The Impact of Nonverbal Learning Disabilities on Early Development

by Aileen Philips Schloerb

Abstract

This article presents an overview of the often neglected diagnostic category of nonverbal learning disabilities. Following the presentation of a case study, questions are raised about the infrequently considered relationship between nonverbal learning disabilities and early development. Specific reference is made to the impact of nonverbal processing deficits on cognitive, affective, linguistic and social development. An examination of risk and protective factors relative to the case study is included, as well as an indication of early warning signs and treatment implications. Finally, recommendations are advanced for directions of future study.

Introduction

What it means to be human is defined most commonly in terms of the ability to use words to make sense of and communicate experience. Similarly, a baby's production of his or her first word is widely considered to be a critical milestone in child development. Evidence of verbal ability has thus received more attention in our assessments of development than evidence of nonverbal ability. Yet, affective cognition, communication, and interpersonal interaction involve much more than the production and use of words. Underlying attention to the relationships between parts and wholes, to spatial relationships, facial expression, posture, gaze, and gesture are equally important in making sense of and in communicating one's experience in the world.

Reflecting the logocentric view of what it means to be human, the term "nonverbal" is defined in the negative: via *absence* (of language), rather than *presence* (of something else). Because we often take them for granted, nonverbal abilities have been slow to be identified. Accordingly, nonverbal learning disabilities remain largely unrecognized and underidentified, in contrast to the more prevalent verbal learning disorders.

Verbal disorders typically impact the acquisition of oral language, reading, written language, and many aspects of mathematics, while nonverbal learning disabilities interfere with spatial orientation, body image, facial recognition, the interpretation of gesture, and various visual-spatial-motor processes. In addition, nonverbal learning disabilities have secondary effects on verbal comprehension (Johnson, 1987). Many of these cognitive and affective functions appear to be best performed or mediated by the right hemisphere of the brain, including spatial analysis, sequencing, and object recognition – all of which are critical to the comprehension and production of facial expressions and bodily gestures used in communication. Additionally, the right hemisphere mediates the function of attention used to discriminate salient communications from background distractions and maintains the visual and auditory imagery that enables a child to understand the environment. Empathy, wit, and vigilance are additional functions attributed primarily to the right cerebral hemisphere (Brumback, Harper, & Weinberg, 1996).

There is a higher incidence of verbally based learning disabilities among individuals with cognitive learning disabilities. As this brief sketch of nonverbal learning disabilities (NVLD) suggests, however, the consequences of nonverbally-based learning disorders are often more debilitating due to their critical impact on fundamental experiences, social interactions, and independence (Johnson & Myklebust, 1967; Myklebust, 1975). Despite the gravity of the disorder, little research exists on the specific impact of nonverbal learning disabilities on early child development (Palombo, 2001; Rourke & Tsatsanis, 1996).

The purpose of this paper is to suggest some of the ways in which critical areas of development in infancy and toddlerhood may be affected by the presence of nonverbal learning disabilities. These two particular developmental stages were selected not only because they serve as a foundation for all future stages of development, but because, as Piaget observed through his conceptualization of this period as the *sensorimotor* phase of development, a child's ways of knowing and mechanisms for making sense of experience are inextricably linked to the nonverbal functions of his/her developing self. Thus, the impact of nonverbal deficits during these periods of developmental appears to be critical.

After a brief case presentation, a more detailed explanation of the disorder will follow. The discussion will then address potential points of interaction

between nonverbal learning disabilities and early childhood development. Finally, the impact of relevant aspects of the social environment will be considered, including risk and protective factors, early warning signs, and treatment implications.

Case Study

Gloria is a seventh grade student at a suburban junior high school (modified case study from Palombo, 2001). A neuropsychological evaluation conducted when Gloria was in the first grade indicated that she had the characteristics of a nonverbal learning disability. This diagnosis was confirmed at age thirteen by a second evaluation. These evaluations provided evidence that Gloria's cognitive ability is in the superior range, based on her strengths in verbal processing and reasoning. Two areas of relative weakness were evidenced in the domains of nonverbal learning and executive functioning and self-regulatory capacities. Gloria's learning weaknesses are in the visual-perceptual, visual-motor, and organizational areas. She has learned to compensate for these weaknesses by adopting a slow, perfectionist style and a dependence on her verbal capacities. In the area of socio-emotional functioning, Gloria shows less capacity for problem solving and conceptualization than expected of someone her age. Although she is able to recognize more obvious social cues, such as greetings that include a verbal component, she is unable to make sense of more subtle communications, such as those that involve irony or shifts in intonation, posture, or positioning. She demonstrates little capacity for empathy and shows little awareness of the people with whom she relates.

