

Family and Personal History

Drake D. Duane, MD
Institute for Developmental Behavioral Neurology / Arizona State University
Scottsdale, Tempe, Arizona

What follows are observations to supplement the traditional family and personal history taking that aid in determining the presence of a learning disability.

FAMILY HISTORY

Family history data never make a diagnosis but assist in determining the relative risk for the diagnosis of one or more of the learning disabilities. A positive family history for a specific learning disorder in isolation never makes the same diagnosis in the child being evaluated. Family history data should always be obtained cautiously because overdiagnosis and underdiagnosis by relatives are common. The accuracy of the family history improves the more times it is acquired.

There may be no known family history because the child is adopted. Students who are adopted are overrepresented in the referral populations evaluated for learning disorders. Whether this reflects adoptive parental overconcern; genetic risks from parents who themselves exercise immaturity, impulsivity, and poor judgment; the effects of less than optimal maternal prenatal care; or a combination of these is unclear. A recent survey investigating family history in attention deficit hyperactivity disorder (ADHD) with or without reading disability documented an 8:1 higher frequency of adoption among referred students with a confirmed diagnosis of attention deficit disorder compared to referred controls (1).

Although almost any type of learning problem can occur from an acquired disorder of the nervous system, it is increasingly evident that there are strong genetic factors that predispose to learning underachievement. With respect to reading disability, twin and family studies clearly indicate a strong familial occurrence in which an autosomal dominant mode of inheritance with variable penetrance is probable (2). It is now known that the coexistence of reading disability and ADHD, which is common in populations selected for either diagnosis, is due to two independent genetic factors (3). Consequently, the family history should be searched for a confirmed diagnosis of ADHD or reading disability. The former may be harder to establish than the latter, because alleged ADHD is often contaminated by individuals with emotionally engendered hypermotility, commonly observed in anxiety and hypomanic disorders. A correlation exists between developmental disorders of language and reading disability, which can also occur in multiple family members. Developmentally, the phenomenon is characterized by delayed first words or anomalous receptive or expressive spoken language.

The psychiatric family history is of importance, because the occurrence of depression and bipolar disorder are frequent in families manifesting attention problems (4,5). Likewise, in Tourette syndrome, a history of obsessive-compulsive disorder, depression, and ADHD is common in other family members, as is a history of tic and related disorders, including stuttering (6). In right-hemispheric dysfunction, which is characterized by impairments in calculation and visual spatial ability, relatives can have similar academic manifestations and, like the child, are at risk for mood disorder (7). Maternal history of autoimmune disorder can

place a child at risk; in one investigation, two thirds of mothers of children with documented reading disorders were shown to have antinuclear antibody titers in excess of 1:80 (8). Furthermore, mothers with systemic lupus erythematosus have increased rates of children with left-handedness or learning or attention disorders (9).

Although learning disorders themselves can be primary orders of memorization, there has, thus far, been no link between pediatric problems of memorization and relatives with senile-onset memory disorders of the Alzheimer type. Hypersomnia has recently been described as a common characteristic of individuals with learning and attention problems. Relatives of affected students can give a similar history of daytime hypersomnia despite good nocturnal rest. The extent to which this phenomenon overlaps with narcolepsy is still to be established (10).

Once the diagnosis is confirmed in the index child, it is not uncommon that other family members will come forward to be evaluated themselves. Their assessment permits direct confirmation of the familial character of the learning problem.

PERSONAL HISTORY

The personal developmental history is critical because it can confirm a developmental disorder of learning and can be crucial to its genesis. It is clear that maternal alcohol and substance abuse predisposes to both major and subtle behavior disturbance. Prescription drugs such as doxylamine can increase the risk of placenta previa or developmental anomaly. Older studies suggest that the risk of reading disorder is associated with a higher probability of perinatal stress. Low birth weight for dates, unusually low or high levels of intrauterine motoric fetal activity, and prematurity all increase the possibility of an acquired mechanism inducing an attention or learning deficit disorder. The role of the anomalous fetus in influencing term and the character of the delivery is unclear. Apgar scores below 7 increase the risk for perceptual motor handicap. The extent to which interventions such as ultraviolet light for newborn jaundice influence central nervous system development is unclear, but there has been speculation that they affect visual cortical development. As with family history, such data unfortunately represent no more than risks for maldevelopment and in isolation do not make a diagnosis or identify causal mechanisms.

