The Strengths of Dyslexia

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Until recently, most literature on dyslexia has been overly focused on the disadvantages of being dyslexic. The obvious talents and strengths in those with dyslexia have been a much smaller part of the conversation surrounding this diagnosis. Those with dyslexia have been deemed as “sufferers” of dyslexia, which has a negative connotation that implies it is a disability to be managed rather than being recognized as an alternate way of processing information that actually has many benefits. The notion that dyslexia is something to be overcome or fixed is a perception that needs to evolve—dyslexia is not a disability. Instead, the beauty of dyslexia lies within its strengths, which are often overlooked. Contrary to the popular connotation of the diagnosis, the dyslexic mind has much beauty and brilliance to offer society.

> “Dyslexic brains function differently from nondyslexic ones, not because they’re defective, but because they’re organized to display different kinds of strengths. These strengths are achieved at the cost of relative weaknesses in certain kinds of fine-detail processing.”
> (Eide et al. 2012)

However, the identification of dyslexia does revolve around common challenges. The dyslexic individual struggles with decoding and encoding, meaning it is difficult for them to make the translation between printed letters and symbols and words. Dyslexia is not a synonym for reading comprehension struggles; there is a different subset of people who struggle with language and reading comprehension. Dyslexia refers to the group of people whose struggles are at the word identification level, causing these individuals to be slower to connect the visual set of symbols that go together to make up words. Additionally, research is coming around to the understanding that dyslexia is not a single gene issue, such as purely auditory, as previously thought. Instead, research is now confirming that dyslexia is a multifactorial syndrome involving linguistic components, visual components, attentional components.

Dyslexia in School Settings

In an educational setting, diagnosing can be very confusing because it is often seen in children with above average intelligence and who may even be identified as gifted. So you can have a very bright child who appears to have reading issues, which presents what seems to be a contradiction. It is not uncommon that the intelligence of the dyslexic individual actually disguises the disorder. Because they excel at puzzle solving, they can use context clues to piece together the concepts of reading material. They also memorize words well which helps them comprehend passages, but they may just be guessing the individual words themselves; when asked to read specific words, they may not be able to.

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The coined term “stealth” dyslexia refers to the ability of these individuals to circumvent diagnoses because they possess strong verbal abilities that can obscure the dyslexia diagnosis. They can actually defeat some of the diagnostic tests, which can also be attributed to their advanced puzzle-solving abilities. They can read with very strong comprehension, yet on the single word level, without context, struggle greatly, which presents spelling and writing problems.

Our education system prizes verbal comprehension, which is obviously disadvantageous to those who learn spatially or visually. It is entirely possible to be low in verbal abilities and very gifted in other areas, but the current educational platform is not set up to empower these learning methods, making it difficult for individuals with differing learning processes to keep up.

Relationally, there is also an asymmetry between the talent sets. We have found that individuals who are high spatial or visual but low verbal can easily understand that the verbal talents of others outstrip their own, making it easy for them to realize what they are missing. But the vice versa is not true—high verbal processors have a hard time understanding those who use insight-based and nonverbal processing, because they cannot give a verbal account of the information that the verbal processors need for comprehension.

The importance of building an education system that respects these differences cannot be understated. There are developmental differences that the psychiatric community already understands, such as the concept of working memory capacity and executive function, that need to be built into the education system.

There is a need for the education system to understand and embrace the bend of dyslexic individuals to learn via episodic memory and experienced-based memory. The current system focuses on uploading basic-skills learning in early education for the first three years (reading, calculating, writing) and then learning content. Dyslexic kids learn facts by interacting, projects, engaging in activities, but have a weak ability to memorize procedures and learn rote skills or assimilate lists of facts. Integrating diverse formats of learning that set dyslexic children up to achieve success early on, where they can build their own system of facts, will allow them to flourish. Right now, the system is basically the exact opposite of what is good for these kids.

In order to understand the talents that dyslexic children possess, the talents first have to be identified. So many dyslexic adults report that they did not know, as children, that they were dyslexic. Investigating and identifying early is important so kids can learn that they have cognitive opportunities as well as learning risks and can begin educational intervention early. When kids aren’t given tools or language to understand the reason for their difference, it can create significant downsides to self-esteem and self-perception.

