Psychomotor Assessment Of Learning Disabled Children

An Essay

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LIST OF ABBREVIATIONS

ADHD	Attention deficit hyperactivity disorder.
BOT-2	The Bruininks-Oseretsky Test of Motor Proficiency-Second Edition.
BOTMP	The Bruininks-Oseretsky Test of Motor Proficiency.
CA	Cancellation.
CD	Coding.
CHC theory	Cattell-Horn-Carroll theory.
DCD	Developmental coordination disorder.
Ga	Auditory Processing.
Gc	Comprehension-Knowledge.
Gf	Fluid Reasoning.
Glr	Long-Term Retrieval.
Gs	Processing Speed.
Gsm	Short-Term Memory.
Gv	Visual-Spatial Thinking.
LD	Learning disability.

PSI	Processing Speed Index.
SRSD	The self-regulation, self-development
SS	Symbol Search.
TOWL 3	Test of Written Language -Third Edition.
VMI	Visual Motor Integration.
WJ III	The Woodcock-Johnson Psychoeducational Battery – Third Edition.

INTRODUCTION

Learning disability (LD) is a group of neurodevelopmental disorders which manifest in childhood as persistent difficulties in learning to read efficiently ('dyslexia'), write ('dysgraphia') or to do mathematical calculations ('dyscalculia') despite normal intelligence, conventional schooling, intact hearing and vision and adequate motivation and socio-cultural opportunity. These children present with 'academic problems' such as reading slowly and incorrectly, skipping lines while reading aloud, making repeated spelling mistakes, untidy/illegible handwriting with poor sequencing and inability to perform even simple additions and subtractions ***(Felder et al., 2008).*** Their 'academic problems' also have an adverse impact on their self-image, peer and family relationships and social interaction. Children with LD often remain undetected because of their general lack of awareness, that lead to chronic poor school performance, class detention and even dropping out of school ***(Eiser and Jeuney, 2007).***

Corsini (1999) defined Psychomotor Ability as it is the ability to perform body motor movements (movement of

fingers, hands, legs, etc) with precision, coordination, or strength. These psychomotor abilities include the following:

- Static Strength.
- Multi-limb Coordination.
- Finger Dexterity.
- Manual Dexterity.
- Arm-hand Steadiness.
- Control Precision.
- Aiming.
- Gross Body Equilibrium.

Handwriting is a complex psychomotor skill encompassing a blend of visual-motor coordination abilities, motor planning, cognitive, and perceptual skills, as well as tactile and kinesthetic sensitivities ***(Maeland, 1992)***. It is important to identify handwriting performance components as a mean of targeting effective intervention strategies ***(Amundson and Weil, 1996)***. The motor and psychomotor components related to handwriting performance may include fine motor control (in-hand manipulation, bilateral integration, and motor planning), visual–motor integration, visual perception,

kinesthesia, sensory modalities, and sustained attention ***(Cornhill & Case-Smith, 1996)***.

Handwriting as a major component of the learning process requires a high level of fine motor coordination and high-precision force regulation, and also perceptual, cognitive and language abilities ***(van Galen, 1991).*** Handwriting is a complex interaction between motor and cognitive processes. Some components of the handwriting process are considered of 'low' level such as motor planning and execution. Other components are considered 'high' level such as strategies for generating language at the sentence and text levels (linguistic and lexical), and reviewing and revising written text ***(Berninger et al., 1997).*** Processes underlying handwriting have a hierarchical as well as a parallel structure. In a hierarchical arrangement higher order stages precede lower-order ones. This does not imply that there is exclusively serial activity. Through parallel processing more levels are active at the same time with regard to different parts of a text to be written. The operation of these levels overlap, but are also hierarchical in the sense that lower-level processes cannot be activated until higher-order processes are specified; first, the writer must know what he must write (higher level) and the graphemes that formed the word before

executing the motor program retrieved from long-term memory (lower level) ***(van Galen, 1991).***

The development of handwriting begins with early scribbling, which becomes more intentional with time ***(Oliver, 1990).*** As the child develops, design patterns evolve into more precise shapes and then letters. Letter shapes can often be seen in children's drawings which can be viewed as an apprenticeship for writing ***(Willats, 1985).***

Handwriting studies of typically developing children in age 6–11 years, have found the quality of handwriting develops quickly during age 6–7 years and reaches a plateau by age 7–8 years. Further development is seen by age 8–9 years, in that handwriting becomes automatic, organized, and ' I ' available as a tool to facilitate the development of ideas ***(Karlsdottir and Stefansson, 2002).***

Those children who do not succeed in developing proficient handwriting are defined by some authors as "poor handwriters" and by others as "dysgraphic" ***(Marr and Cermak, 2001).***

Hamstra-Bletz and Blote (1993) defined "dysgraphia" as a disturbance or difficulty in the production of written language that has to do with the mechanics of writing. The difficulty is manifested in the inadequate performance of handwriting among children who are of at least average intelligence level and who have not been identified as having any obvious neurological or perceptual-motor problems. It is reported that the prevalence of handwriting difficulties among school-aged children varies between 10% and 34% ***(Smits-Engelsman et al., 2001).***

Many methods have been developed for the evaluation of handwriting difficulties. Most are based on analyzing the handwritten product and speed. These evaluations formed the basis for research into the developmental sequence of writing and in the clinical identification of children with handwriting problems ***(Hamstra-Bletz and Blote, 1993).*** The process of describing the features that characterize the written output of children with handwriting difficulties has formed the basis for the development of scales for handwriting evaluation ***(Rosenblum et al., 2003).***

In recent years, more attention has been devoted to identifying the features of handwriting process deficits among children with a variety of perceptual-motor and learning problems ***(Rosenblum and Livneh-Zirinski, 2008).***

Handwriting problems do not disappear without intervention ***(Hamstra-Bletz & Blote, 1993).*** Prevention, remediation and accommodation are all important elements in the treatment of dysgraphia. Many problems can be prevented by early training ***(Deuel, 1995).*** Occupational therapy remediation has been shown to be an effective intervention for these students ***(Case-Smith, 2002).*** Numerous methods to teach or improve children's handwriting exist. The approach of improving functional abilities of children with motor learning difficulties has gained popularity in clinical practice. This strategy assumes that skill acquisition emerges from the interaction of the child, the task and the environment ***(Mandich et al., 2001).***

Much is written about assessment of psychomotor abilities in learning disabled children. However, little is known about dysgraphia in Egypt, being a new field to discuss.

AIM OF THE WORK

To review the literature about normal psychomotor development for writing and spelling. In addition to review the literature about psychomotor assessment procedures of children with learning disability. This is in order to help their future management.