

Guest Editorial

The Status of Neuropsychological Testing in Psychogeriatrics in the Year 2000

Neuropsychological testing provides an important adjunct to diagnosis and prognosis in geriatric assessment, which has become of increasing importance in light of the rising prevalence of neuropsychiatric disorders for which no specific biological marker is presently available. Neuropsychological testing itself involves the observation of an individual's behavior in relation to a given stimulus selected for its likelihood to provoke an abnormal response in the face of damage to a specific neuroanatomical structure. The theoretical basis of neuropsychological assessment is derived both from cognitive psychology, which deals with the development of cognitive tests for the demonstration of theoretical models of cognitive functioning, and also from behavioral neurology, which aims at the classification of normal and pathological responses to cognitive stimuli with a view to screening central nervous system disorder.

The increasing priority given in recent years to research in cortical aging has focused interest in particular on subsystems of memory functioning and their underlying neuroanatomical correlates. Cognitive research in this area has been

greatly facilitated by the more widespread use of cerebral imaging techniques in a research context. This has permitted more precise localization of cognitive functions in cortical and sub-cortical areas, particularly in relation to the differentiation of varying memory systems such as implicit learning (unintentionally acquired information) and secondary memory. This is of importance to aging research because impairment in the former is seen in senile dementia, whereas difficulties of secondary memory are considered to be a common feature of both dementia and normal cerebral aging. Nyberg (1998), for example, has recently undertaken a review of magnetic resonance imaging studies of secondary episodic memory (memory for events) and concludes that there is converging evidence that the principal areas of activation are medial temporal regions and the right prefrontal cortex. Cerebral imaging studies are also being used to validate neuropsychological testing methods. For example, the widely used verbal fluency test, generally considered to principally mobilize the frontal cortex, has recently been demonstrated by positron emission

tomography studies to be related not only to left prefrontal areas but also significantly to the right side of the cerebellum with significant decremental responses over a large area of the posterior cortex (Schlosser et al., 1998). Sex differences were also observed in this study, with male subjects showing extension to the superior temporal gyrus, and female subjects to parietal and orbitofrontal cortices.

In clinical practice, neuropsychological testing is being increasingly used in the area of aging-related neurodegenerative diseases, notably in the differentiation of diseases and clinical syndromes, for example between multiple system atrophy and progressive supranuclear palsy (Monza et al., 1998), frontotemporal degeneration, Lewy body dementia, Alzheimer's disease (AD), and Parkinson's disease dementia (Grossman et al., 1998; Mahieux et al., 1998; Mendez et al., 1997), between AD and cerebrovascular disease (Cherrier et al., 1997; Crossley et al., 1997; Laine et al., 1997; Libon et al., 1998; Tei et al., 1997), and in demonstrating clinical heterogeneity (for example, Ritchie et al., 1998) and Parkinson's disease (Filoteo et al., 1997).

Towards the year 2000, the role of neuropsychological assessment in psychogeriatrics is thus seen to be expanding, with more precise methodologies being developed within a research context that in conjunction with cerebral imaging techniques, will not only provide new information on the functioning brain during the aging process, but will also lead to the development of more finely tuned diagnostic methods. Unfortunately, combined neuropsychological testing and functional imaging has largely been confined at present to research,

and its ultimate utility in the clinical setting has still to be explored. At the present time, it is regrettable that the education of neuropsychologists does not include more rigorous training in imaging methodology and that conversely, neuroradiologists do not generally have much experience in neuropsychometrics. The development of joint workshops and conferences to this end may constitute a useful step in this direction in the coming millennium.

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