An introduction to neurodiversity and neurodivergence

Neurodiversity is a biological fact: it is a word for the infinite variation in neurocognitive functioning within the human species, analogous to ethnic diversity or gender diversity. Put simply, it means that all humans are wired differently. These differences influence the way an individual thinks and learns, how they process sensory input and perceive the world, and how they interact with others.

An individual is **neurodivergent** if their mind functions differently from the dominant societal standards of normal. An individual is **neurotypical** if their mind conforms to what is constructed as normal in their society. A group of people is **neurodiverse** if it includes more than one neurotype. As the concept of diversity applies to groups of people, an individual cannot be neurodiverse or have neurodiversity.

The **neurodiversity paradigm** is a perspective on neurodiversity that states that no type of mind is inherently more or less valuable or normal than any other. From this perspective, neurocognitive difference is viewed as natural rather than defective, and it is described in terms of **neurotypes** rather than disorders. In acknowledging the role of socially constructed norms when defining neurodivergence and neurotypicality, the neurodiversity paradigm draws attention to the power dynamics and majority privilege that have contributed to the historical framing of minority neurotypes as abnormal or deficient. It should be noted that not all neurodivergent people subscribe to the neurodiversity paradigm.

Where did the concept of neurodiversity come from?

The concept of neurodiversity originated in the autistic online discussion group 'InLv' in 1996. The term was popularised by Judy Singer, an Australian autistic sociologist, who interviewed InLv members and analysed their discussions for her 1998 Honours thesis. She wanted to map autism as a societal issue rather than a medical one, and this re-mapping represented a radical departure from accepted autism orthodoxies of the era. Drawing on postmodern, feminist, critical, and emancipatory theories, Singer redefined autism as a political category comparable to class, gender, and race, effectively describing the emerging autistic online community as a new social movement based on neurological diversity.

Under the medical model, autism and other minority neurotypes were and still are considered as neurodevelopmental 'disorders' in a way that emphasises individual deficit and impairment while disregarding societal and environmental factors. The neurodiversity paradigm, instead, proposes a more nuanced appraisal of neurotypes that encompasses both strengths and impairments. It highlights that context and perspective often determine how a particular trait is experienced: for example, hypersensitivity can enable an individual to find intense delight and joy in flowing water, but it can also disable them when they are in a busy environment.

Autistic activists and academic theorists have developed the neurodiversity paradigm further, weaving in concepts from the social, relational, and minority models of disability, the disability justice movement, and queer/crip theory. It was through this cross-pollination that the idea of disability as a bilateral mismatch between neurodivergent and neurotypical sensibilities (as opposed to a unilateral deficit) came to the fore. The neurodiversity model was quickly adopted by other disability activists and now embraces a range of neurocognitive differences. In this alignment with other neurominorities, neurodiversity

activists focus on shared experiences of marginalisation between groups that are socially constructed as Other, and fight for acceptance of all kinds of human diversity.

Forms of neurodivergence

Neurodivergence can be broadly grouped under the categories of innate and acquired. **Innate neurodivergence** is present from birth and therefore generally experienced as an inseparable part of personhood. Examples of innate neurodivergence include (but are not limited to) autism, ADHD, dyslexia, dyspraxia, dyscalculia, dysgraphia, synaesthesia, auditory and visual processing disorder, Tourette's, intellectual disability, giftedness, Down Syndrome, and FASD.

Acquired neurodivergence can develop at any time of life as part of a health condition, injury, drug use, trauma, stressful life events, or the side effects of medication. As acquired neurodivergence may be episodic or temporary, it is generally not experienced as a part of personhood. Examples of acquired neurodivergence include (but are not limited to) mood disorders, anxiety disorders, Alzheimer's, schizophrenia, and traumatic brain injury.

Variations in terminology

Most of the neurotypes listed above have traditionally been framed in terms of deficit or deviance from the norm, and labeled as disorders and syndromes. This reflects the medical community's focus on assessing a person's difficulties in order to arrive at a diagnosis. While diagnosis is an important first step for accessing services and support, the pathologising terminology used in diagnosis may later be rejected by the person in favour of more affirming and strengths-based language.

