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The Gifts of Dyslexia: Talents Among Dyslexics and Their Families

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Abstract To date most dyslexia research has been oriented toward pathology – investigating what is wrong, developing means of remediation and following patterns of difficulty within families. However, some researchers have observed that many dyslexics have high visual-spatial and other talents that are enormously important for various occupations – that these areas of talent are often passed down through families – and that family members may have special roles in developing these talents. Some argue that the most successful dyslexics are often able to make their major contributions mainly because they were able to focus on their areas of strength early – with major support from family members and others. Researchers note that when one seeks the most proficient, original and creative in certain occupational groups – whether in medicine, architecture, art, design, entrepreneurial business, engineering, mathematics or science – one finds that dyslexics seem to be well represented. Recent thinking among researchers suggests that a more balanced understanding of the talents and difficulties experienced by dyslexics is needed for the benefit of individuals and the larger society – as well as to take advantage of a distinctive window into the inner workings of the brain. Explicit recognition of the nature and range of distinctive talents among successful dyslexics could substantially affect the early identification and proper education of dyslexic children. It is apparent that this cannot be done by comparing these children to conventional, non-dyslexic, academically successful adults. Rather, this should be done by comparing these children to highly successful and unconventional dyslexic adults.

Key words Child, gifted; Dyslexia, developmental; History; Underachievement; Vocational guidance

Revealing a New Paradigm

After two or three decades of focusing mainly on the obvious language deficits associated with dyslexia, some researchers believe that it is time to learn from the distinctive strengths of dyslexics instead. Rather than just focusing on remediating their weaknesses and failures, these researchers want to understand the talents of successful dyslexics and study how these talents are important for education, work and life – especially in a world where radical technological and economic change is redefining what is important to know and what is important to be able to do.

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Researcher and educator Gordon Sherman speaks of "The other side of dyslexia – the mysterious side of creativity and talent. Certainly, we know that gifted people with dyslexia exist. We find them in fields such as art, science, education, music, drama, business, architecture and medicine. How do we account for their talents? Is there a subset of individuals marked by reading and other language difficulties who express a spectrum of talent mostly outside the language domain? Do their talents result from a brain organization initiated by an alternative genetic blueprint and further modified by a different set of environmental interactions? Clearly, we need rigorous scientific studies to begin to answer these questions and to understand the connection between talent and dyslexia".[1]

The late Harvard Medical School neurologist Dr. Norman Geschwind believed that the very same early brain development changes that produce the difficulties

associated with dyslexia can also produce a wide variety of talents and special abilities. With Geschwind's observations in mind, a number of researchers from various institutions and disciplines are hoping to build over time a collaborative research effort to supply solid scientific evidence for a set of observations about talents among dyslexics that have been gaining increased credibility for some time.

Reaching Out to Occupational Groups

These researchers believe it is important to learn from and build bridges to various occupational and professional groups to better understand the nature of dyslexic talents in various educational and work settings. There seem to be larger numbers of dyslexics in certain occupations than others – and this seems to change over time. Medicine, engineering, architecture, art, design and certain branches of science and mathematics – all of these are believed to have more dyslexics than other occupational groups – or have occupational requirements that involve special abilities often seen in dyslexics. Researchers are seeking to learn from talented dyslexics based on their lifetime experience, career success and varied difficulties.

For example, one of the studies under consideration is an investigation of a particular group of medical prize-winners now of retirement age. During a reunion conference several years ago, many winners of the Markle Scholar prize (with five-year funding) reported a history of dyslexia themselves (as highly visual surgeons, radiologists or pathologists) or reported having close family members with dyslexia. Researchers hope to systematically investigate the career, family and life patterns evident in this group and other groups like them. It is also argued by some that talented dyslexics were only able to enter certain professions (medicine and engineering, for example) before a certain time; after which certain standardised tests largely eliminated those with real and highly valuable (but difficult to test) talents and capabilities.

