

Quick reference sheet for educators of individuals with Spina Bifida

Summary	Preschool / Early Elementary School	Later Elementary School	Middle School / High School	College / Young Adulthood
Reading				
<p>While sight word reading and decoding can be a problem, they are often much better developed than reading comprehension skills.</p> <p>Isolated reading disability (achievement <25th percentile) in children with Spina Bifida is rare (~3%), while patterns of combined reading/math disabilities are common (26%)</p>	<p>Letter knowledge, sight word reading, and pseudoword decoding are often areas of relative strength in children with Spina Bifida. These strengths in basic reading often mask the emergence of reading comprehension difficulties at later ages.</p>	<p>Sight word reading and decoding remain relative strengths for children with Spina Bifida during elementary school, but difficulties in reading comprehension often become increasingly apparent with grade.</p> <p>Reading comprehension skills are typically strongest at the sentence level, but can be quickly overwhelmed by the integrative demands of reading paragraphs and longer texts.</p>	<p>Word reading strengths typically persist in later grades. Reading comprehension difficulties, however, remain common when youth with Spina Bifida are required to construct meaning, integrate information, and draw inferences from paragraphs and longer texts.</p>	<p>Reading comprehension often remains less developed than word reading accuracy in many adults with Spina Bifida. Problems with inferential comprehension may persist.</p> <p>Functional reading skills are often adequate for daily adult life. Stronger reading and math skills are associated with a broader range of life experiences in adulthood for individuals with Spina Bifida.</p>
Math				
<p>Math disability is a common area of lifetime difficulty in Spina Bifida.</p> <p>Estimates suggest that 29% of children with SB have an isolated math learning disability (achievement <25th percentile), and an additional 26% have math and reading disabilities (2).</p> <p>Math disability in Spina Bifida can be identified at an early age.</p>	<p>One-to-one counting correspondence, rote counting, and matching-based-on-quantity are common areas of early math difficulty. Preschool screening of these skills is a useful way to identify children with Spina Bifida at risk for math disability who may require intervention.</p>	<p>Math fact retrieval is often intact in youth with Spina Bifida, but may be performed more slowly (6) or performed using less-mature counting strategies (e.g., finger counting, "counting up").</p> <p>Math procedures (e.g., "borrowing from zero" during subtraction) can be areas of difficulty, and may result from periodic attentional "slips" and/or from an overt lack of procedural math knowledge (6).</p>	<p>Math becomes increasingly complex in higher grades, and topics such as geometry and estimation place increased demands upon common areas of cognitive weakness in Spina Bifida, e.g., working memory, executive functions, mental manipulation of visual / spatial information.</p>	<p>Difficulties in computation accuracy, speed, math problem solving, and functional numeracy can persist, and can interfere with "real world" functional skills such as price comparisons, value of coins, banking and budgeting, and time concepts.</p> <p>To a greater extent than functional literacy, functional math skills are related to self-reported levels of social and personal autonomy in Spina Bifida.</p>
Executive Functions				
<p>ADHD in youth with Spina Bifida falls at around 30%, with inattentive type most frequently noted.</p> <p>Many youth with Spina Bifida struggle with task initiation, planning, and organization.</p>	<p>Children with Spina Bifida often respond well to the routine of early classroom structures, including "built-in" prompts and step-by-step directions.</p>	<p>The transition into third and fourth grades (e.g., "reading to learn" instead of "learning to read") places additional organizational demands upon children with SB, and this change in expectations often "unmasks" underlying difficulties in executive functions.</p>	<p>Transition into middle school puts added organizational demands upon youth with Spina Bifida, and often includes extra tasks (e.g., catheterization) they must "remember to remember" to complete.</p>	<p>Executive functioning difficulties appear to persist into young adulthood in many individuals with Spina Bifida, and should be actively accounted for in the process of transition into college or work settings.</p>
Processing				
<p>Strength is often seen in the ability to form associations (e.g., associative processing) such as forming associations between words and their definitions). Weaknesses often occur in the ability to integrate information (e.g., assembled processing).</p>	<p>Strengths in forming associations often support the development of good functional language skills, categorical knowledge, and age-appropriate word reading abilities in children with Spina Bifida.</p>	<p>In early adolescence, youth with Spina Bifida often find it increasingly difficult to comprehend complex oral and written language. This is most evident when oral or written communication requires the active construction of meaning and the integration of multiple sources of information, e.g., word definitions, past experiences, social context, etc.</p>	<p>Difficulty integrating information can disrupt social competence, particularly if the adolescent with Spina Bifida has trouble using past and current social experiences to assess how well he or she is being received by others.</p>	<p>While young adults with Spina Bifida often report high quality of life, many also report social participation restrictions, unemployment, and difficulty moving into more independent living arrangements. For these reasons, school-based efforts to address processing concerns and learning difficulties prior to young adulthood are essential.</p>

Quick reference sheet for educators of individuals with Spina Bifida. T. Andrew Zabel, Ph.D., ABPP/CN & Darcy Raches, Ph.D. (2010)
Sponsored by the Centers for Disease Control and the Spina Bifida Association