Although there were mild medical complications during her mother's pregnancy, Gloria's delivery was normal. Her parents describe her as having been a "fussy baby" who had difficulty falling asleep. She was verbally precocious and achieved developmental milestones at or before expected ages; however, her gross motor skills were never fully mastered and she is described as "uncoordinated."

Gloria's behavioral and learning difficulties became apparent when she first entered school. Her teachers described her as inattentive and impulsive. Gloria was easily angered and upset. Although she had difficulty with friendships, she was able to maintain a few friends throughout grade school. However, when she entered middle school, these friends joined a larger group that intimidated Gloria. Subsequently, she withdrew from making social contacts and now relies exclusively on her family for relationships.

Gloria's familial relationships are not without conflict. She tends to avoid her father, who is only peripherally involved in her life, and she is extremely dependent on her mother for assistance with all aspects of her life: schoolwork, calming her, entertaining her, and caring for her as if she were a young child. Gloria is jealous of and competitive with her younger sister. At times, she acts verbally and physically aggressive towards her.

Academically, Gloria has had difficulty with some reading tasks, in spite of her intelligence. Her interests outside of school are limited. She is able to engage adults with her expansive vocabulary and fund of knowledge but is limited in her relationships with them by her emotional immaturity. She enjoys singing and art and has just begun to baby-sit, which has proved moderately successful.

Characteristics of Nonverbal Learning Disabilities

Disorders of nonverbal ability have variously been termed right hemisphere learning disabilities, visual-spatial and grapho-motor learning disabilities, or socio-emotional learning disabilities (Brumbeck, 1996). Because nonverbal learning disabilities have been associated with dysfunctions in the right cerebral hemisphere, there are various debates concerning the possible subtypes of nonverbal learning disabilities, as well as on the extent of overlap between nonverbal learning disabilities and the higher functioning end of the autistic spectrum as embodied in Asperger's Syndrome. Palombo (2001) suggests that children with NVLD crave social contact and have a capacity for social relatedness that distinguishes them from children with Asperger's Syndrome. Further research is needed to more accurately delineate these disorders and their subtypes. For the purposes of this paper, the definition of NVLD provided below will be employed.

According to Palombo (2001) – who has engaged in extensive clinical work with individuals who have diagnoses from this category – there are three domains into which the symptoms of nonverbal learning disabilities fall: neuropsychological, academic, and socio-emotional. In regard to neuropsychological features, Rourke (1989, 1995) has proposed areas of primary deficits in tactile and visual perception and complex psychomotor coordination, as well as marked difficulties dealing with novel or complex situations. Specifically, deficits in visual perception involve difficulties discriminating and recognizing visual details and organizing visual stimuli.

Complex psychomotor tasks that require the cross-modal integration of visual perception and motor output are particularly problematic, and deficits are often more marked on the left side of the body. Finally, deficits in nonverbal problem solving, concept formation, hypothesis testing and exploratory behavior contribute to challenges in dealing with novel materials and adjusting to new situations.

The academic features of this disorder often manifest in the areas of poor handwriting, written composition, and mathematical skills. While decoding skills in early reading are often strong, reading comprehension is weak, particularly at the inferential level. As is evident in Gloria's case, individuals with this disorder often have strong oral language skills in the areas of vocabulary, syntax, and some pragmatics. Most individuals have good memories and manifest rote memory verbalizations. However, their use of concepts may lack precision, and there may be a lack of depth in the content of their expressions. The content may also lack a sense of overall cohesion. Deficits in concept formation impede their ability to reason, analyze, and synthesize materials. Finally, individuals with NVLD often experience difficulty distinguishing salient from non-salient information and grasping the broad gestalt of meaning, instead focusing on a single aspect of a total event (Palombo, 2001).

With regard to social functioning, children with nonverbal learning disabilities are often unable to decode the social cues involved in reading body language, facial expression, and vocal intonation. This leads to ineptness in social situations, as demonstrated by Gloria. Further, individuals with NVLD are often unable to learn from these social situations. They also have trouble organizing their perceptions of other people's faces, which leads to reduced eye contact. With respect to the processing of affective information, it is not clear whether the difficulty lies in the task of decoding affective states or in the area of visual processing (Palombo, 2001). The impact of these critical features of nonverbal learning disabilities on development is significant. Although nonverbal learning disabilities continue to impact human development throughout the life cycle, infants and toddlers appear to be most susceptible to nonverbal deficits, given their extreme dependence on nonverbal forms of knowing and communicating.

