>
</tr>
</tbody>
</table>

Figure 1 reference [1]

Figure 2 reference [2]

Figure 3 reference [3]