

# Chapter 68

## Nonverbal Learning Disabilities and Asperger Syndrome in Young Adults: Vocabulary, Gestalts, and Social Perception

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### **ABSTRACT**

*The purpose of this chapter is to explore data-driven hypotheses concerning linguistic similarities and differences in adults with nonverbal learning disabilities (NLD) and autism spectrum disorder (ASD). The focus of the chapter is on profiling linguistic, cognitive, and neuropsychological strengths and weaknesses seen in both clinical groups. A research sample of adults from 19 to 44 years of age is described. Findings include strengths in the breadth of vocabulary and weaknesses in semantic precision and integration. A secondary finding, in which responses to adult autism screening surveys distinguish both clinical groups from controls, and the clinical groups from one another, is presented. Patterns and trends in this data point to difficulties with verbal and nonverbal gestalt formation that are amenable to intervention. Clinical examples of interventions suggested by the data are provided, as they apply to post-secondary students of the same age as the sample.*

### **INTRODUCTION**

#### **History, Definition, and Diagnosis of NLD**

Samuel Kirk first used the term *learning disabilities* (Danforth, 2011; Mather & Morris, 2011) to describe disordered or delayed development of a range of academic skills in children. These skills were primarily reading, but also included mathematics, writing (handwriting and written expression), oral expression, and spelling (Kirk & Bateman, 1962). Johnson and Myklebust (1967) were the first to use

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the term *nonverbal learning disabilities* (NLD), or learning problems that occurred at the perceptual level of experience. Myklebust (1975) further described the characteristics of NLD as self-imperception, including a lack of recognition of parts of one's own body and the spatial relationships between them; social imperception and facial agnosia, or an impairment in recognizing faces; difficulties understanding visual and spatial concepts such as size, height, weight, laterality and direction; perceptual speed and motor deficits; and problems with academic and life skills such as learning to print, or to dress oneself (1975). As may be gathered from this summary, early work emphasized social and perceptual deficits over academic ones.

Academic achievement in NLD is not necessarily impaired in the first years of school, a point made by Rourke (2000) in exploring reasons for a lack of research into the disorder. Rourke and his colleagues emphasized psychosocial outcomes in their studies. They explored whether a predisposition to mental illnesses was part of a larger NLD syndrome originating in lateralized, or left versus right hemisphere, cortical differences (Rourke, 1989; 2000; see also Palombo & Feigon, 1986; Palombo, 2006). A related approach (Gross-Tsur, Shalev, Manor, & Amir, 1995; Humphries, Oram Cardy, Worling, & Peets, 2004; Worling, Humphries, & Tannock, 1999) has been to investigate functional consequences of the hypothesis that NLD is related to right hemisphere deficits. In the same tradition, the work of Cornoldi, Mammarella, and their colleagues has examined visual-spatial cognition in children with NLD (e.g., Mammarella et al., 2006; Mammarella, Giofrè, Ferrara, & Cornoldi, 2013; Venneri, Cornoldi & Garuti, 2003), and in the delineation of NLD groups for clinical and research purposes (Cornoldi, Venneri, Marconato, Molin, & Montinari, 2003; Mammarella & Cornoldi, 2014).

A separate stream of research has investigated medical syndromes with known white matter disturbances, a documented underpinning of right hemisphere impairments (e.g., Bonner, Hardy, Willard, & Gururangan, 2009; McCann et al., 2008; Ris et al., 2007; Rissman, 2011; Steele et al., 2005). Right hemisphere dysfunction is connected to a general NLD syndrome through the white matter hypothesis (Rourke, 1989; 1995). Briefly, the hypothesis is that myelin, a fatty, white substance that insulates neurons and is responsible for efficient neural communication, has been damaged. Damage results in under-connected neural circuits. The theory is based on the hypothesis that white matter volume is greater in the right hemisphere than in the left, resulting in the right hemisphere's characterization as the hemisphere most responsible for processes that are integrative in nature (Jung-Beeman, 2005; Goldberg & Costa, 1981). Therefore, difficulties with integration, as well as with visual-spatial abilities, emotion regulation, and other right hemisphere-biased processes in typically lateralized people, are observed in NLD (Rourke, 1989; 1995). Studies reviewed in the present chapter, however, did not include the medical approach to investigating NLD. None of the participants in the study described here reported histories of co-morbid medical conditions related to NLD, in which the possibility of right hemisphere differences may have been assessed medically or exists by definition as part of the medical condition involved. The results and discussion reflect an educational approach to the topic.

NLD has not been included in any of the iterations of the Diagnostic and Statistical Manual of Mental Disorders (DSM), published by the American Psychiatric Association (APA) to guide practitioners in the diagnosis of mental illnesses and developmental disorders.<sup>1</sup> This exclusion has resulted from a mismatch between diagnostic systems that focus on symptoms, and definitions used by researchers in evaluating other aspects of these disorders (Ris & Nortz, 2008). In the DSM, the symptoms of learning disabilities are academic skill weaknesses, rather than cognitive processes or neuropsychological impairments that underlie them. In reading disability, or dyslexia, research concerning underlying impairments has con-

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