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Information for Parents and Professionals

Multisensory Learning Differences:

Dyslexia Defined

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DYSLEXIA DEFINED

Dyslexia means “difficulty with words”

Dyslexia is a condition that prevents capable individuals of any age or background from learning to use basic language tools fluently: reading, spelling, writing, and organizational skills. The brain does not process language in an orderly manner or with the normally-anticipated speed. The problem may be described as a cerebral disordering of the brain’s language hemisphere, where messages from the eyes, ears, and hands do not tend to integrate or retrieve readily from the brain. In short, it is a mechanical rather than intellectual dysfunction. The dyslexic’s brain-computer shorts, scrambles, misfires, and malfunctions randomly, when least expected. It confuses, distorts, or otherwise reorders the intended program in transit. *Normal dyslexics – often superior or gifted in other respects – do not learn the mechanics of language in a fashion commensurate with their intellectual potential.*

As early as the turn of the century, Hinshelwood had observed that some children demonstrated difficulty with learning but seemed bright. He was convinced that if he found appropriate methods, these children could learn to read at least as well as they were able to think. He wrote: “Sadly, they are most likely to be treated as imbeciles or incorrigibles and either neglected or punished for a deficit for which they are in no way responsible.”

SOME CHARACTERISTICS OF DYSLEXIA

- **ABNORMALLY POOR SPELLING** is the single, most universally present deficit. Spelling disability has proven not only more striking, but often more bizarre than reading failures. It is certainly more persistent and difficult to overcome. In many instances poor spelling, not poor reading, is the presenting symptom. Writing the letters of the alphabet in the improper sequence, confusion with letter/sound association, wordings with substitutions and omissions, or miscopying are mechanical failures in processing.
- **DYSFLUENT READING**, especially oral reading, is symptomatic. A child will substitute a look-like word, misread little words, reverse syllables, guess sounds, or fail to decode even simple words. Many students simply invent as they read or become dependent on visual contextual clues to get through a passage.
- **CHARACTERISTICALLY POOR OR ILLEGIBLE HANDWRITING** and poor organization are typical of dyslexics’ written expression. While the “idea content” may be superior, the representation of ideas in written words is generally impaired. The child cannot deal with the “code.”
- **COMPETENCE IN SPOKEN LANGUAGE** may develop early or late, but generally not at the expected hour on the developmental clock. If the child remains without therapeutic intervention, then untreated, persistent misarticulations, inappropriate word choice, poor memory for names, difficulty finding the “right” word or and syntactical confusions are warning signals of later school language failure.
- **MOTOR COORDINATION INADEQUACIES** and confusions with left-right orientation (ambidexterity) inhibit handwriting, speech, and the sense of the left-to-right sequence that is

characteristic of language. Left-handedness and ambidexterity are common predictors of dyslexia.

- **FAILURE TO UNDERSTAND SPEECH**, to listen to or follow directions, is a common symptom of dyslexia. The child tunes in or out at random, mixes the message, overloads the circuits of the brain's left hemisphere language computer, and often shuts down. Other children have poor auditory screening systems and attend to many different messages simultaneously, getting no single meaning or memory. They scramble what they hear and are often speechless to the point of stuttering when "asked the questions." Some tend to "back log" or delay processes if verbal information is presented too quickly or unclearly. If they are tired, "the language goes."
- **GENETIC ORIGINS**: The evidence in families of the same or related problems among close or distant relatives, often several generations, is strikingly evident. Dyslexia is thought to be genetic in origin and more common among males than females.
- **PERSEVERATION**, from the root word persevere, is a common factor in the dyslexic personality. He/She tends to be a "perfectionist" or the extreme opposite, completely disorganized. The gears get "stuck" either way, and the dyslexic person is often helpless to do anything. He/She learns the habit of trying repeatedly to get things right but never stops to monitor what has gone wrong. Teenage and adult dyslexics often demonstrate an unusually high predisposition for addictive behavior. This is particularly troubling when thinking about a teenage dyslexic who is trying to resist drug or alcohol abuse.
- **THE INABILITY TO PROCESS SYMBOLS AND TRANSMIT MESSAGES** consistently together, adversely affects other languages such as math, music, French or even body language and coordination, for example.
- **A STUDENT MAY HAVE AN EXTRAORDINARY INTUITIVE SENSE** of "how language works" but struggles to learn to "make language work" when dealing with the English alphabet in all its representations. Many dyslexic children can understand and analyze complex ideas presented to them verbally, for example, but when trying to express these same ideas in writing their attempts are often poorly organized, rarely reflecting the quality of the original thought.