The Impact of NVLD in Infancy

In infancy, many abilities are typically evidenced soon after birth, such as the ability to recognize visual patterns and to engage in social communication. One of the infant's first developmental tasks is the accumulation of sensorimotor knowledge, which occurs prior to the development of language and serves as the foundation upon which all future cognition rests (Piaget, 1954). Another critical task in infancy is the development of social relations and the related skills of self-regulation, which include the regulation of body rhythms that underlie such activities as eating, sleeping, and emotional regulation. Given the developmental requirements of these two domains in particular, it is not difficult to infer how significant the impact of a nonverbal learning disability might be at this critical early stage. In particular, nonverbal learning disabilities seem likely to impact the development of cognition and socio-emotional functioning (though this has not been established by direct observation of the early development of children with this disorder because diagnoses of NVLD have only recently begun to emerge; information that does exist has been reconstructed from the histories given by caretakers).

According to Piaget, it is during the first two years of life that cognition evolves as a function of the sensorimotor experiences through which infants interact with the world. These experiences include sucking, visual and auditory sensations, and the infant's increasing awareness of their own different physical states (Piaget, 1954). Because the infant's life experience and knowledge of the world are centered on the body and the mechanisms of sensory perception that allow the infant to organize and make sense of the world, it is only possible to speculate about the extent to which this experience and knowledge is skewed by deficits in sensory processing as in the case of individuals with nonverbal learning disabilities.

The possibility of a distorted worldview has been attributed to individuals with nonverbal learning disabilities (Johnson & Myklebust, 1967). In their identification of this diagnostic category, Johnson and Myklebust suggested that an individual with a nonverbal learning disability often has verbal skills in the average or above average ranges but fails to understand the meaning of many aspects of his or her environment. They hypothesized that, because most basic experiences have an underlying nonverbal component at the level of sensation, perception, and memory, a nonverbal learning disability could constitute "a more fundamental distortion of total experience" (p. 273). Higher levels of more complex cognitive development, such as symbolization and conceptualization, would then be impacted by deficits in the lower level forms of cognition upon

which they are constructed. In this way, the presence of deficits early in the sensorimotor stage of development interferes with the formation of mental models that the mind uses to create generalizations and summaries of experience (Siegel, 1999).

A nonverbal learning disability may affect an individual's socio-emotional development as well. It is widely agreed that during the first eighteen months the infant's attachment to parents or other primary caregivers is critical, not only for survival and physical growth, but also for ego development and the construction of a sense of well-being (Urdang, 2002). Furthermore, infancy constitutes a "critical period" for the development of affect regulation through attachment (Shapiro & Applegate, 2000). A child deprived of adequate nurturing may not thrive (Erikson, 1963).

As with other developmental stages, there is an interaction as early as infancy between the infant's biological endowment and his or her environment. Early transactions between parents and infants affect patterns of attachment and self-regulation that, in turn, impact the nature of these interactions (Urdang, 2002). Increasing evidence has demonstrated that neurobiology, emotional relatedness, affect, and the regulation of affect are integrally related (Sapiro & Applegate, 2000). Given the difficulties with the formation of mental models just discussed, the attachment experience of infants with nonverbal processing deficits is significantly different from that of typical infants. Caregivers of infants with nonverbal learning disorders often find themselves frustrated in their attempts to understand their children and unable to decode their cues, which are likely to be different from those of typically developing infants. Social disconnection, such as that which exists between Gloria and her father is a frequent consequence.

The infant who has difficulties in processing and retaining visual-spatial and auditory stimuli and in predicting temporal events likely experiences frustration in attempting to make sense of the social and affective cues in their environments. Infants who possess deficits in the ability to recognize facial expressions will experience delayed attachment, which, in turn, will delay exploratory, cognitive reorganization, and separation behavior (Kaslow & Cooper, 1978). Lacking the ability to perceive facial and auditory expressions accurately, the infant is limited in his or her ability to learn to reproduce these expressions. Poor eye contact, muted or neutral facial expressions, and/or flat, unmodulated vocalizations make such infants difficult to interpret. As a consequence, caregivers and their infants manifest a cycle of unsatisfying social communications.