Dyslexic Talents and Nobel Prizes

Researchers are also interested in studying talents in families with significant numbers of dyslexics in comparison with the talents seen in families without dyslexia. This research would also look at several generations in single families with notable high achievement in the arts or sciences, looking through several generations to see how certain traits endure and vary generation after generation. It is believed that such studies might help individuals in such families more rapidly identify repeating patterns and paths to occupational success and personal fulfillment as well as avoid much wasted effort and psychological trauma.

For example, one such family indicates how dyslexia can be associated with very high visual talents, and how family support across generations can promote the development of these talents. A conference held at Green College, Oxford University, in November 2000 dealt with dyslexia in families with high visual and spatial talent in art and science. One presenter, the former head of a school for dyslexics in London and now a publisher of "books for reluctant readers," spoke of her family over five generations where there are many visual-spatial occupations and no less that four Nobel prize winners (Henry Bragg, Lawrence Bragg, JJ Thomson and George Thomson). She explained that all of the prize-winning achievements had a high visual component. However, family patterns indicate a number of dyslexics as well, especially in the younger generations, now that appropriate testing is widely available.[2]

Hidden Talents

In order to look for hidden talents instead of obvious weaknesses, it seems prudent to first look at the very highly successful individuals to try to see patterns – to try to understand what may be in store for the larger population. When we look at such examples, it would appear that they have many strengths that are often not recognised in school or university but come to be recognised as highly valuable in work and in life. Seeing the longer-term implications, in spite of tradition, we become aware that we need to find ways of seeing and developing the gifts and talents hidden under the difficulties.

It also should be noted that when we look at highly successful dyslexic individuals, we see that they succeeded by following their substantial gifts, not by focusing on their difficulties. Accordingly, it is clear that we need to find ways of bringing traditional education more in line with the changing requirements of work and life. The more we are able to do this, the more likely we will, in the long run, really help dyslexics and others more or less like them. We may also find ways to help non-dyslexic individuals in the larger society as well.

Seeing What Others Cannot See

An example if a dyslexic person with very high talents is Dr. Baruj Benacerraf. Dr. Benacerraf is former head of New York's Dana Farber Cancer Institute and a Nobel Prize winner in immunology. He has expressed great interest in the investigation of dyslexia and talent and has asserted that it is an important area of study that should be treated in a serious fashion. Indeed, he made several statements along these lines during a telephone conversation (March 2003) with this author.

He said (in paraphrase): Yes, there is definitely a positive side to dyslexia and this should be studied. One can deal with the problems with special techniques and lots of hard work. However, he asserted that there are definite advantages – seemingly often having to do with distinctive ways of perceiving three-dimensional space and visual material. But these advantages have not been studied. They seem to be little understood and are rarely developed explicitly. As an example, he spoke of his daughter who is a specialist in ultrasound imaging. He said "she can see things that others cannot or do not see".

Dr. Benacerraf originally learned of his own dyslexia through the traits diagnosed in his daughter and grandson – not an uncommon pattern. Of course, he was aware all along of his own reading, spelling, handwriting and other difficulties. In part, he attributes his success in science to his dyslexia – since he believes the dyslexia allows him to have a better sense of time and three-dimensional space than others in his field.[3]

Ancient Stigma Removed – Lee Kuan Yew

Another example of a highly talented person with dyslexia comes from the world of politics: Senior Minister Lee Kuan Yew of Singapore. A series of newspaper articles in Hong Kong and Singapore announced early in 1996 that Lee Kuan Yew – widely recognised as perhaps the most respected senior statesman throughout all of Asia – had revealed that he had "mild dyslexia." According to an account in a Hong Kong newspaper, "Singapore's elder statesman Lee Kuan Yew, known as an intellectual heavyweight in world political circles, has revealed he suffers from mild dyslexia….The 72-year-old former premier and Cambridge-educated lawyer said he was tested by a British expert…10 years ago at the suggestion of his neurologist daughter Lee Wei Ling, who has the same problem…".

"I am pretty proud of him, all things considered", [Dr. Lee] said of her iron-willed father who, as premier for more than three decades, transformed Singapore from a British colonial port into an Asian economic power". The reason for the testing was, as the elder Lee explained, "I had complained that I could not read fast without missing important items". Lee's daughter had learned of her own dyslexia as part of her medical training in Boston and realised that her father seemed to have similar problems (Agence France Press, Yeo).