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MIND Strengths

In *The Dyslexic Advantage,* the authors discuss the advantages of the dyslexic mind. With each advantage there are trade-offs, but by understanding the giftings that those with dyslexia possess that may differ from nondyslexics, we can help them not only learn in a way that suits them, but help them see their differences as strengths. Dyslexic individuals won't necessarily show strengths in each of these categories, nor does an affiliation with one category mean an individual has dyslexia.

Material Reasoning

Material reasoning has to do with 3-D spatial reasoning, which is the ability mentally conceptualize spatial form and movement within three dimensional space.

> "Dyslexia isn't simply a reading impairment, but a reflection of a different pattern of brain organization and information processing that creates strengths as well as challenges."
> (Eide et al. 2012)

Strength: The ability to reason with the way physical objects interact with one another or the physical orientation (size, position, shape, etc.) of objects in the material world.

Those with this ability may excel in areas such as physics, architecture, mechanics, engineering, construction (Minecraft, legos), even astronomy, because they are capable of creating a 3-D environment in their head, which allows them to picture how objects will interact with other objects (such as a car engine for the mechanic or as a surgeon, the human body). They are capable of mapping out the build of a project in their head. As an interesting example, the Lego master winner this year is dyslexic. His winning builds had incredible 3-D elements and a tremendous amount of narrative concepts within them, which can be another dyslexic trait.

Another example of material reasoning is the capability of looking at a property and instantly constructing a 3-D image of a house, describing what the house could look like, room by room, in great detail. Material reasoning allows an individual to turn their thoughts into a reality that they can actually walk through in their mind.

This ability is more than just having a picture in their head. The dyslexic's ability to accurately store spatial information and manipulate it in their minds with immaculate detail is actually quite extraordinary.

Trade-offs: Although material reasoning is a wonderful tool when working with the material world and 3-D images, it can make working with 2-D surfaces challenging. For example, writing letters that mirror one another can be difficult. Oftentimes, those who have dyslexia will mix up their b's and d's or their p's and q's. The same can be true with vertically mirrored letters such as b and p.

Individuals with strong material reasoning abilities often struggle with expressing their thoughts or reasonings in words, especially in the form of writing, because they often reason in nonverbal ways. This is why it can be confusing in academic settings when bright children struggle to answer simple questions. Nonverbal reasoning is currently not highly valued in academic settings; verbalizing and writing out one's thoughts is the dominant practice.

Allowing space for dyslexic students to be able to communicate the way they know how to, all the while learning the skills needed for verbal reasoning and writing, will boost their confidence and help them continue to persevere in the areas that they struggle.

Interconnected Reasoning

Interconnected reasoning involves systems thinking, which is the ability to see how things fit together within a larger system and work together. A dyslexic individual with high interconnected reasoning may excel in the field of endocrinology, which is highly data-driven with feedback loops, metabolic cycles and requires the ability to interpret how all the feedback works together. Many excel in engineering processes or work in high-level logistics. They could also have the ability to understand complicated systems like nature and environmental systems. Currently, many of the high-level minds who are trying to work out climate change and environmental systems are dyslexic. Big system thinking and how they impact each other is a big strength for those with high interconnected reasoning skills.

While dyslexic people tend to be highly overrepresented in these areas, day-to-day management of fine detail organization, paperwork and forms is very difficult for them. It can make it hard for their talents to be showcased if they have to display the information with forms or computer programs with columns, etc. that may not correlate with their processing strengths.

Dyslexic students are often penalized for incorrect grammar or syntax without equal consideration for content. Even though learning to follow literary rules is important, the content of what is being written should also be highly valued. Dyslexic students have great ideas, but they just do not communicate them in the typical fashion. Instead, the strengths of interconnected reasoning make these individuals highly creative and perceptive, capable of making connections that are often overlooked by those who do not process information in this way.