To illustrate this point, Gloria's fussiness as a baby may have resulted, at least in part, from her difficulties constructing the appropriate mental models that could assist her in developing social cognition and in making sense of events in her environment. Gloria's difficulties judging her orientation in space and the logic of the physical world, including the mysteries of her interactions with others, contributed to her "nonverbal dyslexia" (Badian, 1986, 1992). Unable to crack the code of sensory organization that underlies our sense of self in the world, as well as our relationships to others, it is likely that Gloria's cognitive and social foundation for constructing a coherent worldview and relationships with others was severely impoverished.

The Impact of NVLD in Toddlerhood

The toddler phase of human development can be characterized by major developments in language and speech, significantly increased locomotion and motor skills, the elaboration of play, and cognitive leaps that include the formation of more complex mental representations (Urdang, 2002). Within this article, only a few aspects of this complex developmental stage that are impacted by nonverbal deficits will be examined. Again, because only indirect observations are available of the earlier development of those who are later diagnosed with nonverbal learning disabilities, available evidence has been reconstructed.

According to Johnson and Myklebust (1967), deficits in nonverbal learning disabilities manifest not in the ability to use spoken or written language alone, but rather in the way in which words are used. Johnson and Myklebust state:

> The child with a nonverbal learning disability is like the child who lacks color vision. He has no difficulty in learning the *word* red, but cannot acquire the experience red, so he cannot distinguish it from the experience green or yellow. When he uses the *word* red, as required by daily activities, it connotes only a vague, conglomerate impression often unrelated to the actual circumstances. The manifestations nonverbally are distortions of perception and of mental imagery. (p. 273)

Johnson and Myklebust have pointed in particular to the tendency of individuals with nonverbal learning disabilities to attend to details without noting the overall general configuration of which they are a part. Thus, the acquisition of verbal skills appears to be

disconnected from the underlying experiences to which words refer and, thus, severely interferes with one's ability to circulate with others in a realm of shared meanings.

When children with nonverbal learning disabilities begin to walk, their visual-spatial-motor problems emerge clearly. They appear clumsy and poorly coordinated, to the point that caregivers must watch them closely so that they do not endanger themselves or things in their environment. Furthermore, children's development of self-help skills, which begin to emerge at this age, poses additional dilemmas. Due to deficits in visual-spatial and cognitive processing, children with nonverbal learning disabilities are slow to learn to feed and dress themselves and to master tasks such as hand washing and grooming (Palombo, 2001). As a consequence, they are dependent on others to help with self-care long after children typically begin to seek independence.

Also in toddlerhood, children increasingly seek out interpersonal experiences (Austrian, 2002). However, difficulties reading social cues create problematic interactions with other children and adults. As one might imagine, social interactions at this age that rely so heavily on nonverbal communication are particularly impermeable to the understanding of toddlers with nonverbal learning disabilities. These children have great difficulty learning how to interact and play with others. Children's deficits in recognizing social cues further compounds their difficulties in learning how to physically navigate in their environment, as these cues help toddlers learn limits and instructions from their caregivers (Palombo, 2001). This creates a vicious cycle of intervention/correction and frustration/anger, which adds a secondary layer of emotional challenges to the primary layer of physical challenges. Parents feel that they must constantly reprimand and limit the child who responds with rage and incomprehension to what is experienced as unfair treatment. These exchanges initiate patterns of frustration, rejection, and mistrust. Not surprisingly, parents report that the temper tantrums of these children are much more intense than those that normally occur at this age (Palombo, 2001).

Application to Case Material

The impact of nonverbal deficits on Gloria's processing of her inner and outer worlds had significant consequences in different developmental domains. On a cognitive level, the formation of mental models may have been impacted by impoverished visual-perceptual and visual-motor processing and consequently resulted in an incongruent foundation for further cognitive growth (Austrian, 2002). Although Gloria has keen verbal intelligence, the disconnect between her fund of verbal knowledge and her background experience has produced disjointed achievement. Socially, Gloria's difficulties reading and expressing social cues has adversely affected her negotiations of social relationships and her ability to learn from them. In turn, these deprivations have impeded development of self-regulatory skills, as well as her capacity for empathy with others. Finally, Gloria's processing deficits have affected, and continue to impact, her ability to perform the self-help skills required for daily care, and this makes age appropriate independence problematic.

