CHAPTER 2

DISABILITIES AND OTHER LEARNING CHALLENGES

I am different, not less.
~Temple Grandin, professor and autism advocate

As disability activists have been shouting from the rooftops with the #SayTheWord campaign, disability is not a dirty word. It's not something to whisper about or tiptoe around. We don't need to avoid saying the word or continuously create new phrases like special needs or differently-abled. As disability researcher and Paralympic medalist Anjali Forber-Pratt says, "such euphemisms deny the existence of disability and reinforce the stigma surrounding disability rather than embracing it as a valued aspect of diversity" (Vanderbilt University, 2019).

At its foundation, a disability is a difference that is disadvantaged in current society. The determination of whether a specific disadvantage rises to the level of being a disability is not black and white by any means. It's based on societal norms (or what is considered "normal"). When a trait is commonplace in a society, it generally is not considered a disability. In fact, the society may even shape itself around that trait. A fascinating example of this occurred in the 19th century in the small, isolated town of Chilmark on Martha's Vineyard. Genetic deafness was so commonplace that nearly everyone learned sign language in addition to oral language (Romm, 2015). Deaf children went to school with hearing children. Deaf adults weren't limited in their ability to socialize or maintain employment (at least not any more than anyone else in an isolated coastal town). Because Deafness was so common, with an estimated 1 in 25 individuals being deaf, it would have been a disadvantage to the whole community if Deaf and hearing individuals

couldn't communicate. So rather than labeling Deafness as a disability and treating those individuals differently, the community shaped itself around Deafness and became bilingual.

Conversely, most modern-day Americans could be considered disabled if they lived among the Guugu Yimithirr, an aboriginal people in Australia. In this society, individuals are expected to always know exactly which direction they're facing (Deutscher, 2010). Instead of saying things like "turn left" or "look to your right," they would say "turn North" or "look to the Southeast." All without looking at a compass. Imagine if you were plopped into this society and expected to be able to follow directions that are integral to everyday living and communication. You likely would have a very hard time because having an internal compass is not highly valued in American society, so you never learned this skill.

This nuance of what constitutes a disability is important to keep in mind as we dive further into this conversation. We're going to talk about learning deficits and challenges, but let's remember that these deficits are all based on the societal norms, values, and structures we've put in place. In other words, they're all made up and we could decide to change them at any time. They are not inherently the correct or most useful norms, values, and structures. Other societies have decided on different priorities. Remember, it was the norm for everyone in Chilmark to learn sign language. Similarly, the Guugu Yimithirr have a strong sense of direction because their society places a high value on that skill.

Societal values also shift over time – the skills that are valued today might not be the most important skills in the future. Our students who have disabilities likely also have strengths and skills that are highly useful or might be in the future. It's essential that we don't focus all our attention on students' challenges and neglect their strengths.

THE SPECTRUM OF LEARNING CHALLENGES

Experienced educators know that there are countless variables that can impact student learning. Disruptions within the learning environment – like an announcement on the loudspeaker or emergency drills – can distract students and interrupt the learning process. The brain literally can only focus on one thing at a time. Once attention is pulled away, it takes time and energy for the brain to shift focus back even just to remember what that task was in the first place. Students can also experience disruptions due to internal states like hunger or fatigue, which are unfortunately all too common. Some students, like those with Attention Deficit Hyperactivity Disorder (ADHD), are more sensitive to what others may consider to be minor distractions – both external (like rustling papers) and internal (like off-topic thoughts).

FOOD INSECURITY AND INADEQUATE SLEEP IN THE UNITED STATES

According to the U.S. Department of Agriculture, 12.5% of households with children in the United States were food insecure in 2021 meaning that the family doesn't have enough money or other resources to feed everyone in the family. An additional 6.9% had low food security. The rates of food insecurity are even worse for Black and Hispanic families, as well as families headed by a single mother. In addition, school-age children also commonly experience inadequate sleep. Researchers estimate that approximately 1 out of every 3 children is not getting enough sleep (Tsao et al., 2020). Both hunger and a lack of sleep can cause learning challenges like a lack of energy to engage in class, inability to focus, and emotional-behavioral issues – symptoms that could be mistaken as ADHD or a learning disability (Ashiabi, 2005; Jyoti et al., 2005; Taveras et al., 2017; Tsao et al., 2020).