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Three Strengths:

1. *Perceiving Relationships*- Individuals with high interconnected reasoning excel at linking the similarities and correlations of experiences, events, ideas, and/or objects. The strength within this skill lies in the ability to make connections from a wide variety of angles, understand cause-and-effect, and bring in new perspectives within a larger context. Individuals with this skill are excellent at recognizing the works of various artists or architects due to their ability to connect patterns. They are also capable of making connections that are beyond the obvious. For example, if asked what blue and gray have in common, instead of pointing out the obvious connection of colors, they would connect them to be the colors of Civil War uniforms (Eide et al. 2011). The ability to detect connections is a core strength in careers of science, psychology, and economics.
2. *Shifting perspectives*- Interconnected reasoning helps individuals approach a problem from various angles and techniques. Those with dyslexia tend to enjoy combining a wide spectrum of knowledge together to approach an issue, which often leads them to be multi-specialists rather than a master of a single subject. Outsiders looking in may not see any connection between two points, but if the dyslexic individual is allowed to fit all the pieces together, often their connection is not as far off as initially perceived.
3. *Global Thinking*- Seeing the big picture and combining various views/bits of information into one global view is another strength. Grasping the overall meaning of a subject, idea, or even words and phrases are required for understanding. Those with dyslexia rely heavily on context clues for understanding, which is why their comprehension is increased in long passages. It also explains why getting down the specifics of reading and writing can be a challenge because they grasp the “gist” or overall view more readily. Global thinking individuals are constantly seeking to find deeper meanings below the obvious, which allows them to see the overarching significance of a given idea.

Trade-offs: Interconnected reasoning excels when it comes to creativity and insight, but often falters when it comes down to completing a task swiftly and precisely. The ability to find unusual connections can also be a hurdle in environments where specific answers are expected. The enhanced ability to detect relationships is usually correlated with brains that are also easily distractible. Their ability to see connections in unusual places can lead to them changing the subject of a conversation or academic paper without realizing it, which can be misunderstood as a random tangent. Lastly, their view of the overall picture can make it increasingly difficult to learn the nuts and bolts of topics when they don’t have an understanding of the overall purpose or meaning behind the tools being taught to them. Supplying an overview, context, and practical relevance for what they are being taught can drastically increase their retention.

“The power of interconnected reasoning lies in its ability to link all of an individual’s knowledge, ideas, and mental approaches into an integrated conceptual matrix.”
(Eide et al. 2012)

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Narrative Reasoning

Narrative reasoning involves episodic memory, which is illustration and contextual-based memory, where an individual creates memories based on experiences and encodes elements such as place, time, personal perspective, their involvement, their feelings, and the lived-in elements that surround the learning process. They might even remember where they were and what the weather was like when they learned a certain thing. Dyslexic people tend to have this trait. Instead of relying on semantic memory, where facts are more abstract as just dates and names without details, fact retrieval within episodic memory elicits a rich background system and network of experiences and feelings.

The experiences of others will call up their own set of feelings that they can then put together in pictures in order to explain their narrative. This way of thinking tends to be case-based rather than analytical. We see this in the field of psychiatry. In psychiatry, they could switch back and forth between a list of symptoms and using examples very easily. This involves the recreation of things using episodic memory, using illustrations in their mind vs just definitions. Instead of facts, it would be more personalized, like different cases.

The University of Pennsylvania did a study on creativity and curiosity, wondering how different people search on Wikipedia. They found that dyslexic brains were much more far field, had wider associations, and better metaphorical reasoning.

Narrative reasoning uses past personal experiences to explain present or future potential scenarios or to understand and test crucial concepts. The narrative reasoning in dyslexic individuals leads to thinking through information in the format of stories. Due to a dyslexic's strength in conveying information through storytelling, contrary to popular understanding, those with dyslexia can become prominent writers. In fact, Anne Rice and Vince Flynn are both well-known, bestselling authors who have used their dyslexic strengths in order to transport readers into highly detailed and captivating stories.

Strengths: A core strength for those who are strong in narrative reasoning is their ability to store their experiences and observations in fragments in various areas of their brain and then collect them together upon recall. This allows for experiences to be remembered with great detail what would otherwise be forgotten, and it allows for pieces of an experience to be used in order to create realistic scenarios in storytelling or problem-solving. Those with episodic memory are capable of taking fragments of memories and reassembling them in creative ways in order to play out potential scenarios or outcomes rather than using formulas or definitions to abstractly come to conclusions.