Not only is age at which developmental milestones are achieved significant, but the quality of those milestones can reveal important (albeit subtle) deviations from the norm. The temperament of the newborn and young child reflects its biology. Interaction with the social environment with smiles, apathy, or fear are noteworthy. Recognition of strangers as foreign by 12 months of age is normal, whereas its absence at 18 months of age reflects anomalous development.

When collecting data about development, the physician should assess the accuracy and personal characteristics of the adults providing the information. For example, conduct disorder as a comorbid feature of ADHD is influenced by the personality characteristics of the parents, i.e., parental diagnosis of conduct disorder in offspring with ADHD (11). Many pediatricians refer to irritable babies as suffering from colic, even in the absence of gastrointestinal distress. However, anomalous irritability, as well as peculiar characteristics of sleep, can reflect aberrant central nervous system development, whether acquired or genetic.

Among the presages for reading disability, as well as language disability, is the delayed emergence or anomalous performance of first words and first sentences. Articulation disorders are less specific, but the link between phonologic awareness, overall language competence, and reading skills is clear (12). In developmental oral verbal apraxia, deviation in central nervous system development characteristically is associated with peripheral difficulties in sucking, chewing, and swallowing.

The semi structured preschool environment is socially more intense than that of the home, so that a child's cognitive and behavioral difficulty can first be manifest in that circumstance. Further, the accuracy of observations made by trained observers in this context can supersede that of first-time parents. Subtle seizures can be noted by these evaluators, as well as deviations from the norm in social conduct, which characteristically, in the right-hemisphere syndrome, is associated with emotional withdrawal, in contrast to the hyperactive child's motoric explosiveness.

It is formal schooling in kindergarten and beyond that provides the crucible for cognition, and it is within this environment that developmental learning disorders can first manifest as poor socialization, motoric hyperactivity, inattentiveness, or underachievement in specific academic subjects. By school age, rating scales completed by educators as well as by parents are of particular value in identifying specific learning or attention disorders.

By definition, ADHD syndromes should manifest by age 7 years, and their symptoms should persist for a minimum of 6 months. Disorders of reading can escape detection until grade three or four when the reading task involves more complex sentence structure, and reading comprehension is expected. Although calculation disorders of mathematical reasoning are often not appreciated until grade five or six, when the complexity of arithmetic problems increases. Disorders that affect abstract reasoning adversely influence performance in algebra, which is not part of the curriculum until the seventh or eighth grade. The deferral of geometry in the general curriculum until junior or early senior high school reflects the maturation of this function in the central nervous system. Characteristically, students with impaired visual motor or visual spatial memory struggle to achieve passing geometry grades. In contrast, many students with even moderate reading disorders excel in the abstract thinking of science or in the cognitive demands imposed by geometry. These same students, who in early years are delayed readers, continue to be poor spellers, slow readers, and commonly find foreign language in the classroom a burden. Learning disability students can first present to the neurologist with a single, at times, nocturnal seizure in late childhood or early adolescence (13). Retrospective analysis confirms the preceding history of school underachievement.

Mechanical deficiencies in penmanship (which at times are associated with persistence of an immature hand posture holding a writing instrument) can be characterized by slow writing rate, as well as impaired penmanship quality. This characteristic, as well as the presence of a slow reading rate, argues for untimed written examinations. The child with motoric awkwardness, which can accompany some right-hemisphere syndromes not uncommonly retreats to the chess board as a miniaturized and more readily mastered playing field. If sports are engaged in, they are apt to be individual rather than team sports. Body size and speed are not the only factors which influence specific positions on a team sport. The cognitive characteristics of a superior football quarterback include a quick visual scan of three-dimensional space accompanied by excellent hand-eye coordination, traits

unnecessary for the ponderous lineman who can traverse and perceive no more than 3 square yards of the playing field.

A difficulty in assessing the individual developmental history is determining whether social incongruities between the patient and family members and peers represent primary emotional disturbance, secondary reactions to frustrating school experiences, or concomitant psychosocial manifestations of anomalous central nervous system development. Although parent and student rating scales can help establish the presence of emotional difficulties, they usually do not establish their origin; however, their concomitance and persistence in adult family members supports a biologic origin for the social-emotional manifestation (914).

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