The dyslexic is the child who ate "pussgeddi" for lunch, "biksticks" for dinner, and takes "callipitters" to the science teacher. On the playground he is a bully, the clown, or the target of ridicule because he "thinks" he knows the rules, tells everybody else they don't, doesn't know what position he is playing, then fakes it and kicks the ball into his own goal. He remembers the end, forgets the middle, and doesn't know where to begin. He is the passive child with the accepting smile who seldom talks and isn't a bother.

Dyslexics may be able to compose interesting melodies by ear at the piano, but cannot sound out a one-syllable word. Like Rodin and Michelangelo, who were dyslexic, they may be gifted artists unable to write the symbols of the alphabet or integrate letter forms to spell words and create meaningful written expression. Like General Patton, they may be good orators, strategists, and problem solvers, but cannot transfer these skills to written language or personal organization. Like the young Niels Bohr, the great scientist, they may invent or build complicated models and structures without being able to read the directions, hold a pencil correctly or copy from a blackboard. In the first grade their parents are assured that they will "grow out of it in time" and then, years later, they are advised that their child, now age fifteen with an I.Q. of 125, should not be expected to go to college because he is "reading at a fourth grade level."

In summary, Dyslexia is a mechanical disorder of genetic origin evidenced by the brain's inability to "process" the symbol of language. It does not stem from intellectual, emotional, socio-economic, cultural, or physical deprivation; however, some of these may co-exist with, or exasperate, dyslexia. Understandably, extreme frustrations, anger or emotional instability result from being bright but unable to learn.

SYMPTOMS OF DYSLEXIA AND RELATED LEARNING DISORDERS

- **READING:** slow reader; trouble distinguishing between main thesis and supporting evidence; can't remember what you just read. Reading literally: problems with tone, metaphors and words with more than one meaning (e.g., "there is a fork in the road"). Reading out of sequence and omitting words (the student went to see professor). Decoding problems: trouble associating letters and their sounds (sound/symbol association), often mistaking one word for another ("for" and "from," "to" and "of"). Tracking difficulty: skipping over words or lines when reading; commonly omitting titles, chapter headings and subheadings; inevitably experiencing headaches or falling asleep when reading.
- **WRITING DIFFICULTIES:** **freezing** up when trying to write; difficulty organizing thoughts and papers (chronology and sequencing); difficulty visualizing a paper's overall topic and formulating a thesis statement; tendency to focus on specific parts of the paper instead of the overall picture and how each part relates to the whole; beautiful sentences in your head vanishing before they can be set down on paper; errors generally not caught when proofreading; professors comment that your ideas are great but that your mechanics and structure are weak. Difficulty using cursive script: thus, usually illegible printing; and whether it's cursive or print, you write too slowly or too rapidly without a manageable pace.
- **SPELLING:** Reversals: "friend" = "freind"; "probably" = "propadly"; "0317" = "0137"; habitually dropping or adding letters and parts of words when writing: "know" = "now." Unable to spell common, everyday words as well as more difficult words; letters and words often delivered out of sequence.
- **SPEECH, LISTENING AND SPEAKING:** Difficulty pronouncing words (articulation); difficulty getting a point across on first try (verbal targeting; expressive language); difficulty reading aloud; stuttering; hesitancy in speech; difficulty understanding spoken language (receptive language).
- **ORAL AND WRITTEN WORD ASSOCIATION:** Difficulty translating oral speech into written words; problems with simultaneously taking notes and attending to what is going on in class; orally a word means one thing, but written, that word seems to mean something else or nothing at all; words heard yet not comprehended.
- **COORDINATION/ORIENTATION:** Difficulty distinguishing left from right (directionality); difficulty with local geography and directions; feeling lost in a familiar setting; becoming confused when going down stairs or passing people - you may even miss steps or stumble despite being a good athlete; difficulty doing simple mechanical tasks; never can seem to organize things; uncoordinated; hyperactive in order to compensate.
- **MEMORY:** Difficulty with retention of "common knowledge" items, such as friends' names, names of places, your current age, and even what day it is (short-term memory). Difficulty

recalling names of things in conversation: frequent use of “this” or “that” rather than more precise words (dysnomia); difficulty memorizing a string of numbers or letters in order (auditory/visual sequential memory); constantly misplacing, losing, and forgetting things (tactile aphasia); always behind - you seem to live in a time warp (in terms of organization, planning, and time management).

