
Dis/ability Constructs and Factors of Assessment and Diagnosis on Learning Outcomes

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ABSTRACT

This article examines factors contributing to suboptimal learning outcomes among neurodivergent (ND) students. It focuses on language, assessment, and diagnostic classification of learning differences and how they influence the conceptualization of ability and disability, ultimately affecting educational policies and practices. Drawing on social theory, particularly Erving Goffman's (1963) work on stigma, the article discusses how the use of negative labels leads to "spoiled identities" and exclusion, which can diminish self-esteem, motivation, academic performance, and social engagement for ND students (Babik & Gardner, 2021; Brown & Bigler, 2005). Additionally, it addresses how linguistic artifacts, including diagnostic labels used in educational settings are not neutral but carry emotional and ideological weight, influencing biases, perceptions, and practices in ways that reinforce stereotypes and discrimination (Bekerman & Zembylas, 2023; Goffman, 1974). These adverse effects can contribute to suboptimal learning experiences and the overall well-being of ND youth.

This article is the second in the [Neuroeducation Conversations](#) series, a research endeavor geared toward educational therapists and those in allied professions. These papers review existing research literature to explore the factors leading to suboptimal learning outcomes for neurodivergent (ND) students.

LANGUAGE AND LABELS

When we explore factors contributing to suboptimal learning outcomes among neurodivergent (ND) students, the words we use matter. Why? Because they're not just words, they're metaphors of meaning that historically trace and influence our human experience; they carry power and position; words define ideological boundaries that translate into policies and practices (Bekerman & Zembylas, 2023; Shi-xu, 2000). Put another way, the linguistic artifacts (i.e., words) we use help us conceptualize, categorize, and prescribe meaning to things, but such artifacts also harbor emotion that is entangled with individual and collective biases, cultural priorities, and worldviews (Magnani et al., 2021; Tektigal et al., 2022).

So, what happens when words are used to classify people and conceptualize their abilities? One could argue that categories and classifications of learners enable instructional differentiation and efficient facilitation of support (Grigorenko et al., 2020). Social

theory explains this classification process as *framing* and *naming*, a *schema of interpretation* that individuals use to understand and respond to events in their world (Goffman, 1974). These mental "filters," shaped by biological and cultural influences (including stereotypes), enable people to conceptualize their experiences and inform their decision-making. The concept of framing encompasses the social construction of phenomena, often shaped by outside forces such as the media, political or social movements, religion, influential people (including family and peers), or other organizations and actors (Goffman, 1974). Sociologist Erving Goffman's foundational work on societal stigma (1963) provided a fundamental understanding of how biases lead to stigma and how stigma impacts identity. Goffman discussed how naming or labeling people based on stereotypes could result in "spoiled identities" that negatively affect an individual's formation of self-concept and sense of belonging according to social *in-group* versus *out-group* dynamics (Babik & Gardner, 2021). Negative attitudes toward disability and ND individuals directly impact peer relationships, self-esteem, and motivation. These factors can hinder academic performance, social engagement, mental health, and overall well-being (Brown & Bigler, 2005; Franz et al., 2023).

Stigmatization can be exacerbated in social contexts, such as schools, especially when biases are embedded in the school's climate, interactions, pedagogy, and practices (Wilson & McGuire, 2021). Institutional and individual stigmatization present significant barriers to educational access for children with disabilities, including the impact of such labels on teachers' attitudes toward inclusive education and their perceptions of ND students (Röhm et al., 2022). Even within inclusive educational environments, ND students are frequently subjected to harmful labeling and prejudicial attitudes of divisive *othering* (Spivak, 1985). However, such biases are often hidden in policies and curricula or disguised by ableist practices that tend to go unnoticed by the dominant cultural norm but that are deeply felt by those most vulnerable, including ND students (Chatzitheochari & Butler-Rees, 2022; Hamilton & Petty, 2023; Tefara et al., 2023). Persistence of implicit bias remains a systemic problem in both educational and clinical systems (Owens, 2020; Smith et al., 2023), and scholars have shown that diagnostic labels, or how we frame and name differences and disability, otherwise known as *labeling theory* (Link & Phelan, 2001), negatively affect teacher expectation (Franz et al., 2021; Röhm et al., 2022) and student performance (Haft et al., 2022).

