

## Eye Convergence Training

The symptoms of convergence insufficiency (CI) can make it difficult for a student to concentrate on extended reading and overlap with those of ADHD.”

Regarding ADHD:

“For the diagnosis, a complete medical evaluation should be performed and vision or hearing deficits should be ruled out. Underlying visual or hearing problems may cause the child's academic underperformance and/or lack of concentration.”

“Some of the symptoms of ADHD overlap those of convergence insufficiency. Comparing the Convergence Insufficiency Symptom Survey... with the DSM-IV criteria for ADHD, we noted that 5 of the 9 symptoms of inattention could also be applied for CI (symptoms 1, 2, 4, 6 and 8).”

“DSM-IV Criteria for ADHD:

1. Often does not give close attention to details or makes careless mistakes in schoolwork, work, or other activities.
2. Often has trouble keeping attention on tasks or play activities.
3. Often does not seem to listen when spoken to directly.
4. Often does not follow instructions and fails to finish schoolwork, chores, or duties in the workplace (not due to oppositional behavior or failure to understand instructions).
5. Often has trouble organizing activities.
6. Often avoids, dislikes, or doesn't want to do things that take a lot of mental effort for a long period of time (such as schoolwork or homework).
7. Often loses things needed for tasks and activities (e.g. toys, school assignments, pencils, books, or tools).
8. Is often easily distracted.
9. Is often forgetful in daily activities.

**B. Six or more of the following symptoms of hyperactivity-impulsivity have been present for at least 6 months to an extent that is disruptive and inappropriate for developmental level:**

### Hyperactivity

1. Often fidgets with hands or feet or squirms in seat.
2. Often gets up from seat when remaining in seat is expected.
3. Often runs about or climbs when and where it is not appropriate (adolescents or adults may feel very restless).
4. Often has trouble playing or enjoying leisure activities quietly.
5. Is often "on the go" or often acts as if "driven by a motor".
6. Often talks excessively.

### Impulsivity

1. Often blurts out answers before questions have been finished.
2. Often has trouble waiting one's turn.
3. Often interrupts or intrudes on others (e.g., butts into conversations or games).

- II. Some symptoms that cause impairment were present before age 7 years.
- III. Some impairment from the symptoms is present in two or more settings (e.g. at school/work and at home).
- IV. There must be clear evidence of significant impairment in social, school, or work functioning.
- V. The symptoms do not happen only during the course of a Pervasive Developmental Disorder, Schizophrenia, or other Psychotic Disorder. The symptoms are not better accounted for by another mental disorder (e.g. Mood Disorder, Anxiety Disorder, Dissociative Disorder, or a Personality Disorder).

**Based on these criteria, three types of ADHD are identified:**

1. ADHD, *Combined Type*: if both criteria 1A and 1B are met for the past 6 months
2. ADHD, *Predominantly Inattentive Type*: if criterion 1A is met but criterion 1B is not met for the past six months
3. ADHD, *Predominantly Hyperactive-Impulsive Type*: if Criterion 1B is met but Criterion 1A is not met for the past six months.

“Since the symptoms can be similar, it is not hard to imagine a diagnostic confusion.<sup>2</sup>  
<sup>3</sup>We observed in our clinic that an unusual number of children with or suspected to have ADHD also had convergence insufficiency.”

Medication Issues:

“...it is possible that the medications used to treat ADHD are aggravating CI. For some of these drugs, difficulties with accommodation and blurring have been reported (Bennett et al., 1999).”

“No matter what the true cause or cause and effect relationship, it is unavoidable that the presence of CI may cause (1) misdiagnosis, (2) diagnostic confusion or (3) exacerbation of the symptoms of ADHD.”

“In view of these findings, we believe it reasonable that CI be evaluated in patients with or suspected to have ADHD.”

CI is “a condition that responds well to treatment...”

**ARTICLE BACKGROUND: Children being evaluated for attention deficit hyperactivity disorder (ADHD) often have an eye exam as part of their evaluation. The symptoms of convergence insufficiency (CI) can make it difficult for a student to concentrate on extended reading and overlap with those of ADHD.**

**RESEARCH STUDY METHODS: A retrospective review of 266 patients with CI presenting to an academic pediatric ophthalmology practice was performed. All patients included were diagnosed with CI by one author (DBG) and evaluated for the diagnosis of ADHD. A computerized review was also performed looking at the converse incidence of CI in patients carrying the diagnosis of ADHD.**

**RESEARCH STUDY RESULTS:** We reviewed 266 charts of patients with CI. Twenty-six patients (9.8%) were diagnosed with ADHD at some time in their clinical course. Of the patients with ADHD and CI, 20 (76.9%) were on medication for ADHD at the time of diagnosis for CI while 6 (23.1%) were either not on medication or the medication was discontinued several months before the diagnosis of CI. The review of computer records showed a 15.9% incidence of CI in the ADHD population.

**CONCLUSION:** We report an apparent three-fold greater incidence of ADHD among patients with CI when compared with the incidence of ADHD in the general US population (1.8-3.3%). We also note a seeming three-fold greater incidence of CI in the ADHD population. This may simply represent an association and not be a causative relationship. Until further studies are performed, however, patients diagnosed with ADHD should be evaluated to identify the small subset that may have CI -- a condition that responds well to treatment at home.

## **The relationship between convergence insufficiency and ADHD.**

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**BACKGROUND:** Children being evaluated for attention deficit hyperactivity disorder (ADHD) often have an eye exam as part of their evaluation. The symptoms of convergence insufficiency (CI) can make it difficult for a student to concentrate on extended reading and overlap with those of ADHD. **METHODS:** A retrospective review of 266 patients with CI presenting to an academic pediatric ophthalmology practice was performed. All patients included were diagnosed with CI by one author (DBG) and evaluated for the diagnosis of ADHD. A computerized review was also performed looking at the converse incidence of CI in patients carrying the diagnosis of ADHD. **RESULTS:** We reviewed 266 charts of patients with CI. Twenty-six patients (9.8%) were diagnosed with ADHD at some time in their clinical course. Of the patients with ADHD and CI, 20 (76.9%) were on medication for ADHD at the time of diagnosis for CI while 6 (23.1%) were either not on medication or the medication was discontinued several months before the diagnosis of CI. The review of computer records showed a 15.9% incidence of CI in the ADHD population. **CONCLUSION:** We report an apparent three-fold greater incidence of ADHD among patients with CI when compared with the incidence of ADHD in the general US population (1.8-3.3%). We also note a seeming three-fold greater incidence of CI in the ADHD population. This may simply represent an association and not be a causative relationship. Until further studies are performed, however, patients diagnosed with ADHD should be

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PMID: 16361187 [PubMed - indexed for MEDLINE]