Trade-off: Due to their story-driven thinking style, dyslexic individuals in this category seem to easily remember their experiences, stories, or information that has been given through

narrative. Individuals with strong narrative reasoning will remember family vacations in great detail or connect a song they heard to an exact experience from decades prior. However, they struggle with remembering any facts that are impersonal or don't seem to have any significance in their current context. This can make learning in school difficult, since knowledge is measured in how closely a student is capable of reciting facts in a specific manner. Students with dyslexia are often penalized for conveying their understanding through experience or stories since there isn't room, in this manner, to determine whether a concept has been grasped.

"Narrative strengths can be useful in any job or task where past personal experiences can be used to solve problems, explain, persuade, negotiate, counsel, or in some way form or shape the perspectives of oneself or others."
(Eide et al. 2012)

Dynamic Reasoning

Dynamic reasoning's heart and soul centers around prediction that is based on mental simulation. It is the ability to think about current conditions or ongoing processes and grasp what situations will look like if the process continues this way, or even looking to the past and seeing how those processes led up to the current conditions. This reasoning type involves a synthesis of systems and experienced-based reasoning.

It is important to highlight insight-based processing here versus analytical processing. Both are valid ways of processing. Insight-based processing is involved in matching patterns, seeing similarities and the sorting process rather than step-by-step where every link is connected to each other. It means being able to see the way to the answer, as opposed to listing steps. Leaping to the conclusion by insight and seeing how it works is very typical of the dyslexic population.

Strengths: The core mechanic behind dynamic reasoning is the ability to creatively predict how the world functions, how it has functioned in the past, or how it will function in the future. For example, being able to predict how earthquakes or erosion will affect geographical functions is a form of predictive dynamic reasoning. It involves the ability to construct events, or problems, that haven't been personally experienced and map out what the probable outcomes of those events will be. Those with strong dynamic reasoning skills excel in environments that are constantly changing or ambiguous, which others often find confusing or difficult.

Trade-offs: Dynamic reasoning is largely done through the insight of an individual, which requires critical reflection on observations and piecing together episodic memory. Unfortunately, a reflective approach is not often encouraged in a work or school setting due to its appearance of lackadaisical daydreaming. There is also a lack of appreciation for being able to make

insightful connections since it lies within a person's consciousness rather than being mapped out using formulas.

Another trade-off is that speed and efficiency are not nearly as strong in dynamic thinking. In fact, overly exerting effort in order to make an insightful connection actually hinders success rates. Insight occurs when the mind is relaxed and is allowed to wander in order to grab connections and make accurate predictions. Young children are often critiqued on the speed and quantity of their work, which does not make room for strengths such as creativity, insight, or problems solved in the midst of reflection. For instance, dyslexic children may be able to find the connections within mathematical formulas in order to achieve the correct answer without being able to show the step-by-step process. Oftentimes these students will get marked down for not showing their work even if they arrived at the correct answer. Although it is important to help these students get to a point where they can show the steps in between on a given math problem, they should not be penalized for arriving at the correct answer in a way that is unexpected.

Conclusion

With dyslexia being present in 20% of the population, we have to ask ourselves what the upside is to dyslexia. What do these individuals bring to the table? With such a huge portion of the population having a particular cognitive makeup, it is highly unlikely that dyslexia is to be deemed a corruption of normal pattern—nature is favoring large groups of people to display these traits. Our focus should shift to why that is and what they are uniquely able to offer society.

In the coming years, we will see more focus on helping dyslexic and non dyslectic people understand how they can form partnerships and groups that take advantage of diverse cognitive abilities in order to achieve things that they couldn't achieve separately. It is a community-based approach to understanding intelligence and we seem to be headed that direction. It is such a beautiful vision—putting all the strengths together in a room and seeing what's possible and a mutual respect for people who are different and approach problems dissimilarly. The brain is so complex and is capable of a variety of ways to approach tasks. Beyond simply validating these differences, our future should be to harness them and lean on them to more fully embody the problem-solving capacity nature has presented us with.

"We're claiming that certain talents are as much a part of dyslexic processing as the better-known challenges--that the strengths and the challenges are simply two sides of the same neurological coin."
(Eide et al. 2012)

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Further information on this topic:

Eide, B., & Eide, F. (2012). *The dyslexic advantage: Unlocking the hidden potential of the dyslexic brain.* Penguin.

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