- **CONCENTRATING:** Marked difficulty concentrating with noise or people talking in the background; easily distracted; difficulty focusing attention; getting tired or overloaded quickly; unable to do two activities at once (e.g., reading while eating).
- **TESTING:** Unable to complete an exam in the allotted time although material was well-understood and well-studied; blanking out on exams; difficulty narrowing down a multiple-choice question to one correct response; perpetually interpreting questions or directions differently from the way the professor intended them.
- **MATHEMATICS:** Difficulty understanding the wording of a problem; difficulty doing basic calculation (computation and processes); reversing numbers (transposed and translocated sequences).
- **FOREIGN LANGUAGE LEARNING:** Difficulty learning vocabulary; very slow in oral performance; no amount of hard work seems to help.
- **PSYCHOLOGICAL BARRIERS:** It is hard to begin writing a paper because it takes so long to get focused and to get thoughts organized; feeling lazy, stupid or ashamed because of difficulty doing tasks which come so easily to others (low self-esteem); feeling constantly behind no matter how much you learn or how hard you try; feeling that your own work is infantile or crude or otherwise not as good as that of others, and that it’s definitely not on the same level as your thinking. Frustrated by unsuccessful attempts to read, write, spell, and speak correctly; feeling as if you are “faking” your education: people say you are smart, but you don’t genuinely feel this is true even though you may be getting good grades; paranoid about deadlines; fear of filling out forms and applications and using the telephone; isolation; fear of not being understood; intensified self-consciousness and stress because of other problems.

Some students have found that as they begin to talk with other dyslexics the psychological symptoms begin to diminish. When frustration and fatigue decrease, dyslexic symptoms become less pronounced.

For a first-hand, published account of the struggle that dyslexics must persistently wage, we recommend reading either **Reversals** by *Eileen Simpson* or **Susan’s Story** by *Susan Hampshire*.

SOME ASPECTS OF AUDITORY PERCEPTUAL WEAKNESS AND HOW IT CAN AFFECT READING

Parents and teachers may observe any of the following:

1. The child’s **ORAL READING** is below the child’s grade level and intellectual ability. Why?

- a. A child may have difficulty following a line of words on his page when reading aloud. He may skip whole lines and have difficulty keeping his place, keeping up with others, or finding his place again once he has lost it.
 - b. He may misread a word, get the beginning and guess the rest, "little" for "letter," "water" for "weather," "mild" for "mile," "god" for "dog" (i.e., word calling), from visual context clues. He is unable to monitor himself, auditorily, well enough to correct this type of error. There may be reversals and inappropriate substitutions, omissions, and additions within words: "bluck" for "bulk," "felt" for "left," "god" for "dog," "pat" for "tap," "hug" for "huge," "truck" for "struck," "hung" for "huge," "had" for "hand," and "collasp" for "collapse."
 - c. The child may substitute one word for another. He may choose a word that sounds similar, looks alike, or is close in meaning to the one he is supposed to read: "when" for "then," "red" for "read," "home" for "house," "gunning" for "going," "bad" for "dad," "mine" for "nine."
 - d. A child's oral reading may be hesitant, stop and start, replete with inappropriate repetitions of words or phrases. He may skip whole words and phrases and begin again many times. Short words are commonly omitted, inserted, reversed, or otherwise misread. After a passage has been read aloud, a request to state its meaning is often met by silence or an answer that is slow and disjointed with poor phrasing and emphasis. The child simply becomes so involved with the mechanics of reading that he will not understand what he has read.
 - e. He may show little interest in reading at all and particularly in reading aloud; he may "like the pictures best and lots of TV."
2. The child's **ORAL COMPREHENSION** is often below grade level and the child's intellectual ability. Why?
- a. Reading aloud may be such a chore that once a child has struggled through a short paragraph, he remembers little, if any, of the material he has read.
 - b. He may be able to answer "inference" questions (i.e., intellect), but may not be able to deal as well with questions requiring "specific information" from material read (i.e., auditory memory and encoding).
 - c. The child may remember in a very general way what a story is about but may not remember details, such as size, color, shape, number, or names (i.e., auditory memory).

