

*National
Organization of
Mothers
Of
Twins
Clubs, Inc.*

RESEARCH REPORT # 66

Subject: **Attention-Deficit/Hyperactivity Disorder
in Identical Twins**

Researcher: Wendy S. Sharp, M.S.W., and et.al.

Date: January 2003

PURPOSE: The purpose of this study was to examine non-genetic factors and the phenomenon of attention-deficit disorder (ADHD) in one monozygotic (identical) twin but not the co-twin.

METHOD: The study was publicized through web-sites, newspapers/magazines, and mailings in various applicable organizations including the National Organization of Mothers of Twins, Inc. (NOMOTC). Subjects were initially screened by a telephone interview with at least one parent to determine whether ADHD symptoms were present in only one twin or if one twin appeared to have a much more severe case of ADHD than his/her co-twin. Criteria for exclusion from the study included cerebral palsy, chronic medical or neurological disorders, IQ less than 80, and pervasive developmental disorders. If the subjects appeared appropriate, three different rating scales were obtained for both twins from their parents and teachers. Also, obtained was a medicine history. If the subjects appeared appropriated after the rating scales, both twins were brought to National Institute of Mental Health (NIMH) in Bethesda, MD for a 3-day assessment.

BACKGROUND INFORMATION:

For the purpose of this study the word “monozygotic” means identical and the word “discordant” means that only one of the twins has the disorder (ADHD). The word “affected twin” means the twin with ADHD.

A total of 297 pairs of twins were initially screened by telephone. Of the 297 pairs, only 25 pairs of twins were brought to NIMH for the 3-day assessment. Only 10 (3%) of the 25 pairs met the criteria for the complete study. The final study group of 10 twin pairs included 9 Caucasian pairs, 1 Latino pair; 1 female pair and 9 male pairs; and 8 of the 10 affected twins (symptoms of ADHD) were being treated with medicine. Most of the twins (70%) were classified as low birth weight (<5.5 lb.).

Twin studies of attention-deficit/hyperactivity disorder conducted on several continents with a variety of methods all confirmed that monozygotic (identical) twins were substantially more likely to both have ADHD than dizygotic (fraternal) twins. These studies have concluded that ADHD is highly influenced by genetic factors, although environmental factors also play an important role.

RESULTS:

Although quite rare, identical twins can be discordant for ADHD. (One twin can have symptoms and the co-twin does not).

The affected twins weighed significantly less than their unaffected co-twin did at birth, further implicating prenatal brain development in the cause of ADHD.

The affected twins differed from their unaffected co-twins on ADHD symptoms but did not differ significantly on IQ, supporting the conclusion that IQ's of children with ADHD are not affected by ADHD.

It was difficult to determine ADHD trait in one identical twin but not the other.

The study findings did show a greater likelihood of breech birth in affected twins.

The presence of ADHD symptoms in one identical twin is NOT an indication in itself for a medication trial for the co-twin.

90% of the twin pairs who met the initial inclusion criteria turned out to have ADHD symptoms.

ADHD in both identical twins may be substantially underestimated in research.

CONCLUSION:

Identical twins can be discordant for ADHD. In other words, one twin can have ADHD symptoms but not the co-twin. This phenomenon of one having ADHD and the other not is quite rare. This study appears to point to a greater environmental influence vs. genetic cause than first thought i.e. low birth weight, breech birth, and prenatal brain development. Further research on the etiology (cause) of ADHD is encouraged. This study did support the conclusion that IQ's were not significantly affected by ADHD.