Gender Differences in a Clinic-Referred Sample of Attention-Deficit-Disordered Children*

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ABSTRACT: This study of attention-deficit-disordered children revealed that females were more frequently retained in school and evidenced greater impairment on spatial memory tasks. Moreover, there was a trend for girls to be older at the time of referral. With age, the girls evidenced more severity across a wider array of measures, including cognitive functioning, poorer academic achievement, and more problems with peers.

KEY WORDS: Attention deficit hyperactivity disorder; gender; cognition; academic achievement

Attention deficit hyperactivity disorder (ADHD)** is a frequently diagnosed disorder in pediatric and child mental health clinics in the United States. Over the past two decades, a plethora of research has been conducted on this disorder, although it has been almost exclusively focused on boys. In epidemiologic and clinical studies of children with ADHD, more males than females have been found to evidence the disorder, with the incidence ranging from 3:1 to 9:1 in favor of males.

The few investigations of gender differences in ADHD children have yielded inconsistent findings. These disparate findings have been attributed to the failure of investigators to assess subjects directly and to adequately assess attention and concentration, sup-

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*A detailed report describing measures, sample means, and standard deviations is available upon request.
**The terms attention deficit disorder, attention deficit hyperactivity disorder, and hyperactivity are used interchangeably, depending upon the citation referred to.
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111
posedly the hallmarks of the disorder.\textsuperscript{12} Barkley\textsuperscript{13} has attributed the variability in findings to the source of subjects across studies. For example, when children were drawn from pediatric and neurology learning clinics, greater secondary symptoms of cognitive impairments were found in girls, and greater impairments in social conduct were found in boys.\textsuperscript{4,5,11} In a clinic psychiatric sample of males and females with an ICD-9 diagnosis of the hyperkinetic syndrome of childhood, James and Taylor\textsuperscript{10} found that hyperactive girls had lower IQ scores and significantly higher rates of language and neurologic disorders. The authors suggested a possible neurologic basis for hyperactivity in females. In contrast to the findings of James and Taylor, other investigators who have reported few sex differences\textsuperscript{9,14,15} obtained their subjects from psychiatric clinics for the treatment of chronic behavioral problems. Another methodological difficulty in many of these studies that may have contributed to the discrepant findings is their reliance on one rating source, such as a parent\textsuperscript{11} or a teacher,\textsuperscript{8} thus identifying primarily "situational" ADHD children, who are more likely to be evidencing the result of ineffective parent management than to be "true" cross-situational ADHD children as designated in current DSM-III-R (Diagnostic and Statistical Manual, 3rd ed., rev.) psychiatric nomenclature.\textsuperscript{16}

Also important to the investigation of gender differences in ADHD is the comorbidity of internalizing (e.g., depression, anxiety, and withdrawal) and externalizing (e.g., aggression, inattention, and overactivity) psychopathology. Although several studies have suggested that ADHD symptomatology in both genders is characterized by externalizing behaviors,\textsuperscript{6,17} two reports have suggested that females with ADHD are more likely to exhibit differences in comorbidity patterns, including internalizing symptoms such as anxiety and low self-esteem.\textsuperscript{7,11} It is likely that internalizing symptoms are identified and treated later than externalizing symptoms since they are not as disruptive to teachers and parents as are the latter,\textsuperscript{18} thus possibly contributing to the underidentification or, at best, the delayed identification of females. Further, the comorbidity of externalizing behaviors such as aggression and delinquency are of prime importance in the adolescent\textsuperscript{19} and the adult\textsuperscript{20} prognoses for the ADHD disorder. In the few long-term follow-up studies of ADHD children that have included females, no separate analysis was conducted for gender.\textsuperscript{21} Thus, the gender differences in the comorbidity of behavioral psychopathology may assist in predicting the long-course outcome for females.

The purpose of our study was to clarify some of the discrepancy in