These revelations were made as part of an announcement that royalties for a new CD-ROM of Lee Kuan Yew's life would be donated to the Dyslexia Association of Singapore. The association chairman noted that "now that S[enior] M[inister] Lee has admitted to having dyslexia, the stigma is removed and parents will no longer think that it is something to be ashamed about". Lee's daughter serves as a consultant to the Singapore dyslexia organisation (Hussin). Lee Kuan Yew's personal revelation has caused some to wonder about possible connections between his dyslexia and the success of his visionary and long-standing political leadership.[4]

Transforming Occupations

We all know that some occupations are going though great changes at this time. There are increasingly evident inconsistencies between the skills valued in the old verbal technological context and the skills coming to be more highly valued in the emerging technologies of images and visualisation. The old world of the book and writing required one set of talents and skills, while the expanding world of moving images and visualised information seems to require quite a different set. It would be wrong, however, to see these changes as only relevant to the graphic arts in their varied forms. Rather, there are good reasons to believe that these technologies and techniques will in time spread to virtually all areas – from science and technology to business and politics. After all, some of the best minds in science and medicine have long used visual thinking methods; these new tools merely allow these methods to be used by those with less power visual imaginations.

Sometimes the images will represent real things, perhaps very large or very small, or sometimes the images will provide metaphors or symbolic representation of things not easily shown in literal fashion. In this way, these technologies will provide a powerful set of new tools to analyse and manipulate all forms of information about ever

more varied subject matter. And, as these techniques spread and alter the ways that we all work and learn, it is expected that it is only a matter of time before visual talents show vast increases in their perceived value.

Some might argue that the move to focus on images is really quite superficial or even retrograde, as it would appear to shift attention and effort from basic verbal literacy. However, a more persuasive argument can be made that, especially for the young, visual literacy will be as important, or possibly more important, than verbal literacy. During their lifetimes, these trends will simply become more and more important. Of course, you want proficiency in both as much as possible, but we should not allow real visual talent to be dropped by the wayside just because of verbal difficulties. In addition, a case can be made that the experience and abilities of the new generations of digital artists may be very close indeed to the experience of scientists and engineers generally. More and more groups are coming to a rediscovered awareness of the importance of visual and spatial thinking, not only in art and design, but also in engineering and medicine, the sciences, mathematics and related disciplines. In spite of strong conventions of thought and common belief, we are seeing a gradual reawakening of interest in spatial abilities that were formerly thought to be relatively unimportant.

All forms of work are being changed more rapidly and more deeply that most individuals and institutions are aware of. Many of us are aware that a good number of the more routine functions of the copy editor, the bank clerk and bookkeeper are being done more rapidly and more cheaply by machines. However, many are not aware that in similar fashion, it may not be very much longer before "expert" computer systems and artificial life "agents" learn to reliably replicate the more routine professional judgements of attorneys, engineers, physicians and investment bankers.

Referring to the work of economist Paul Krugman, *The Economist* magazine observed: "Lawyers and Accountants…could be today's counterparts of early-19th-century weavers, whose incomes soared after the mechanisation of spinning only to crash when the technological revolution [finally] reached their own craft" (*Economist*). Accordingly, not only are the new technologies changing the ways of doing high level work, they are also eating away from below large chucks of what used to be considered high-level work. Both trends, whatever their relative pace in various occupations, are likely to often benefit the talent mix that many dyslexics seem to have – as they also make their varied difficulties become increasingly unimportant.[5]

More and more of those working at the edge of these new technologies, in the sciences as well as business or the professions, are coming to recognise the implications of these powerful but mostly invisible trends. For example, Dr. Larry Smarr, a physicist, astronomer and a former director of a supercomputer center, has commented: "I have often argued in my public talks that the graduate education process that produces physicists is totally skewed to selecting those with analytic skills and rejecting those with visual or holistic skills. I have claimed that with the rise of scientific visualisation as a new mode of scientific discovery, a new class of minds will arise as scientists. In my own life, my 'guru' in computational science was a dyslexic and he certainly saw the world in a different and much more effective manner than his colleagues…"[6]

Some 50 years ago, Norbert Weiner, one of the originators of the computer revolution, warned that it was only a matter of time before the computer eliminated the value of lower level brain functions just as the steam engine had eliminated the value of unskilled labour (Weiner). Accordingly, we may well look to the recent history of supercomputer centers for evidence of trends which will shortly effect our whole economy and educational system – strangely, very possibly for the benefit of many dyslexics.