Let us now delve deeper into the phenomenon of labels and language within the frameworks of dis/ability, assessment, and diagnosis because I propose that how we talk, theorize, assess, and diagnose ability and disability are factors that affect students' learning outcomes.

Dis/ability Constructs

According to Dan Goodley (2018), a professor of disability studies in the United Kingdom, disability is often framed as a problem of either the body or the mind needing correction or rehabilitation. In contrast, ability is idealized as a standard for success. As such, Goodley proposed the term *dis/ability complex*

as a framework to study the interplay between disability and ability and how they impact work, life, and leisure. When we think of and talk about dis/ability, it's important to realize that fundamentally, the ability/disability binary is a relational construct, meaning that it's a value-laden category that arises through cultural, historical, and social contexts of comparison and normalization of what people have been conditioned to consider "normal" or "able" versus "deviant" or "disabled" (Goodley, 2014). The construct of dis/ability is further based on relative social conditions that permit (able) versus restrict (disable) an individual's full societal participation (Oliver, 1983). It is also important to realize that while neurodiversity exists in all human populations and cultures, definitions of impairment, disorder, and dis/ability vary significantly across sociocultural contexts (Francis & Silvers, 2015).

History of Normalcy and Dis/ability

What is "normal" anyway? Turning again to etymology, the first use of the term *normal* did not apply to humans and human behavior at all. Derived from Latin, the words *norma* and *normal* were originally terms in geometry to describe perpendicularity or perfect right angles. It wasn't until the 19th century that the word *normal* crept from the field of mathematics to medicine to describe a "normal state" or ideal healthy condition of human organs (Cryle & Stephens, 2017). Francis Galton, cousin to Charles Darwin and medical doctor turned statistician, later refined the concept of normalcy, creating the *normal distribution curve* that categorized human traits as either desirable or undesirable deviations from "the norm" (Davis, 2013). The emergent concept of normality was closely linked to developments in eugenics, statistical methods, and scientific claims regarding the human body, race, gender, class, intelligence, fitness, and morality. In the 19th century, Adolphe Quetelet's idea of the "average man" (*l'homme moyen*) and Galton's bell curve served both as scientific tools and cultural forces, crafting societal expectations to align with the comforting yet unsettling concept of normality (Davis, 2013). This notion gained traction in the 20th century, shaping public health, education, and industrial production (Cryle & Stephens, 2017).

Historically, perceptions of competence and dis/ability have changed, and they continue to evolve depending on social context and the boundaries that we set between what is perceived as usual and what is not (Kliewer et al., 2006). Illiteracy, for instance, was once considered normal until reading and writing became standard skills of essential competence during the 19th century, coinciding with the establishment of publicly funded schools (NCES, 1993). In contemporary society, literacy is recognized as a fundamental human right, and illiterate individuals are often perceived as lacking or having some form of disability. Religion, sociality, morality, education, medicine, and politics have all influenced (and continue to influence) how we view human variation, what we accept as normal versus not, and what is considered a dis/ability. (Find additional information about disability history at the National Museum of American History's exhibit (Ott, 2013) [EveryBody: An Artifact History of Disability in America](#)).

There are ongoing efforts in schools and society to challenge traditional notions of normativity and dis/ability. Because who is to say what is normal? What is functional? Moreover, what is disordered? These fresh perspectives on human diversity promote inclusion, respect, and empowerment for all people, especially those who, because of their unique neurotypes, have historically and systemically been marginalized for divergence from "the norm."

The Shift to a Neurodiversity Paradigm

The terms *neurodiversity* and *neurodivergent* are among the current neuro-buzzwords that describe a diverse representation of learners. The terms themselves, though, warrant translation. By dictionary definition, the term neurodiversity means a variety of nervous systems. The prefix *neuro* derives from the Greek word *neûron*, meaning nervous system; the base word *diversity* derives from the Latin root word *diversus*, meaning variety (Harper, 2024). Therefore, *neural diversity* refers to the natural neurological differences within the human population. Akin to biodiversity in the natural world, neurodiversity acknowledges the richly complex variation of neurologies (Stenning & Rosqvist, 2021). While neurodiversity represents the brain functions of all humankind, the term is often attributed to *neurodivergent* populations or those individuals who, because of their distinct neurotypes, perceive, think, and communicate differently than the prevailing stereotypical standard of "normal" (Botha et al., 2024).