Teachers certainly won't always know what is causing a student's learning challenges, but when a student is struggling, it's important to keep in mind the many variables that could be causing the struggle. Neither assuming the student has a disability nor assuming that they don't have a disability. The strategies and interventions we use with a struggling student may change drastically depending on what the root cause is. If a student is having trouble focusing due to ADHD, they will need long-term strategies, accommodations, and possibly medication. Conversely, a temporary learning challenge – like a student experiencing grief over the death of a loved one – could become a long-term challenge if we misidentify the cause. A student who is grieving may just need a little extra empathy and understanding if they have trouble focusing or "act out" in class. If that student is mistakenly labelled as disruptive or disinterested in learning, these manifestations of grief can snowball into bigger and longer-lasting issues. In Chapter 3, we'll take a closer look at how emotions and mental health impact learning. Then, Chapter 4 will expand on how emotional challenges and academic challenges can fuel each other into a school trauma cycle.

Carefully considering the root cause of a student's challenges is particularly important in the aftermath of the COVID-19 pandemic. Many students experienced heightened levels of stress, interrupted schooling, and possibly also grief and trauma. They may be experiencing symptoms that are similar to disabilities but could be temporary, not lifelong, challenges if treated correctly. Table 2.1 serves as a reminder of the vast spectrum of learning challenges from temporary challenges to long-term challenges and disabilities and can help us check our assumptions.

TABLE 2.1 TEMPORARY VS. LONG-TERM LEARNING CHALLENGES

TEMPORARY LEARNING CHALLENGES	LONG-TERM LEARNING CHALLENGES WITH POTENTIALLY LIFELONG IMPACTS
Illness or injury	Long-term disease or disability
Learning English as a second language	Speech, language, and reading disorders
Stressful or upsetting event, like a divorce or death in the family	Chronic, repeated, or severe stress or trauma
Not studying for a test or lack of effective study skills	Moderate to severe anxiety that negatively impacts performance on a test
Occasionally distracted or unorganized	Persistent challenges with focus or organization
Skipped or missed a meal	Food insecurity or malnutrition
Bad night of sleep	Chronically sleep deficient
A temporarily unsafe or uncomfortable learning environment	Frequently unsafe or uncomfortable learning environment
A fight or disagreement with family member, friend, or teacher	Lack of stable, supportive relationships
Minor-moderate medication side effects	Significant adverse reaction to medications or other medical treatment
Occasionally missing class or starting at a new school	Frequent absences or frequently changing schools

Oftentimes, teachers can parse out the underlying challenge(s) based on their interactions with the student and the student's family. When a student continues to struggle, though, the student needs support of additional professionals like school psychologists, counselors, or social workers to identify the root cause and provide interventions. Sometimes, this may mean a referral for a special education evaluation. In the next section, we'll look at educators' role in referring students for a formal evaluation.

SPECIAL EDUCATION

Teachers play an essential role in noticing when students are struggling and might need special education. They know what knowledge and skills students should be attaining at their grade level. They also have the benefit of seeing how a whole class of similar-age students are progressing. Still, seeking input from parents and caregivers can provide invaluable context about prior learning experiences and factors outside of school that might be impacting the

student's learning. Sometimes, family members might think their child's learning challenges are typical, especially if they had similar challenges when they were in school. Remember, many disabilities run in families. Further, in past generations, invisible disabilities like ADHD were more likely to go undiagnosed. Due to this, many parents actually discover they also have a disability when their child is diagnosed, and they recognize their own challenges.

Legal Requirements and Categories of Disability

Public schools are required under the Individuals with Disabilities Education Act (IDEA) to identify, locate, and evaluate students who need special education services. This federal mandate is called Child Find. Teachers and other school staff have a responsibility to identify students who need an evaluation, following their school district's procedures, if they suspect a student may have a disability that's impacting their learning. However, the student's parent or legal guardian holds the decision-making power when it comes to evaluations and special education services. They have the right to deny an evaluation. They also can request one. The results of the evaluation must also be provided to the student's parent or legal guardian and explained in ways that enable them to make informed decisions.