This process has been most evident in relation to autism. Identity-first language ('autistic person') is now preferred over person-first language ('person with autism', 'person has autism'), reflecting general language usage where words referring to positive or neutral characteristics are placed before the person (such as 'tall person'), while words referring to negative characteristics are placed behind the person (such as 'person with cancer'). The shift to identity-first language also acknowledges the widespread community perceptions of autism as an integral part of the person, rather than an affliction that can or should be separated from them. Other terms that are often rejected include 'disorder' (using, instead, 'condition'), 'non-verbal' (using, instead, 'non-speaking'), and 'symptoms' (using, instead, 'traits'). The simplistic binary scales of high/low-functioning and mild/severe are also considered problematic, as the level of impairment a person experiences fluctuates according to a multitude of factors within and without the individual, as well as over their life span. This is demonstrated by famous autistic people like Temple Grandin or Stephen Shore, both of whom were labelled low-functioning as children but went on to earn doctorate degrees. If specificity is needed in describing a person, it is preferable to refer to any additional disabilities or circumstances that may impact their ability to 'function' (for example, 'X is autistic, uses a letterboard to communicate, and currently needs assistance with toileting.' 'Y is autistic and able to work full-time when well supported').

Clinical descriptions of neurodivergence often include reference to emotional dysregulation and 'challenging behaviours' as if they were inherent traits of the neurotype. However, these behaviours are less a feature of the person than a consequence of their environment: emotional dysregulation can occur in anyone whose sensory, emotional, social, and cognitive needs are unsupported. Frustration, fatigue, and low self-esteem are also common in neurodivergent people, owing to the mismatch between the enormous effort they tend to put into everyday tasks and the often unsatisfactory outcomes despite this effort. Those who have not been able to access an official diagnosis may be labelled lazy, sloppy,

or naughty, adding to their frustration. Accordingly, the 'challenging behaviours' that emotionally dysregulated people engage in may be better described as behaviours suggestive of distress.

It is important to note that these changes in terminology are not applied universally. For example, Attention Deficit Hyperactivity Disorder includes the words 'deficit' and 'disorder', neither of which reflect the tenets of the neurodiversity paradigm. In community forums, people belonging to this neurotype may describe themselves as 'having ADHD' avoiding the stigmatising words by using the acronym, or 'being an ADHDer', also avoiding the stigmatising grammar by claiming the label in an identity-affirming way. Others may say that they have attention deficits. As everybody has their own preferences, it is crucial to check in with each individual to find out what language they use for themselves.

Myths and misconceptions

There are a number of myths and misunderstandings associated with neurodiversity and neurodivergent students. It is important to acknowledge and consciously reject these misconceptions. For example, there is a perception that neurodivergent students cannot learn. In fact, all students have the potential to learn, and low teacher expectations for neurodivergent students, based on a perceived lack of intelligence, have been linked to student underperformance and poor achievement. While some students may require curriculum adaptation and differentiated teaching instruction, this does not mean they are incapable of learning and succeeding at school.

Another myth is that embracing the neurodiversity paradigm simply means changing how we talk about neurodivergent people. In fact, the neurodiversity paradigm goes beyond language to challenge society's assumptions about what is normal and how difference is framed. Under this model, it is not the characteristics of neurological differences but societies themselves that create barriers to the participation, achievement, and success of neurodivergent individuals. This shifts the onus from the neurodivergent individual to society itself as the locus for change.

There has also been a persistent but misleading belief among some researchers and practitioners in this field that all neurodivergence can be cured. While this is true for some types of acquired neurodivergence, innate neurodivergence is lifelong. Innately neurodivergent people may learn to hide their traits when in public to avoid stigma (called 'masking'), but this does not mean they are cured. In addition, the practice of masking comes at a high cost to the person in terms of energy expenditure and self-worth. It has been linked with burnout and mental health conditions in the research literature.

Using a strengths-based model to support neurodivergent students

While the neurodiversity model acknowledges the challenges a neurodivergent individual may experience, it contextualises these challenges as environmental, societal, and relational instead of casting them as purely individual deficits. Most importantly, it also highlights the strengths a neurodivergent student may bring to the classroom, increasing awareness and understanding about neurological differences, and reducing social stigma. Indeed, neurodivergent students may have many strengths: these may include creativity, a natural ability to think outside the box, high levels of empathy and self-awareness, straightforward communication, strong problem-solving skills, enhanced perceptual skills, decreased liability to cognitive biases, resilience, and perseverance in the face of adversity. Some of these strengths are intricately linked to their individual 'wiring' and some arise from living as part of a neuro-minority, facing similar bias and exclusion as other minorities. The balanced framing of difference in the neurodiversity model can assist teachers and schools who may be thinking about how to support neurodivergent students to be successful learners.