The prevalence of neurodivergence (or neuro minorities), those whose bodies, minds, and behaviors diverge from the prevailing standard of "normal," represents a significant minority group, conservatively estimated at 20% of the global population (Doyle, 2020). Neurodivergence advocate Nick Walker (2021) explained neurodiversity as a simple understanding that human brains are, by nature, all unique. Embracing neurodivergence involves recognizing and valuing the uniqueness and the entirety of a person and seeing beyond medical and historically pathologized diagnoses or ways of "correctness" (Baumer & Frueh, 2021). While the *Neurodiversity Paradigm* originally served as a social justice movement (Ne'eman & Pellicano, 2022), newer proponents of neurodiversity efforts in research and education aim to address practitioners and practices to reframe neurodivergence as natural difference and not deficit pathology (Stenning & Bertilsdotter Rosqvist, 2021), leveraging student's strengths while offering support for their learning needs.

Neurodiversity communities and allies are raising their voices and challenging perceptions, definitions, and constructs of dis/ability. For example, the *neurodiversity paradigm* challenges the *medical model of disability* by emphasizing practices that recognize and support diverse neurologies rather than seeking to "cure" what is considered maladaptive problems (Chapman, 2021). Neurodiversity advocates support the *social model of disability*, which frames dis/ability as a result of environmental barriers and societal limitations rather than an inherent individual flaw (Oliver, 1983). With this framework, the emphasis on addressing dis/ability lies in altering society and the environment rather than changing the individual. However, neurodiversity scholars,

such as Patrick Dwyer (2022), Robert Chapman (2021), Nick Walker (2021), and Anna Stenning and Hanna Rosqvist (2021), offer a transformative perspective, highlighting the advantages of a balanced neurodiversity approach that integrates elements of both the social and medical models, a theory long proposed by Singer (2016). This perspective acknowledges dis/ability as arising from the interaction between individuals and their contexts. It also supports interventions that assist individuals in managing challenges (e.g., skill-building or medication) and modify societal and environmental barriers (Dwyer, 2022). Crucially, a neurodiversity approach rejects interventions to normalize or "cure" ND individuals and emphasizes neural diversity's importance and inherent value (Walker, 2021). It further embraces positive or neutral language, arguing that it does not preclude recognizing disability or providing necessary support (NCDJ, 2021).

This critical paradigm shift from a biomedical focus to neurodiversity approaches advances an ideology that views neurodivergent individuals as possessing a rich and varied array of strengths and literacies, challenging reductive notions of deficit and dysfunction (Bailey, 2023; Stenning & Rosqvist, 2021). Along these lines, there has been an increase in neuro-affirming advocacy (Leadbitter et al., 2021; ODPC, 2018), as well as a gradual theoretical shift with neuropsychological assessment, turning from deficit discrepancy models to *pattern of strengths and weaknesses* (PSW) approaches for diagnosis (American Psychiatric Association, 2013; Regier et al., 2013). Despite these important theoretical turns, the research literature consistently shows that ND students face suboptimal learning and post-secondary outcomes compared to peers who are considered neurotypical (Haber et al., 2016; Newman et al., 2011). When considering suboptimal learning outcomes among ND students, lingering empirical frameworks of assessment and diagnosis must be considered as contributing concerns of how we frame, name, and conceptualize dis/ability and the impact on student success (Gutkin, 2012).

ASSESSMENT

Assessment of learning calls for an important distinction between assessing learning outcomes and assessing learners. This distinction extends beyond pure semantics. Instead, it reflects philosophical and practical implications related to our values in education and our approach to human development and diversity. Students should not be reduced to mere outputs of an educational system, as this fails to recognize their complex and multifaceted nature.

