VOCATIONAL ASSESSMENT OF LEARNING DISABILITIES

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ABSTRACT: In light of the fact that the incidence of learning disability has been estimated as representing up to 25% of the school population (Hurst, 1968), it is not surprising that in recent years there has been increasing recognition that there are many individuals who having previously experienced academic difficulty are now, as adults, experiencing vocational difficulty. This papers examines one reason why this problem has not received much prior recognition, the relatively unique diagnostic problem presented by a learning disability.

Unlike many disease entities which are based on specific laboratory and clinical findings, learning disabilities are typically defined on the bases of statistical formulae which determine criteria which must be general, the diagnosis of learning disability requires a certain measure of discrepancy between measured ability (IQ) and academic achievement (reading or counting skills), wherein the discrepancy is presumably due to some type of neurologically based limitation on information processing.

Because the presumptive etiology of specific learning disability is of neurologic origin, and the requirements for eligibility depend on psychological assessment, a neuropsychologically focused vocational evaluation is the diagnostic procedure of choice. This will help put into perspective the ways in which such evaluation can be utilized in optional fashion for sorts of data which can be expected from a comprehensive neuropsychological evaluation of vocational potential.

Cerebral Hemispheric Specialization for Information Processing

In almost all right handed and the majority of the left handed people, the left cerebral hemisphere is specialized for processing information which is primarily verbal, logical, sequential, abstract, and analytic. Conversely, the right cerebral hemisphere specializes in processing.

Cerebral Hemispheric Asymmetry

In approximately 77% of both adults and children there is convincing evidence that the two cerebral hemispheres are asymmetric both in size and functional efficiency (Geschwind & Levitsky, 1968; Hartlage, 1982). This is an important concept for vocational planning, since a number of worker trait characteristics interact with specific learning disabilities (or aptitudes) on the basis of functional cerebral hemispheric asymmetry.

Individuals with dysfunctional right hemispheres, in addition to being at risk for visual-spatial learning disabilities and work related problems, tend to be more inclined to impulsive, less reflective approaches to problem solving, in what neurologists often refer to as "la belle indifference" life styles. An individual with right cerebral hemisphere dysfunction resultant from a stroke, for example, may commonly deny any impairment or problem, even though the sequelae have left considerable weakness of the left side of the body or even a left hemiplegia. Such individuals often respond impulsively to questions, giving an impression of lowered ability levels than they possess, or give occasionally bizarre responses to personality assessment measures, giving an impression of impaired reality testing. With left hemisphere dysfunction, in addition to language impairments, individuals are likely to be much more uncertain and tentative, in what neurologists refer to as a "catastrophic reaction." An individual with left hemisphere problems following a stroke, for example, is likely to require a great deal of reassurance and encouragement, and to suffer from depression and feelings of helplessness. Such individuals are often doubtful of their own abilities, and reluctant to respond to questions about whose answer they aren't certain may give an impression of greater mental impairment than they actually suffer.

In milder forms of lateralized cerebral asymmetry, right hemisphere deficient individuals are more likely to appear careless and uneven in their application of attention to a task, and to be comparitively poor in monitoring their own behavior. Left hemisphere deficient individual are often seen as lacking initiative, perhaps being too compulsive, and having difficulty adjusting to changing work situations. The behavioral differences associated with cerebral hemispheric functional asymmetries tend to be especially pronounced among individuals who have had neurologically mediated learning problems of a long standing duration, probably reflecting the individuals' attempts to deal with their selective cognitive processing weaknesses. The child who has always experienced difficulty dealing with such right hemisphere dependent tasks as picture puzzles, fine eye-hand coordination tasks, and spatial orientation, is more likely to try to use language or other left hemisphere mediated abilities to solve problems, while the child with chronic language problems may find greater satisfaction in dealing with activities where doing rather than talking about a task is more likely to be met with success. Thus we find a number of various historical attempts to classify individuals according to their approaches to problem solving (Gardner et. al., 1959; Witkin et.al., 1962) which have striking resemblances to the sorts of uneven mental strengths attributable to functional cerebral hemisphere asymmetry (Hartlage, 1982).

