SLEEP MOVEMENTS OF NORMAL AND ATTENTION DEFICIT DISORDER WITH HYPERACTIVITY CHILDREN

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For Mom and Dad . . .

who have offered constant love and support

throughout my life and

during my endeavors

SLEEP MOVEMENTS OF NORMAL AND ATTENTION DEFICIT DISORDER WITH HYPERACTIVITY CHILDREN

by

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Abstract

Attention deficit disorder with hyperactivity (ADD-H) children have been described as maintaining a high level of activity during sleep (DSM-III). Although this characteristic has been included as one of the defining features of the ADD-H category, it has not been demonstrated empirically. The purpose of this study was to examine the sleep behavior of ADD-H and normal children. Sleep movements of the children were examined through the use of video recordings. The results indicated that ADD-H children did not exhibit a significantly higher overall level of motor activity during sleep than normal children. There was a significant interaction effect among group, night and period during the night indicating that ADD-H children display a different periodicy of sleep movement than normal children depending on the particular night.

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Sleep Movements of Normal and Attention Deficit Disorder with Hyperactivity Children

Attention deficit disorder with hyperactivity (ADD-H) occurs in approximately 3% of prepubescent children. The frequency of ADD-H has been found to be ten times greater for males than for females. The Diagnostic and Statistical Manual of Mental Disorders, third edition (DSM-III) states that "the essential features (of the ADD-H child) are signs of developmentally inappropriate inattention, impulsivity, and hyperactivity" (p. 41). In the past, the diagnosis of ADD-H has focused exclusively on the presence of excessive motor activity. The child has been described as displaying restlessness in the classroom setting,and gross motor activity such as running or climbing in inappropriate situations. Yet, as cited in recent reviews, in situations where high levels of activity may be expected (e.g. playing) the ADD-H child has not been found to be easily differentiated from normal children (Baxley & Le Blanc, 1976; Whalen & Henker, 1976).

The diagnosis of ADD-H has now grown to include not only the presence of hyperactivity, but also focuses on attentional factors. Baxley and Le Blanc (1976) reported in their review that in a task-oriented situation, ADD-H children may have difficulty organizing and completing their work, and also seem as though they are not listening

when in a learning situation. Although ADD-H children have average or above average intelligence, in school these children are described as "highly distractable, restless and disruptive and are typically below average in academic performance" (Baxley & Le Blanc, 1976, p. 5). In their review, Whalen and Henker (1976) described ADD-H children as responding impulsively without allowing adequate time for consideration of the problem, resulting in careless errors. They (Whalen & Henker, 1976) concluded in this review that the characteristics of a child with this disorder vary with the situation. During a task oriented, highly structured situation, especially when sustained attention is required, the restlessness of the ADD-H child is most evident. Yet, when viewed on a one-to-one basis or in a new situation, the child may appear normal. This inappropriate behavior or attention is not consistent in all settings, or even in the same situation all of the time.

The method of diagnosis for ADD-H varies among authorities. Whalen and Henker (1976) reported that one method is based on behavioral ratings or observations by parents, teachers or independent observers. Electromechanical devices have also been used to determine normal daytime activity levels. A sensitive electronic movement indicator, a stabilimetric ("wiggle") cushion, is one such device. Another device used is an actometer.

This instrument is a self-winding watch worn on the child's wrist or ankle as he/she moves freely about. The child's movement winds the actometer giving a reading of the activity level. Other methods of diagnosis have included neurological and psychological examinations. In their review, Baxley and Le Blanc (1976) found that psychological examinations were useful in that, besides the test results, the child's behavior during the testing period was also a useful diagnostic tool. These children were clinically described as having a low level of concentration and frustration tolerance along with a short attention span during a testing situation.

Minde, Weiss and Mendelson (1972) found that the prognosis for the ADD-H child is poor. Although the intensity of the behavior problems decrease with age and often diminish in adolescence, serious social and academic difficulties have been shown to persist. Such behavioral areas include selective attention and concentration, restlessness, aggressiveness and anti-social acts.

According to DSM-III (314.80), one criterion for an attention deficit disorder with hyperactivity is that the child "moves about excessively during sleep." This description implies that overactivity during the day generalizes to become an important feature of the child's sleep. An additional implication of this statement is that activity is a unitary concept that is affected in a

holistic manner. Previous research has already shown that the characteristics of sleep, both physiologically and behaviorally, have a complex relationship. Consequently, the phrase "moves excessively during sleep" can have several meanings. On one hand, it may mean that the overall activity level of the ADD-H is higher than for normal children during sleep. Yet, it may be that the ADD-H and normal child differ not in the quantity of movement, but the specific type of movements thay engage in during the night. Moreover, perhaps it is the pattern of activity levels throughout the night that differentiates the two groups.

Sleep can be divided into four definable stages. The stages are typically defined according to their electroencephlogram (EEG), electro-oculogram (EOG), and electromyogram (EMG) characteristics. Cohen (1979) reported that "during sleep onset stage 1 . . . sleep, individuals are rather easily awakened and often report dreamlike, hallucinatory fantasy which is sometimes indistinguishable from dreaming" (p. 16). Here, the EMG voltage is high, indicating a tightening of the muscles. Yet the EEG shows a low voltage with a fast pattern. Also, the EOG is wavy indicating slow rolling eye movements. In stage 2, awakening thresholds are somewhat higher. The "mental content has a more thoughtlike and fragmentary form, and recall of this is rather sparse and less