Assessing Learning Outcomes

My scholarship intentionally concentrates on learning outcomes rather than academic achievement as an effort toward holistic educational therapy case conceptualization. *Achievement outcomes* and *achievement gaps* refer to a measure of student performance and a difference in student performance. Both have been established as problematic and prolific in the educational literature (Coleman, 1968; Hanushek, 2022; Kozol, 2005; Ladson-Billings, 2006), although some argue that the term

"achievement gap" reinforces a negatively racialized and deficit mindset (Shukla et al., 2022). On the other hand, learning outcomes include acquiring particular skills, knowledge, and aptitudes that help students become life-long learners (Diamond, 2010). Learning outcomes differ from *learning objectives*, which are finite goal expectations given a particular course or program. However, mixed terminology within the literature is standard, using and even defining learning outcomes to mean learning objectives (Harris & Clayton, 2019). Overlap also exists between concepts and the use of the terms *achievement* versus *learning outcomes*, and it stands to reason since content-based mastery and academic knowledge inform overall student learning. While higher education has conceptually embraced learning outcomes (Erikson & Erikson, 2019), the notion of learning outcomes as measures of K-12 accountability broadly, or student success precisely, is yet to be fully realized. Lile and Bran (2014) posited that one reason for this is simply that learning outcomes target behavioral results or changes in students as opposed to knowledge acquisition, which they indicate is better defined and more straightforward to assess.

The National Longitudinal Transition Study-2 (NLTS-2), a study funded by the U.S. Department of Education and initially conducted in 2001 to evaluate learning outcomes among special education students in secondary schools, offered one of the first large-scale analyses of learning outcomes among ND youth (Liu et al., 2018). The study involved over 11,000 students between 13 and 16 receiving special education services. The researchers evaluated in-school learning outcome measures according to four dimensions: school participation (attendance), academic performance, social adaptation, and independence (i.e., personal functioning in home, school, work, and community endeavors) (Newman et al., 2011). Measuring these dimensions, as well as four post-graduate dimensions (e.g., employment status, enrollment in post-secondary education, level of financial independence, and social integration), the study tracked students over eight years and five waves of longitudinal data collection. Using qualitative methods such as personal interviews and written surveys from youth, families, and school staff and evaluation of school records, they assessed outcomes according to the various dimensions, the findings of which underscored the barriers that ND students face in successful transition from school to adulthood. Specifically, NLTS-2 isolated some of the types of disabilities that put students more at risk of poor trajectories and some of the in-school characteristics that contributed to long-range challenges (e.g., students with multiple disabilities, emotional disturbance, or intellectual disability are the most at risk for suboptimal outcomes for post-secondary education, employment, and productivity in social and community engagement) (Wagner et al., 2006). Other learning outcome analyses have utilized the attributes of learners to gauge outcome effects, such as *cognitive learning*, *emotional expression*, *psychosocial development*, *practical ability*, *values*, *attitudes*, and *skills* (Sun & Ho, 2023). Still, others have evaluated school effectiveness features as key determinants of student outcomes (Javornik & Mirazchiyski, 2023; Zheng et al., 2024). However, consensus on best practices or foundational frameworks for assessing learning outcomes appears lacking in the research literature.

Assessing Learners

When it comes to assessing learners, our current landscape of educational assessment is also divided in how assessment is conceptualized and operationalized across disciplines (Masters, 2013). Psychometricians focus on statistical modeling of tests, while psychologists use assessments for diagnostic purposes related to client strengths and needs. Educational leaders view assessment as a means of state-mandated accountability, whereas teachers perceive it as a formative and summative process with students. On the other hand, parents tend to understand assessment primarily regarding grades and standardized or high-stakes test scores. This conceptual fragmentation between psychology, general education, curriculum, psychometrics, and assessment objectives results in a lack of communication and collaboration among interested parties. Consequently, while influenced by multiple disciplines and parties, educational assessment often gets siloed, hindering effective use and integration across the various facets that inform it (Brown, 2022).

Specific to special education eligibility determinations, federal legislation of the Individuals with Disabilities Education Improvement Act of 2004 (IDEIA, 2004) stipulated a multidisciplinary evaluation process. Unfortunately, much of our current special education process, including assessment, is broad, biased, and largely ineffective for optimizing the learning of those who need it most (Rhodes, 2021). Although IDEIA's mandate indicates that assessments must be culturally, linguistically, and contextually appropriate, it does not specify methodology or criteria to ensure equitable implementation (IDEIA, 2004). This ambiguity often leads to subjective interpretation of special education referrals, vague criteria for eligibility, and inconsistent categorical identification (Sullivan & Osher, 2019). As a result, students from diverse cultural, linguistic, ethnic, and economic backgrounds remain disproportionately represented in special education (both over- and under-identified depending on various disability categories) (Raines et al., 2012).