Students are identified as needing special education when they have a disability that negatively impacts their academic performance and that requires specially designed instruction. IDEA describes 13 different categories of disability, though different states may use different terms:

- Autism Spectrum Disorder (ASD);
- Deaf-Blindness;
- Deafness;
- Emotional Disturbance (many states use the term Emotional Disability in an effort to reduce stigma);
- Hearing Impairment;
- Intellectual Disability (also called cognitive disability or, formerly, mental retardation);
- Multiple Disabilities;
- Orthopedic Impairment;
- Other Health Impairment (ADHD often falls into this category);
- Specific Learning Disability;
- Speech or Language Impairment;
- Traumatic Brain Injury; and
- Visual Impairment, including Blindness.

When a student is identified as needing special education, an Individualized Education Program (IEP) is developed to address their individual needs. Some students with disabilities may have a 504 Plan, not an IEP. Students with 504 Plans don't need specially designed instruction. Instead, they may need accommodations to remove learning barriers. For example, a student with a visual impairment may need to sit at the front of the classroom and have materials in a larger font. A student qualifies for a 504 plan if they have a disability, whether temporary or lifelong, that substantially limits their ability to participate in at least one life activity (e.g., walking, seeing, concentrating, etc.).

COMMON DISABILITIES

The most commonly identified disabilities that require special education services are Specific Learning Disabilities like dyslexia or dyscalculia, speech and language disorders, ADHD, and ASD. These are categorized as **neurodevelopmental disabilities** in the Diagnostic Statistical Manual for Mental Disorders, Fifth Edition (DSM-5) which psychologists and other professionals use to diagnose disorders. Diagnoses in the DSM-5 overlap with the IDEA categories but aren't always exactly the same. For example, while ADHD is a diagnosis in the DSM-5, it's not a classification category in IDEA (students with ADHD often qualify under other categories, typically OHI).

Neurodevelopmental disabilities aren't caused by disease or an accident or trauma. And they aren't caused by bad parenting or bad teaching. Neurodevelopmental disabilities are caused by brain differences that develop during childhood. They tend to run in families and have genetic components that can be made worse or better by environmental conditions (see the next section for more explanation on what causes disabilities). They also occur on a continuum of severity. Some students will be only mildly impacted by their disability while others will be more significantly impacted. Most students, especially during the early school years, respond readily to targeted, high quality interventions. Some students may need more intensive interventions that include modified learning standards that allow for more individualized instruction to meet the student's needs.

Specific Learning Disabilities

Students with a specific learning disability (SLD) have specific challenges in one or more of the following areas:

- **Reading, including dyslexia.** Students may struggle with any or all of the components of reading – foundational reading skills like sounding out words, fluency, or comprehension.

- **Written Expression** (which could include dysgraphia, though this term is used in different ways by different people and not included in the DSM-5). Students with a writing disability struggle to express their thoughts in writing. They have trouble organizing their ideas in writing and may make a lot of grammatical errors.
- **Math, including dyscalculia**. Students may struggle with understanding quantity, memorizing math facts, math reasoning, or making calculations.

Learning disabilities aren't related to intelligence. Most students with SLD have an average IQ. Some even score above average on IQ tests. Part of the criteria for having SLD requires certain "rule outs." Under IDEA, the evaluation team must determine that the student's challenges aren't "primarily the result of visual, hearing, or motor disabilities, of intellectual disability, of emotional disturbance, or of environmental, cultural, or economic disadvantage" (IDEA, 2004). However, although it was common practice in the past, schools do *not* have to show a discrepancy between a student's IQ and their achievement. This is known as the **discrepancy model**, and it used to be the way schools evaluated a student for SLD. After IDEA was reauthorized in 2004 and new regulations were released in 2006, school evaluation teams can now base their decision on how the student responds to high-quality instruction and research-based intervention. This is referred to as the **response to intervention (RTI)** model. States cannot legally require schools to use the discrepancy model.