The degree to which a nonverbal learning disability interferes with an individual's functioning depends, in part, on the protective and risk factors in his or her environment. The nature of Gloria's social environment is mixed. On the whole, however, it is composed of a greater number of protective factors. Gloria's family enjoys an upper-middle class lifestyle that can provide her with various kinds of academic and therapeutic support. As a Caucasian, she is a member of the mainstream racial group in her community and larger cultural milieu. The stability of her family unit provides another source of support that can contribute to her resilience. Although living with a child with nonverbal learning disabilities can be stressful, her family has remained intact. In particular, her mother has served in a significant compensatory role in assisting Gloria with daily living tasks, school work, and attempts at self-regulation. Thus, Gloria's mother serves as a significant companion to her in the absence of peer relationships.

In terms of risk factors, it must be noted that while Gloria's family unit remains intact, her relationship with her father is precarious. He invests himself deeply in his work and is only minimally involved in Gloria's life. While this relationship does not impose an overt risk, the absence of a satisfying connection with this significant other may be considered a risk factor. Other risk factors relate to other aspects of Gloria's social milieu. As is typical during the early teen years, Gloria is perhaps more aware at the present time of her difficulties with peer interactions. She has begun to question her denial of the importance of friends and her sense of isolation. Finally, the larger community's lack of awareness about nonverbal learning disabilities, including in Gloria's school environment, provides a significant source of risk. Her behavior and academic

problems are often misunderstood, and uninformed others formulate harmful judgments of Gloria. Gloria's gender also contributes to this misunderstanding. Because a significantly greater number of boys are labeled with nonverbal learning disabilities and other behavior disorders (Palombo, 2001), Gloria's behavior is often viewed as significantly deviant from normal female behavior.

As has been discussed, the processing deficits associated with nonverbal learning disabilities severely impact the cognitive and linguistic foundations that enable development to progress typically in several critical areas. Gloria struggles with a basic ability to make sense of her experience in the world and with others, limiting her ability to be aware of and empathize with others, to form friendships, and even to develop self-awareness. In Gloria's relationships with parents and teachers, the misunderstandings that often occur during attempts at communication result in high frustration and anger on both sides. Furthermore, parents and teachers frequently experience a lack of gratification in their respective parenting and teaching, and this additionally contributes to disappointment and resentment. Because the cognitive and affective deficits associated with nonverbal learning disabilities can interfere with the formation of satisfying relationships with others, they also lead to problems with self-esteem and self-confidence. Furthermore, the considerable anxiety associated with this disorder can lead to irritation, frustration, sadness, and worry.

In spite of these significant impediments, Gloria is fortunate to be endowed with significant strengths. Her intelligence and highly developed verbal skills assist her in the verbal mediation of her difficulties and provide her with a sense of competence in certain academic areas. In addition, her perseverance and motivation to have better relationships can serve to promote change. Gloria is fortunate to receive the appropriate remedial and therapeutic services necessary to acquire the academic, occupational, and psychosocial skills her daily life requires. She has been able to depend significantly on her mother to compensate for her own deficits in many areas of functioning. Although the extent of her dependence may be viewed as a risk factor from the perspective of typical child development, it has been a critical and indispensable resource in her atypical circumstances. It is hoped that, with the internalization of strategies and skills gained from other sources of external support, Gloria will eventually achieve a greater degree of independence.

Misdiagnoses and Early Warning Signs

Due to limited awareness of NVLD, many children with these deficits are misdiagnosed when they are young (Tanguay, 2001). Because of poor impulse control and the inability to attend to tactile and visual information, children with NVLD are often misdiagnosed as having Attention Deficit and Hyperactivity Disorder (Stein, Klin, Miller, Goulden, & Coolman, 2004). Due to dependence on predictable routines and what may appear to be ritualistic behaviors, individuals with NVLD may manifest features of obsessive-compulsive disorder (Vacca, 2001). Alternatively, an anxiety or panic disorder is also sometimes misattributed due to evidence of high levels of anxiety, which is, in fact, secondary to the disability. However, it should be noted that research findings indicate that, as a group, children with NVLD are more susceptible to internalizing psychological disorders such as anxiety and depression than children with other types of learning disabilities (Ozols & Rourke, 1985). With regard to academic misidentification, verbal strengths and academic competence in certain areas may mask the disability until a child moves into upper elementary grades when education involves less the decoding and rote memory processes of learning to read and moves more into a comprehension-based process of reading to learn. Thus, a child and his or her family may experience misunderstandings and despair if he or she is not properly diagnosed with nonverbal learning disabilities that may impact his or her learning and development of wider interpersonal relations.