A growing body of research questions the modern relevance of what some call an outdated special education construct that is riddled with legal ambiguity and ethical landmines (Sadeh & Sullivan, 2017). Frey (2019) supported this claim, explaining that special education legislation and eligibility practices were initially created to give "equal access" to education but must now shift to provide "appropriate education" that meets the individual needs of ND learners. Under this emerging theoretical approach (Sadeh & Sullivan, 2017), psychoeducational assessment protocol and special education eligibility determinations would more robustly and more precisely account for the multifaceted nature of students and learning, considering biopsychosocial factors and cascading developmental risks (Masten & Cicchetti, 2010). Advocates as such call for a movement away from assessment for classification's sake (Frey, 2019) and toward integrative, meaningful, results-oriented assessment and instruction for all students.

This division among actors and tendency to silo practice is especially concerning for neuropsychological and psychoeducational evaluations because comprehensively assessing a student's learning needs and the efficacy of interventions requires more than a solitary diagnostic measure or single perspective

to integrally consider the multifaceted and living interactions between the student and their context (Darling-Hammond et al., 2020; Fletcher et al., 2018). Advances in neuroscience and cognitive science have substantiated that learning is a multivariate, highly contextualized process that occurs both internally (through distributed brain networks) and externally (via interactions with the environment and culture) (Mišić & Sporns, 2016). These processes involve integrated embodiment of perceptual, cognitive, and motor functions, realizing that encoding information is highly individualized and varies in different cultures according to cultural rules, priorities, and specific linguistic metaphors used to explain the world (Fugate et al., 2018). Therefore, authentic psychoeducational intake and assessment should mirror the embodied nature of how humans learn (Villarroel et al., 2019), holistically framing each case based on the myriad of multi-system factors.

DIAGNOSIS

As established, there are many reasons for assessment, which likely vary depending on whom you ask. Historically speaking, psychological batteries were developed and used as justification for discriminatory practices such as racial segregation and exclusion of individuals from certain occupations (Fernández-Ballesteros, 2004). In the 1800s, medical practitioners began distinguishing between psychiatric impairments and mental retardation, which led to a fixation on intellectual differences. Alfred Binet's contributions (in the first part of the 20th century) emphasized cognitive processes over sensory abilities, eventually forming the foundation for modern intelligence testing. Assessment instruments such as the Binet-Simon scale and, later, the Stanford-Binet IQ Test were used to classify and segregate individuals, notably immigrants and children with intellectual disabilities. Psychological testing gradually expanded to include personality, aptitude, and clinical assessments (Fernández-Ballesteros, 2004).

Broadly, psychological assessments are used as a comparative measure or diagnostic classification based on symptomatology (Suris et al., 2016). Disorders and diseases are systematically classified through the American Psychiatric Association's Diagnostic and Statistical Manual (DSM). Learning disabilities were first recognized as a diagnostic category in the DSM-III (1980) under the term "Academic Skills Disorders," which was later renamed "Learning Disorders" in the DSM-IV edition (1994) (Silver, 2013). The current DSM-5 (2013) classification of "Specific Learning Disorder" (SLD) represents a consolidation of previously separate classifications of learning disabilities into a single SLD category. The new SLD consolidation encompasses impairments in reading, written expression, and mathematics, with comprehensive evaluation determinants, including client history, academic reports, teacher narratives, and response to intervention (Silver, 2013).

However, scholars and practitioners have critiqued the DSM for its overreliance on biological research and pharmaceutical treatments despite evidence that cultural and social contexts significantly influence disorders' onset, symptoms, and course (Aggarwal, 2023). By contrast, the newer Psychodynamic Diagnostic Manual (PDM), which is now in its second edition

(Lingiardi & McWilliams, 2017), has been coined a “taxonomy of people” rather than a taxonomy of disorders, as it incorporates culture into its framework in various ways that prioritize the patient's internal experience and the therapeutic relationship over mere symptomatology and fixed disease classification (Aggarwal, 2023). Despite advancements in diagnostic manual iterations, the merits and operationalization of newer constructs, including the PDM, remain contested in the field (McWilliams, 2008).