Learn more: Response to Intervention and Learning Disabilities

https://bit.ly/3RvUMNL

Just like any other student, each student with a learning disability will have different strengths and challenges. Simply knowing that a student has a learning disability doesn't tell you their specific challenges. It's common for students with a learning disability to experience challenges in more than one area, but some students may struggle in one area and not the others. Even within each subject area, there are numerous skills. For example, reading involves many layers of skills like knowing the different sounds in words, matching sounds to letters, understanding grammar and text structure, vocabulary knowledge, and reading comprehension (including prior knowledge of the topic). This is why it's essential to dive deeper than the disability category and find out which specific skills are most challenging for your student and which skills you can harness as strengths.

Simply knowing that a student has a learning disability doesn't tell you their specific challenges.

Speech or Language Impairment (Communication Disorders)

Communication involves many complex skills. To communicate with others, we have to focus and organize our thoughts, find the right words, and coordinate the muscles in the mouth and vocal cords to form the correct speech sounds. We also need to understand what others are trying to say, verbally and nonverbally. Students who struggle in any of these areas may be identified as having a speech or language impairment under IDEA. The DSM-5 categorizes these challenges as **communication disorders**. Students may have challenges in one or more of the following areas:

- **Speech:** Forming speech sounds, including phonological knowledge of speech sounds as well as coordinating the necessary movements of the tongue, jaw, and vocal cords to produce the desired words
- **Fluency:** Flow, tempo, and speed of speech – challenges with fluency may include disruption or delays in speech through long pauses, hesitations, interjections, or repetition of sounds or words (stuttering)
- **Language**
  - **Expressive language (speaking):** Putting thoughts into words or finding the right words
  - **Receptive language (understanding):** Understanding what others are saying
- **Social Communication:** Interpreting the social context and other social aspects of communication, including:
  - Adjusting communication style to match different contexts (e.g., on the playground vs. a classroom)
  - Understanding and responding to social communication norms (like taking turns talking in a conversation) as well as verbal and nonverbal communication signals (e.g., body language)
  - Making inferences or understanding nonliteral language (e.g., metaphors, idioms, etc.)

Oftentimes, students struggle in multiple areas of communication. Students also might act out due to their difficulties communicating. Sometimes behavior challenges may be misinterpreted as the main problem rather than a symptom of an underlying disorder. This is especially true for language disorders, which are less noticeable than a speech or fluency disorder, and are oftentimes overlooked (Sundheim & Voeller, 2004). Additionally, many students with a speech or language disorder also have dyslexia or reading disability, though sometimes this doesn't get identified until later after their speech skills have improved.

Attention Deficit/Hyperactivity Disorder (ADHD)

According to the DSM-5, ADHD can present in two different ways or a combination of both:

- Predominantly inattentive
- Predominantly hyperactive-impulsive
- A combination of both inattentive and hyperactive-impulsive

Boys are more likely to present with hyperactive-impulsive ADHD, while girls are more likely to present as inattentive. They may daydream a lot or find themselves thinking about other things when they should be concentrating. Since they tend to be less outwardly disruptive, girls (and anyone with inattentive type ADHD) frequently fall under the radar and go undiagnosed. Their symptoms also may be dismissed as insignificant or attributed to other mental health disorders, like anxiety, that commonly co-occur with ADHD (Skogli et al., 2013).

In people who don't have ADHD, the brain filters out external stimuli (like noises in the hallway or a classmate getting up to sharpen a pencil). The brain is also able to suppress random thoughts and focus our attention on the task at hand. For people with ADHD, the brain is not very good at doing these things. This means that the student will have more difficulty staying focused or paying attention. (But it also means, they might make more interesting connections that someone without ADHD wouldn't have thought of!)

ADHD also causes challenges with what are often called **executive function skills**. These skills include things like:

- Organization;
- Time management;
- Planning;
- Regulating emotions;
- Thinking before acting/speaking;
- Working memory, or the ability to hold information in mind long enough to do something with it; and
- Cognitive flexibility or the ability to switch from one task to another.

Other disorders as well as everyday stressors can sometimes cause symptoms that look a lot like ADHD. Trauma, anxiety, and depression can all cause challenges with attention, activity levels, and executive function skills (see Chapter 3). Additionally, as we've discussed, environmental factors like a

student not getting enough sleep or struggling with family conflict can cause similar challenges.