Specific early warning signs have been identified retrospectively by parents of children who were later diagnosed with NVLD. These include lack of self-regulatory behaviors evidenced by the child's difficulty calming down, the inability to self-soothe, and prolonged sleep disturbances. With respect to motor development, one might note the significant lack of exploratory behavior and motoric activity, as well as prolonged periods of unsteadiness and awkwardness when first learning to walk. Signs of atypical cognitive and affective behaviors include: difficulties learning cause and effect; the presence of excessive fears such as of machines, animals, the dark; the dislike and sometimes fear of surprises; and difficulties with transitions (Tanguay, 2001).

Interventions

Early identification enables families to seek the information needed to better understand the nature of the disability as well as means for coping with it. A psychoeducational component to treatment emphasizes

that children with NVLD do not learn through typical forms of observation and assimilation but must be taught in an explicit, highly verbal, step-by-step manner (Tanguay, 2001). Frequent feedback, predictable and explicit routines, specific directions and examples, and the teaching of generalization are also recommended (Vacca, 2001). Therapeutic interventions might also include the use of simplified pictorial representations of objects, persons, ideas, and situations to help a child better understand the impact of misperceptions of gesture, body image, spatial orientation, and social interactions on the construction of the child's worldview and modes of functioning (Johnson & Myklebust, 1967).

In order to assist children with NVLD with the interpretation and production of nonverbal communication, it is important for others to draw attention to their own and the child's nonverbal behaviors and to explain how nonverbal expressions can be interpreted. It is helpful to provide information on cause and effect sequences related to NVLD so that the child can begin to understand both the cause and the consequences of verbal and nonverbal behaviors (Bryan, 1977). Specifically, it is recommended that nonverbal communication skills be task-analyzed into step-by-step sequences targeting: 1) the discrimination of specific social cues, such as facial expressions, postures, or gestures; 2) understanding the social meanings of these cues by analyzing them in the context of the social situations in which they occur; 3) discussion of the appropriate usage of such cues; and 4) the application of these cues to actual social problems through role-play (Minskoff, 1980).

There is a general consensus in the field of learning disabilities that problems persist throughout the lifecycle (Johnson, 1987b; Palombo, 2001). Adults with NVLD have reported that counseling is helpful in dealing with frustration, but that practitioners should also include help for immediate problem solving, rather than emphasizing the resolution of previous conflicts (Johnson, 1987b). Generally, individuals with NVLD benefit from gaining a clear sense of their overall strengths and weaknesses in order to anticipate possible problems in occupational and social situations. Although this disability is serious, prospects for a child with NVLD are excellent if identification occurs early and interventions are appropriate.

Future Directions

It is hoped that this description of nonverbal learning disabilities and their potential impacts on early development will contribute to increased awareness of the problem and some of its implications. It is clear that a NVLD is disabling condition with serious consequences for a wide range of aspects of daily life. In order for individuals with NVLD to be better identified and served, it is important that clinicians, educators, and administrators become better informed about the nature of the disorder.

With respect to research, it is imperative that further empirical studies be conducted to more clearly distinguish this diagnostic category from other right cerebral hemisphere disorders. While some of the critical ways that NVLD impact early child development have been suggested here, a more thorough examination of the effects of NVLD would benefit both practitioners and clients. Additionally, the specific impact of NVLD on individual development beyond infancy and toddlerhood merits detailed examination. Research on the treatment of emotional and behavioral disturbances is needed to determine the appropriateness of different therapeutic approaches with this population. To this end, further study may attempt to identify the specific type of therapy that is best suited for individuals with NVLD. Although researchers suggest that insight-oriented therapy may appear to be indicated due to the verbal strengths of individuals with NVLD (Rourke & Tsatsanis, 1996), it is important to remember that a high level of verbal output does not equate with abilities in concept-forming and problem-solving, which are significantly lacking in individuals diagnosed with NVLD. Specifically, therapists must explore the ways in which therapy might capitalize on existing linguistic strengths in order to treat cognitive deficits. Hopefully, a heightened awareness of the existence of nonverbal learning disabilities will lead to increased early identification and early intervention, and, thereby, significantly improve the prognosis for individuals struggling with this condition.

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Aileen Philips Schloerb is a part-time MSW student who works with individuals with learning disabilities at the Learning Clinic at Northwestern University.