A prevailing concern with many evaluation measures and diagnostic manuals is that diagnostic classifications often reflect a Western, individualistic notion that overlooks variations in selfhood across cultures (Langa & Gone, 2019). Therefore, practitioners should approach case formulation sensitively, recognizing that sociocultural factors might be absent or misinterpreted (Aggarwal, 2023). The complexity of diagnostic decision-making poses challenges for applying universal frameworks (e.g., the DSM) to diverse local contexts. Filepe's (2015) case study on ADHD serves as a prime example of how diagnosis is a highly contextualized and culturally situated process. Drawing on extensive ethnography and two years of fieldwork, Filepe explored the evolution of ADHD diagnosis in Portugal when the condition was newly recognized in the medical community and undergoing diagnostic validation. The study examined global epidemiological data, diagnostic protocols, and clinical practices that doctors utilized to determine ADHD diagnoses. Filepe's research showed that selective global diagnostic standards heavily influenced the clinical criteria used for ADHD diagnoses. Further, he found that clinicians relied on international statistics to inform their practices due to a lack of robust epidemiological data in Portugal. For example, public and clinical interpretations often diverged, leading to misunderstandings surrounding the roles of hyperactivity and inattention as part of diagnostic criteria for ADHD. Filepe's study also flagged concern with transfer in local validation with diagnostic tools such as the Conners Rating Scale, which is operationalized in the United States, underscoring the overarching need for culturally-informed approaches to improve diagnosis and treatment that transcends simple categorical framing and is more nuanced in considering localized cultural, social, and institutional contexts.

Even so, interdisciplinary research on assessment and diagnosis remains predominantly oriented toward deficit-based medical models, which inadequately account for sociocultural factors, ecological contexts, and *third-person voice* (that of the ND individual) in diagnostic decision-making (Chapman, 2021; Dwyer, 2022). Key elements such as assessing and accessing students' *funds of identity* (educational practices that are guided or enriched by students' cultural assets and identities) (Esteban-Guitart & Moll, 2014), self-perceptions, and sociocultural influences are often undervalued in diagnostic evaluations and treatment planning (Gordon & Rutschman, 2019). While research into *funds of identity* holds promise (Black et al., 2021), the lived experiences of ND students remain peripheral in discussions of diagnosis and treatment, which often prioritize symptomatology and limitations over holistic understanding (Taneja-Johansson, 2023). This oversight may come at a significant cost (Cascio et al., 2020; Chapman, 2021; Franz et al., 2023), as current

systems predominantly compare students to standardized norms, classifying deviations as disorders or dysfunctions that can result in stigma and lack of *cultural commodity* (Black et al., 2021), meaning limited value or recognition of a student's cultural identity within mainstream education. Treatment strategies subsequently focus on remediation or accommodation to align individuals with normative standards (Sandoval Gomez & McKee, 2020). This framework of "typical" versus "atypical" in assessment, diagnosis, and intervention planning reinforces *ableism* (Chapman, 2021) and neglects critical risk, protective, and other factors contributing to suboptimal learning experiences of ND students (Svetaz et al., 2000).

CONCLUSION

How we talk about human differences and dis/ability matters. What we choose to assess and how we arrive at diagnostic decisions matter. The language and labels we use to conceptualize and classify ability and disability, even the mental constructs we use to judge normal versus abnormal, influence the learning attitudes, experiences, and outcomes of ND students. These linguistic frameworks and diagnostic classifications are often laden with cultural, emotional, and ideological biases that shape policies, practices, and perceptions. From a neuroscience standpoint, one may ask, are learning disabilities “disabilities” at all? Or are there simply differences in neurologies and behaviors that get categorized as “disabled” because the methodologies and metrics we use match majority neurotypes and conventions rather than holistically assess the individual? While assessment and diagnosis can facilitate targeted instructional support or secure particular resources, it also risks perpetuating stigmatization, reinforcing stereotypes, and marginalizing ND students within educational and social contexts.

If disability history has offered us anything, let it be an enriched understanding and respect for our vast human variation. Examining how we frame and name differences may help us better understand factors contributing to students' identities and overall outcomes. As educational therapists, we are well positioned to do so alongside our students as we navigate their complex and innumerably varied learning interests, inclinations, and needs.

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KEYWORDS

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