Learning disability theorists have shown fairly consistent attention to functional neurologic asymmetry in their attempts to classify learning disabilities, as represented by Bannatynes "spatial" vs. "linguistic" psychological learning disability classification (Bannatyne, 1968) or Boder's neurological "hyseidetic" vs. Dysphonetic classification of learning disabilities (Boder and Jarrice, 1982).

The role of functional cerebral asymmetry as related to learning disability is especially important for intervention planning, since there is evidence to suggest that neurologically mediated behaviors are selectively influenced by use or disuse, with those functions which are comparatively less used tending to have reduced output of transmitter storage vesicles to adjust for the decreased need (Aletta and Goldberg, 1982). Thus an individual whose preferred mode of information processing involves linguistic, sequential, analytic cognitive approaches may be expected to become not only less

efficient but in fact less functionally capable of information processing involving spatial, holistic, simultaneous cognitive approaches. Although this phenomenon has given some encouragement to special educators who wish to remediate deficit functions by encouraging their increased use, review of the fairly comprehensive literature on the topic supports and emphasis on focusing attention on stronger information processing systems, both as a means to maximize a given individual's likelihood of success on a given task and as a means of avoiding frustration and discouragement by focusing on a relatively weak processing system (Hartlage & Telzrow, in press). If one recognizes the fact, for example, that poor performance on word recognition is caused by a dysfunction in the central visual process (cortical blindness), it is obvious that approaches toward remediation of the deficit are not nearly so likely to prove successful as are approaches to compensation for it, such as utilizing auditory or tactile processing modalities. Conversely, of course, if poor word recognition occurs in an individual with intact neurological mediation who has not been exposed to an opportunity to learn to read, remediation of this deficit by tutoring or educational enrichment represents a more reasonable strategy. Neuropsychological assessment of learning disabilities can thus be of considerable value in the differentiation of which deficits in a given processing system are due to neurologically limiting substrates, and thus will be more amenable to substitute or compensatory intervention, and which reflect more environmentally limited functions which can be alleviated by direct remedial approaches. In this respect, rehabilitation intervention takes the form of helping the client maximize vocationally relevant strengths by correlating neuropsychological findings with specific jobs in which the learning disabled client's residual functional capacities will be of most utility and in which the functional areas of learning disabilities mediated by neuropsychologically limiting substrates will be least required for successful job performance.

The Intelligence - Learning Disability Interaction

Although by mandate the diagnosis of learning disabilities depends on a discrepancy between measured ability (IQ) and academic achievement (reading or counting grade level), the absolute level of mental ability of individuals with learning disabilities is an extremely important consideration in the development of a realistic vocational plan for a learning disabled client. An individual with an IQ of 140, for example, with a significant learning disability involving counting and mathematical skills (dyscalculia), may still have counting and mathematical skills at approximately the average level: with an IQ of 140, computational skills at a level appropriate to an IQ of 100 represent a significant discrepancy, but not one which is all that vocationally limiting for most work. Conversely, an individual with IQ and computational skill appropriate to IQ 60 has the same absolute magnitude of discrepancy between ability and achievement, but would be limited to jobs not requiring computational skills much above the third grade level.

In this respect, there is need to evaluate the specific vocationally limiting features of the learning disability in light of the global level of mental function in order to generate an initial overview of vocationally feasible goals. Next, the levels of mental function mediated by each cerebral hemisphere can be evaluated (by comparing verbal with performance IQ on the Wechsler scale). Finally, the impact of the specific learning disability, in the context of of global and specific intellectural strengths and weaknesses; can be incorporated into a profile to compare with job requirements from the Dictionary

of Occupational Titles and other relevant sources. Although not necessarily so, there is usually a fairly close congruence between depressed IQ scores on verbal (or nonverbal) scales, and specific learning disabilities involving language (or spatial) abilities. This occurs because, although learning disability is diagnosed on the basis of a discrepancy between ability and skill, the underlying neuropsychological substrates of verbal IQ tend also to subserve language abilities, so that a learning disability involving language comprehension will commonly be found in a individual who also has comparatively poor performance on such Wechsler verbal subscales as comprehension, information, similarities, or vocabulary. In a similar fashion, a learning disability characterized by poor spatial ability or poor eye - hand coordination will typically be reflected in comparatively poor performance on Wechsler subscales like block design and object assembly.