When a student has an official diagnosis, support can be tailored to meet their individual learning support needs based on the challenges that diagnosis identifies, as well as the student's individual strengths and needs. However, due to gender, racial, and ethnic biases, as well as social inequities in access to screening and assessment, some students may never receive an official diagnosis despite presenting characteristics that align with a specific type of neurodivergence. Support can still be provided to these students. When a student does not have an official diagnosis and a condition is suspected, it is important to consult with their family before seeking further professional advice.

There are many ways that teachers and schools can support neurodivergent students. This may include fostering a school culture that celebrates diversity, providing teachers with professional development on supporting diverse learning needs, and incorporating student voice in decision-making processes. The teacher plays a key role as both a facilitator of and role model for approaches to neurodivergence in the classroom, although students, other teachers, school leaders, and even parents can contribute to the culture of the learning environment.

In terms of classroom support, teachers should ensure that learning programmes and the learning environment are designed in ways that engage all students and draw on their known strengths. This strengths-based approach can create opportunities for them to access the curriculum in ways that suit their individual abilities, allowing them to experience success and develop confidence in their abilities but also ensuring that the things they find challenging do not become barriers to their learning. This approach may include:

- providing content in multiple formats that allow students to access information in a way that suits their learning strengths,

- offering multiple options for how a student may represent their learning,

- allowing students to draw on their special interests,

- utilising assistive technologies such as speech-to-text apps.

Designing learning programmes that allow students to access the curriculum in a number of ways is an approach that can benefit not only neurodivergent students but all students. An example of this is the Universal Design for Learning approach.

Where additional learning support such as teacher aide support or specialist support like speech language therapy is needed, referrals can be made to the Ministry of Education or relevant authority by contacting a regional service manager. In New Zealand, referrals are generally made by a school's Special Education Needs Coordinator (SENCo) or Learning Support Coordinator (LSC). Many requests for additional resourcing and support require the student to have a formal diagnosis of a disability, and to highlight their challenges and difficulties while ignoring their strengths. This can be a negative experience for students and their families. Schools and teachers may support students and their families through this process by making sure they have the information they need and understand the process, and by attending events such as paediatric appointments with students and their families.

This guide was updated by Romy Hume in 2023.

References

Armstrong, T. (2015). The myth of the normal brain: Embracing neurodiversity. AMA Journal of Ethics, 17(4), 348-352.

the education hub

https://theeducationhub.org.nz/category/school-resources/

Armstrong, T., & Ebrary, Inc. (2012). Neurodiversity in the classroom: Strength-based strategies to help students with special needs succeed in school and life. Alexandria, VA: ASCD.

Barnhart, G. (2015). Neurodiversity: Celebrating the unique abilities of persons with autism. Journal

of Intellectual Disability Research, 59, 73.

Baron Cohen, S. (2017). Editorial perspective: Neurodiversity – a revolutionary concept for autism and psychiatry. Journal of Child Psychology and Psychiatry, 58(6), 744-747.

doi:http://dx.doi.org.ezproxy.auckland.ac.nz/10.1093/pch/pxy093

Bélanger, S. & Caron, J. (2018). Evaluation of the child with global developmental delay and

intellectual disability. Paediatrics & Child Health, 23(6), 403-410.

Botha, M. et al. (2024). The neurodiversity concept was developed collectively: An overdue correction on the origins of neurodiversity theory. Autism 1-4. DOI: 10.1177/13623613241237871

Bottema-Beutel, K., Kapp, S. K., Lester, J. N., Sasson, N. J., & Hand, B. N. (2021). Avoiding ableist language: Suggestions for autism researchers. Autism in Adulthood, 3(1), 18-29. https://doi.org/10.1089/aut.2020.0014

Burke, D. A., Koot, H. M., & Begeer, S. M. (2015). Seen but not heard: School-based professionals' oversight of autism in children from ethnic minority groups. Research in autism spectrum disorders, 9, 112-120. https://doi.org/10.1016/j.rasd.2014.10.013

Dekker, M. (nd). A correction on the origin of the term 'neurodiversity'. In Martijn 'McDutchie' Dekker's blog. https://www.inlv.org/2023/07/13/neurodiversity-origin.html

Goodley, D. (2011). Disability studies: An interdisciplinary introduction. Sage.