3. PHONETIC SKILLS ARE POORLY OR UNEVENLY DEVELOPED. WHY?

- a. A child may have trouble associating the proper sound with its alphabet letter or a letter shape with the correct sound. He might read or spell "ret" for "red," "bog" for "dog," "am" for "an," "block" for "blank," "ket" for "kit," "sip" for "ship" (i.e., sound-symbol association).
- b. He may be unable to take words apart by sounding (i.e., decoding) or combine sounds to make words (i.e., blending). He may have difficulty reproducing sounds in the correct order to form a word (i.e., temporal sequencing). Hence the child may read or spell "who" for "ho," "gifst" for "gifts," "flet" for "left," "ftap" for "pat."
- c. He may be unable to tell the difference between one sound and another (auditory discrimination). Is it "d" or "t," "p" or "b," "a" or "o," "i" or "e," "j" or "g," "m" or "n," "z" or "s," "f" or "th" or "v"?

4. DIRECTION-FOLLOWING - A child may have difficulty following directions. (Auditory memory).

- a. At home you may hear "I don't want to. I can't find it. It's not there, not now." You may find your child playing instead of doing what you have asked. He is not misbehaving; he simply may not remember, accurately, what your instructions were. He may have trouble, as well, telling you what he did at school today, what the homework assignment is, or what he did with his friends yesterday. He forgets! He may be overly sensitive to the actions or reactions of his parents and other siblings in the family.
- b. At school he may learn very little from verbal input. He may need verbal directions repeated often, and ongoing structure and monitoring in a verbal setting. He may seem out of touch as if he is not getting it, or is lazy or totally passive.
- c. At play he may seem to be the odd man out, last chosen, the butt-end of a joke because he is slow to respond to verbal commands or can't remember the rules of a game easily. In this situation, a child may try to be the "big boss," for this is one way he can control a situation that holds confusion and potential failure for him with his peers. He alienates other children, as a consequence, when he becomes loud, bossy, and doesn't take his turn. If a child does not try to assume a leadership position, he or she might behave like a "baby," passive, silly, out of phase, only an observer. In this way a child relieves himself of the responsibility for being an active participant in the game and hence no one expects him to perform properly. Either way, he excludes himself from normal interaction with his peer group.

5. Teachers and parents may see a child with an auditory disability as lazy or inattentive. He may be a discipline problem or a day dreamer. In such a child you may observe any of the following:

- a. Over activity: persistent restlessness, especially when verbal stimuli are present (i.e., auditory figure ground of sound, intermittent peripheral noise or speaking).
- b. Poor impulse control: inappropriate motor response to verbal stimuli in terms of voice dynamics (loud-soft), stress (accent rhythm), and response-time reaction (delayed feedback), motor response substituted for or accompanying verbal responses.

- c. Short attention span: distractibility, inattentiveness, closure, tuning out, and an inability to maintain an ongoing accommodation of verbal input.
- d. Low frustration tolerance: in a learning or social environment, an inability to cope with and comprehend verbal stimuli. The result may be kicking, tapping, talking, tears, anti-social trends, anxiety precipitated by unfamiliar situations.
- e. Labile moods: cyclic behaviors (i.e., good and bad days), temper tantrums, over-sensitivity, or reactivity.
- f. Poor or minimal responses to verbal input: passiveness, internalized confusion, sketchy memory, non-verbal responses, such as showing instead of saying, acting out problems instead of verbalizing, poor expressive language, syntax, and organization.
- g. Patchy intellectual deficits: scatter in the Wechsler Intelligence Scale for Children (W.I.S.C.) subtest scores. Intellectual potential and expectation for the child are much higher than the apparent ability to learn, internalize, and use basic language skills.
- h. Poor auditory memory: an inability to remember accurately what has been heard and, in addition, to organize auditory stimuli (i.e., auditory memory, discrimination, decoding, sequencing).

SOME ASPECTS OF VISUAL-MOTOR WEAKNESS

1. Gross motor deficits: difficulty organizing, properly sequencing, and coordinating body movements in three dimensional space. Varying (laterality – mixed dominance) levels of ability are evident when a child is organizing motor responses. A child may have good or excellent natural athletic ability overall, but be unable to organize this ability consistently.

Belly-button up (hand eye) – targeting sports, catching, throwing, archery, basketball, golf, baseball, switch hitter.

Belly-button down (feet) – trampoline, soccer, balance beam, skate board, dancing, bike.

Whole body – swimming, hockey, gymnastics, football.

Such deficits may cause a child to seem clumsy, disorganized, or motorically confused. He may be slow to learn to ride a bike or not seem as proficient as his peers in other motor skills. A child's hand or foot may suddenly shoot out and hit another. This may not be a hostile act, but simply a disorganized motor response. He may simply have difficulty locating and controlling parts of his body in space.