Specific Learning Disabilities and Vocational Planning

Learning disabilities involving language, the dysphasias (usually involving the left cerebral hemisphere), can include receptive (typically portions of the middle temporal lobe, the arcuate fasciculus, Wernicke's areas), expressive (typically anterior portions of the cerebral hemisphere, especially Broca's area), or both modalities. A special type of language disorder, dyslexia (usually associated with the angular gyrus area of the left parietal lobe), refers to a condition in which reading uniquely impaired, although there need not be any impairment in comprehending spoken language. The academic correlates of these specific impairments, even when they occur in isolation, often go well beyond what might be attributable to the isolated learning disability. The individual with chronic reading disability will typically have difficulty with most school subjects which have test questions or homework assignments requiring reading, and will not uncommonly fall progressively farther behind in general fund of information, vocabulary, and other areas which normally depend on reading for normal mental progress. Such a learning disability, while educationally very handicapping, need not present too formidable a barrier to vocational habilitation, provided the individual possesses other work related abilities which can be applied to job titles wherein reading sophistication is not required. For such an individual, relating actual reading skill to the G.E.D. requirements of given jobs can normally identify a fairly wide range of vocational options, at least in the lower skill level job families. It is at this point that neuropsychological assessment can play a most useful role, since such assessment can fairly readily identity the specific (dyslexic) component of more widespread prior school difficulties. For individuals with more pervasive dysphasic problems involving both receptive and expressive language processing disabilities, planning needs to take into account both training and placement considerations. Training for such individuals generally needs to focus on the more intact visual-spatial modalities, where pictorial representation, "hands-on" training, and repetition will be more effective than lecturing or similar approaches to instruction. With respect to job placement, such individuals tend to have better long term vocational prognoses in jobs where their comparatively strong visual-spatial skills can be brought to bear.

Individuals with dyspraxias (If dyspraxias involve executory problems, this more likely involves posterior right parietal areas, eg. Brodmann area 18), reflected in poor eye - hand coordination or spatial problems, profit from job preparation wherein instruction focuses on language based sequential instruction emphasizing the "why", rather than reliance on

more visual aids: for such individuals one picture is usually NOT worth ten thousand words! Placement can focus on work families wherein relatively better language skills can be the mainstay of successful job performance, and jobs where fine visualmotor performance is required can likewise be avoided. Depending on the individual's mental ability, and the range of education feasible, individuals with language based learning disabilities but comparatively good right cerebral hemisphere medicated abilities are more likely to do best in jobs utilizing strengths, such as assembler, inspector, tool and die maker, skilled trades, drafting, engineering, and, if the individual is quite bright, specialized fields like surgery. For the individual with better language skills and learning disabilities involving visual-spatial abilities, jobs like sales, clerking, technical writing, teaching, and if the individual is quite bright, psychiatry, represent jobs wherein comparative strengths can be brought to bear on meeting work requirements.

The focus on comparative strengths may well be the hallmark of successful rehabilitation or habilitation planning for individuals with learning disabilities. A learning disability which has not responded to twelve years of educators' attempts at remediation is not a good candidate for a "quick fix" by some job training program aimed at overcoming a chronic skill deficit based on underlying neurological dysfunction. Rather, by focusing attention on those things the client does well, building on each person's unique set of aptitudes and strengths, as revealed by careful neuropsychological assessment, can the client's job potential be maximized in such a way as to help him or her best match his or her own vocationally relevant assets to the world of work.

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