When students with ADHD receive special education services under IDEA, it is often under the category of Other Health Impairment (OHI), which is defined as "having limited strength, vitality, or alertness, including a heightened alertness to environmental stimuli, that results in limited alertness with respect to the educational environment... due to chronic or acute health problems," including ADHD (IDEA, 2004). Many students with ADHD have a 504 Plan instead of an IEP if they only need accommodations and not specially designed instruction.

Autism Spectrum Disorder

ASD can present very differently from one individual to the next – hence, the term *spectrum*. Symptoms usually appear before a child is three years old, but it's not uncommon for ASD to go undiagnosed until later when challenges become more pronounced. The defining features of this disorder are:

Challenges with social skills and building relationships, for example:

- taking turns in conversation;
- playing interactive games with others;
- initiating or responding to social behavior; and
- understanding someone else's point of view.

Communication and language difficulties, including nonverbal communication, for example:

- delays in speaking or language skills;
- not understanding or using typical gestures, body language, or tone of voice; and
- not making eye contact as expected.

Restricted or repetitive behaviors or interests, for example:

- rocking back and forth or flapping arms;
- repeating words or phrases;
- struggling with changes in routine; and
- intense interest in a favorite topic.

Some students with ASD may also have an intellectual disability that limits their mental functioning (e.g., reasoning and problem-solving ability) and daily life skills, like personal care and social skills. However, that is a separate diagnosis

and doesn't apply to most individuals with ASD. If your student hasn't been identified as having an intellectual disability, it's important to assume their intellectual capacity is within or near the average range (or higher). Additionally, approximately 10% of individuals with ASD may have extraordinary, savant-like skills like effortlessly performing complex mathematical calculations or remembering whole pages of text from a book (Sousa, 2016).

DISPARITIES IN DISABILITY IDENTIFICATION

Evaluating students for potential disabilities is not as cut and dry as a blood test or a brain scan. While some disabilities are immediately visible, like when a student uses a wheelchair, others are much less obvious. Neurodevelopmental disabilities such as dyslexia or ADHD are often referred to as invisible disabilities since they can't immediately be seen when you look at someone. Because of this, they can fly under the radar, even into high school or beyond. Sometimes students can compensate for their learning challenges, especially during elementary school. A student with dyslexia might memorize vocabulary words but never learn how to sound out new words. Once the workload, complexity of content, and levels of responsibility increase in later years, their underlying challenges may become more apparent.

A disability may also go undiagnosed when a student seems very "smart." We may be more likely to think the student is just being lazy or not trying hard enough. All too often, people mistakenly associate disabilities with lower intelligence. This is an incorrect association. Most people with disabilities have average or above-average intelligence, just like anyone else. Unfortunately, this misperception leaves many students without the support they need and can be crushing to their self-esteem.

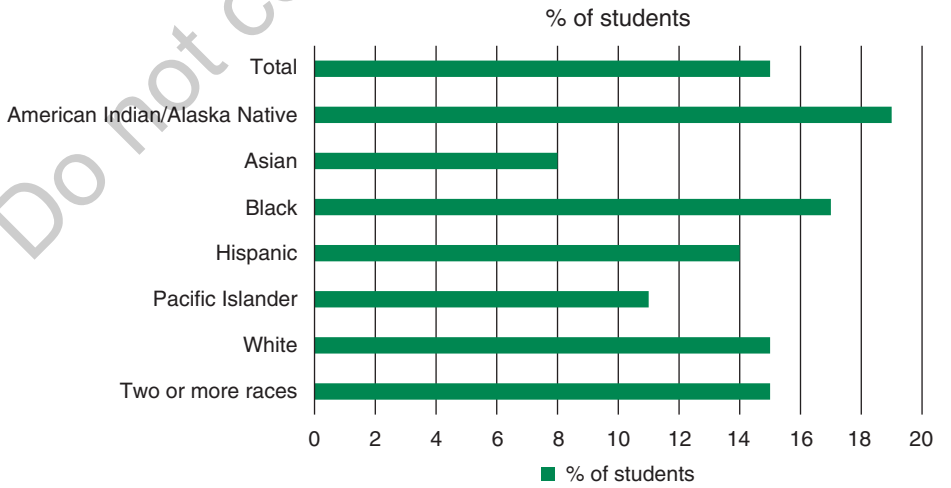
Due to these complex issues, some students go unidentified and continue to fall further and further behind in school. On the flip side, as discussed earlier in this chapter, sometimes learning challenges are misattributed to a disability when the actual root cause is something else entirely (e.g., grief/trauma, hunger, inadequate sleep, medication side effects, etc.). Both over-identification and under-identification of disabilities can be detrimental to a student's academic outcomes and emotional well-being.