2. Fine motor deficits: impaired motor functions. A child may show an inability to organize and control the more subtle motor movements, such as cutting, pouring, tying shoelaces, buttoning, or using pencil and paper in flat two-dimensional space. A child may have trouble manipulate small objects, such as screws, pencils, crayons, or materials such as clay.

3. Poor directionality: a more or less consistent tendency of the brain and consequently, the hand and eye, to organize from right to left and base line up. Hence, a child may reproduce numerals and symbols of the alphabet in their reverse or inverted formations. For example:

This pattern is particularly evident when a child is presented with a combination of shapes to draw, e.g., $\bigcirc \diamond = \diamond \bigcirc$. Since the child's whole academic life is spent, in a sense, reading, writing, spelling, listening, seeing, and speaking from left to right and top to bottom, poor directionality is a most serious matter. It directly influences a child's ability to learn.

4. Dysgraphia: difficulty with the motor mechanics of writing, either printed or cursive forms (i.e., the slow, uneven, or spatially inaccurate reproduction of symbols). Letters may vary in size, shape, or slant. Writing may be dysfluent or dysrhythmic—stop and start—many erasures, perseveration. If a child cannot write or print well, his spelling will suffer. He may become so involved with the motor mechanics of writing that he “forgets” the spelling. You may observe the following:

- a. Poor pencil grip: a pencil may be fisted in the hand. Digits may overlap or curl around it. The hand may be rotated when writing. If a “Dynamic Tripod” position (three-finger hold) is difficult for the child's fingers to assume, he/she will hold instead with four fingers, restricting proper motor movements.
- b. Poor motor memory: an inability of the brain to make the hand remember how a letter is made, (i.e., in which direction is a letter formed, how many strokes are necessary to reproduce it, what the order of these strokes is). The connectives in cursive writing are particularly difficult to learn and produce fluently.

b=p=d, z=ɹ, j=i, u=n f=f i=u
 be=le xe=xv w w G=S m m
 s=ss b=b a=a t=l

Writing, as a consequence, may be labored, disorganized, and sloppy. A child who does not learn the proper cursive formations and connectives, and does not develop a fluent cursive writing style will be a poor reader and speller.

- c. Rigidity: the pencil is held tightly, pencil pressure is excessive, fine motor responses may be over-controlled. Hence, writing will tend to be tiny, cluttered, black with letters strung together without proper spacing.
- d. Flaccidity: the pencil is held loosely or passively. Letters may be excessively large, misshapen, and poorly aligned, and generally unstable in formation.
5. Poor visual memory: an inaccurate memory for how letters, words, shapes, or objects “look” (i.e., revisualization). A child may remember only part of a word and guess the rest. ‘The’ for ‘there,’ ‘where’ for ‘there,’ ‘a’ for ‘the,’ ‘are’ for ‘our’ or ‘air,’ ‘implay’ for ‘imply,’ ‘water’ for ‘weather,’ etc. He often reads a word the way he thinks it looks. He may remember the word school at the

beginning of a paragraph, and yet may be unable to read the same word in another sentence of the paragraph. If a child does not have a stable set of alphabet symbols in his visual memory, he will have difficulty associating the proper sounds and letters.

6. Poor visual discrimination: a child may have trouble matching shapes, symbols, and numerals that are the same. Hence,

b = d, j = i, f = t, p = q, n = u, s = z, k = l, m = n, W = M, cv = vc,
◇ = □, b = p, y = l, z = z, sh = sh, 2 = 2, 6 = 9, 12 = 21, 4 = 4

Reversals, inversions, rotations, and transpositions may characterize his choices. He may not distinguish between things that are different. He may not know the things that are the same. An older student, for example, might not be able to deal with the meaning or concept behind words like there, their, too, two, or to. Homonyms are a mystery. Which one is which? How are they spelled? I can't remember. Not only reading and spelling, but also comprehension is affected, and the confusion is partly the result of poor visual memory and discrimination.

7. Poor visual sequencing: an inability to organize visual stimuli. Any of the following may be evident: the = there, a = the, are = our or air, implay = implee = imply.
- Transposition of letters within a word (i.e., mta—mat, ma—am, liek—like, caot—coat, vampier—vampire, releif—relief, blet—balt, lump—plum).
 - Transpositions of syllables within a word (i.e., emenies—enemies, pusgetii—spaghetti).
 - Transposition of words and phrases when copying or reading a sentence.
 - Difficulty with near- and far-point copying. A child may skip words or confuse their order when copying from the blackboard or from a book at his seat.
 - Difficulty in sequencing lists of words or ideas presented visually. A child who cannot sequence visual stimuli will be a poor speller and reader.