Graby, S. (2015). Neurodiversity: Bridging the gap between the disabled people's movement and the mental health system survivors' movement? In H. Spandler, J. Anderson, & B. Sapey (Eds.), Madness, distress and the politics of disablement (1 ed., pp. 231-244). Bristol University. https://doi.org/10.2307/j.ctt1t898sg.21

Kapp, S. (2020). Autistic community and the neurodiversity movement: Stories from the frontline. Singapore: Palgrave Macmillan.

Kapp, S., Gillespie-Lynch, K., Sherman, L., & Hutman, T. (2013). Deficit, difference, or both? Autism and neurodiversity. Developmental Psychology, 49(1), 59-71.

Kenny, L., Hattersley, C., Molins, B., Buckley, C., Povey, C., & Pellicano, E. (2016). Which terms should be used to describe autism? Perspectives from the UK autism community. Autism, 20(4), 442-462. https://doi.org/10.1177/1362361315588200

Mcgee, M. (2012). Neurodiversity. Contexts, 11(3), 12−13. https://doi.org/10.1177/1536504212456175

Masataka, N. (2017). Implications of the idea of neurodiversity for understanding the origins of developmental disorders. Physics of Life Reviews, 20, 85-108.

Mottron, L., Dawson, M., Soulières, I., Hubert, B., & Burack, J. (2006). Enhanced perceptual functioning in autism: An update, and eight principles of autistic perception. Journal of Autism and Developmental Disorders, 36(1), 27-43. https://doi.org/10.1007/s10803-005-0040-7

Owren, T., & Stenhammer, T. (2013). Neurodiversity: Accepting autistic difference. Learning Disability Practice, 16(4), 32-37.

Raymaker, D. (2021). Toward a neuroqueer future: An interview with Nick Walker. Autism in Adulthood, 3(1), 5-10. https://doi.org/10.1089/aut.2020.29014.njw

Raymaker, D., Teo, A. R., Steckler, N. A., Lentz, B., Scharer, M., Santos, A. D., Kapp, S. K., Hunter, M., Joyce, A., & Nicolaidis, C. (2020). 'Having all of your internal resources exhausted beyond measure and being left with no clean-up crew': Defining autistic burnout. Autism in Adulthood, 2(2), 132-143. https://doi.org/10.1089/aut.2019.0079

Rozenkrantz, L., D'Mello, A. M., & Gabrieli, J. D. E. (2021). Enhanced rationality in autism spectrum disorder. Trends in Cognitive Sciences, 25(8), 685-696. https://doi.org/10.1016/j.tics.2021.05.004

Singer, J. (1998). Odd people in: The birth of community amongst people on the 'autistic spectrum': A personal exploration of a new social movement based on neurological diversity. University of Technology, Sydney.

Singer, J. (1999). Why can't you be normal for once in your life? From a 'problem with no name' to the emergence of a new category of difference. In M. Corker & S. French (Eds.). Disability Discourse. Buckingham: Open University, pp. 59-67.

Singer, J. (2017). NeuroDiversity: The birth of an idea (2nd ed.).

Silberman, S. (2015). NeuroTribes: The legacy of autism and how to think smarter about people who think differently. Sydney: Allen & Unwin.

Van Wijngaarden-Cremers, P. J., van Eeten, E., Groen, W. B., Van Deurzen, P. A., Oosterling, I. J., & Van der Gaag, R. J. (2014). Gender and age differences in the core triad of impairments in autism spectrum disorders: a systematic review and meta-analysis. Journal of Autism and Developmental Disorders, 44(3), 627–635. https://doi.org/10.1007/s10803-013-1913-9

Walker, N. (2013). Throw away the master's tools: Liberating ourselves from the pathology paradigm. Neuroqueer. https://neuroqueer.com/throw-away-the-masters-tools/

Yergeau, M. (2010). Circle wars: Reshaping the typical autism essay. Disability Studies Quarterly, 30(1), 21-21. http://www.dsq-sds.org/article/view/1063/1222

PREPARED FOR THE EDUCATION HUB BY

Julie Skelling

Julie is a special education teacher currently completing a PhD at the University of Auckland. She is exploring ideas about inclusion and inclusive pedagogies from special school perspectives. Julie specialises in working with autistic students and wants to help make research in this area more accessible to a greater number of teachers.

the education hub

https://theeducationhub.org.nz/category/school-resources/