New Tools, New Talents

Dr. Norman Geschwind pointed out that what we consider talents and disabilities depends greatly on the needs for particular abilities at particular times – within a changing economic and technological context. Perhaps it is time to recognise that many of the problems that dyslexics have are, in reality, artifacts of an old print-based technological culture whose prime has past. Perhaps it is time to recognise that many of the talents that many dyslexics exhibit are, in reality, strikingly appropriate for a new image-based technological culture whose prime is yet to come.

As visualisation technologies and new ways of working and thinking spread throughout the world economy, in time, we should expect to see increased tension and a widening divide, at least in the short run – as word skills lose value relative to image skills. Of course, the wider use of visualisation technologies should be expected to help everyone, regardless of their preferred modes of thought. However, as these techniques become increasingly sophisticated, a certain measure of talent and natural propensity toward the techniques are likely to be a factor of growing importance. These changes are likely to make

traditional, non-visual talents less valued, just as they will make traditional methodological approaches less relevant. In the end, both sides and both kinds of approaches will always be needed. But it may be some time before we have moved beyond all of this to circle back once again to an awareness and a genuine appreciation for a broad range of approaches and thinking styles.

As these changes progress, we should expect that moving from the one strategy to the other will have powerful consequences. Without being fully aware of the deep importance of what we are doing, we are now learning to use the tools and technologies that support the simultaneous strategy of the human brain – linked to images. In the past, developing a major part of our culture around the sequential strategy of the human brain has served us well, if imperfectly. It seems time to employ these new tools to fully develop the other strategy and make it a major part of our culture, balancing the two. Very possibly, this could be the most important change in the foundation (and balancing) of human culture for a very long time. And we are now only at the very beginning.

As we proceed along the way, we should expect the pace and direction to be set by strong visual thinkers and creative dyslexics who will often ignore conventional verbal constructions – instead, putting themselves into their own mental models, talking with their hands. Because criteria for success are changing, it is more important to see that recognition of the nature and range of distinctive talents among successful dyslexics could substantially affect the early identification and proper education of dyslexic children. It is also apparent that this cannot be done by comparing these children to conventional, non-dyslexic, academically successful adults. Rather, this should be done by comparing these children to highly successful and unconventional dyslexic adults instead.

In the long run, perhaps a broader understanding of the importance of rediscovered spatial abilities, coupled with the greater use of sophisticated spatial assessment tools, might help prevent conventional educational systems from dropping by the wayside many of those who are especially well suited to emerging families of new visual and spatial tasks and technologies. These visual tasks might be in creating grand computer graphic illusions for Oscar-winning feature films or using scientific visualisation and newly-developed analytic techniques to understand patterns in an elusive stock market or in many-layered ecological systems. It is time to take a long, hard look at visual thinkers and creative dyslexics and begin to see how these children and adults within our larger culture can benefit from a new understanding about what we have long seen mainly as a problem.

Note: Some sections of the above summary have been excerpted from articles and talks by Thomas G. West as well as the longer piece "The Abilities of Those with Reading Disabilities: Focusing on the Talents of People with Dyslexia" that appeared in different form as chapter 11 of the book *Reading and Attention Disorders – Neurobiological Correlates* edited by Drake D. Duane, M.D., published in 1999 by York Press, Inc., based on a symposium, June 28-July 2, 1998, sponsored by The Dyslexia Foundation (formerly the National Dyslexia Research Foundation). The original 2002 paper and references have been updated in several places. Suggested additional readings are listed below along with recommended video documentaries.

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