The likelihood that a student will be identified for special education differs based on their culture, background, and other identities. Because of this, it's especially important to be aware of our potential biases when considering referrals, placement, and services. Researchers have found disproportionate identification of students based on:

The likelihood that a student will be identified for special education differs based on their culture, background, and other identities.

- **Socioeconomic status (SES)**
  States aren't required to track the SES of students identified for special education. However, researchers have found that students from lower socioeconomic backgrounds are more likely to be identified for special education (Schifter et al., 2019). They're also more likely to be placed in separate special education classes rather than included with their peers in general education classes. Higher incidence of disability could be partially explained by increased exposure to various risk factors, such as malnutrition, exposure to toxins (like lead), inadequate medical care, and adverse childhood experiences (ACEs), that have been linked to poverty. However, researchers have also found that educators have lower expectations of students from low-income backgrounds which can influence academic achievement and behavior (Ready & Wright, 2011).
- **Race and Ethnicity**
  Federal law requires that states track the racial and ethnic demographics of students receiving special education services. Note that in this section, I'll be using the terminology set by the federal government for identifying students' race and ethnicity. Nationwide, Black and American Indian/Alaska Native students are disproportionately more likely to be identified as needing special education than white, Hispanic, or Asian students (National Center for Education Statistics [NCES], 2023b). This means that a higher percentage of Black and American Indian/Alaska Native students receive special education services when compared to other racial groups (Figure 2.1). Some researchers have suggested that this doesn't mean students are being inaccurately identified. They propose that we

FIGURE 2.1 PERCENTAGE OF STUDENTS AGES 3–21 RECEIVING SPECIAL EDUCATION BY RACE AND ETHNICITY IN 2021–2022



Source: From National Center for Education Statistics. (2023). Students With Disabilities. *Condition of Education*. U.S. Department of Education, Institute of Education Sciences. Retrieved 8/18/23, from https://nces.ed.gov/programs/coe/indicator/cgg

actually *should* expect Black students to have disabilities more frequently since they are more likely to live in poverty, which, as we just discussed, exposes them to more risk factors for disabilities. However, there is widespread disagreement and differences in research findings on whether it's race and ethnicity or SES that is the driving factor. Researchers have found different results in different states and school districts. When comparing students who have similar SES, some researchers have concluded that students of color are over-identified (placed into special education when they don't need to be), while in other instances, students of color are under-identified (not getting the services they need). There are also differences in which disability categories students of color are identified for and how restrictive of an environment they're placed in. Black students are more likely to be identified as having intellectual, emotional, or learning disabilities, which have more subjective diagnostic criteria. They're also more likely to be placed in restrictive special education settings, rather than being included with their peers in general education classes.

- **English language proficiency**
  Nationwide, in 2020–2021, English Learners (ELs) were identified for special education services at slightly higher rates than the general student population – 16.1% versus 14.5% (NCES, 2023a). However, rates vary greatly in different states and school districts. In some states and districts, including states with large EL populations like California and Texas, ELs are identified for special education at much higher rates (Wisconsin Center for Education Research, 2017). On the other hand, states with a lower percentage of ELs may be under-identifying ELs as having disabilities (Wisconsin Center for Education Research, 2017). When ELs are identified for special education services, they're most often classified as having a learning disability or a speech or language impairment (NCES, 2022). Understandably, it can be difficult to decipher whether a student is struggling due to language development or an underlying disability. Formal evaluations should be conducted in the student's native language whenever possible. It's also essential to consider the effectiveness of the EL instructional practices in the general education class.
- **Sex**
  Male students are nearly twice as likely as female students to be identified for special education nationwide (NCES, 2023b). Research suggests that under-identification of girls may be driving these disparities, meaning that girls who meet the criteria for having a disability are getting missed (Wehmeyer & Schwartz, 2001). However, for some disability categories, like learning disabilities, female students are more likely to be identified. Additionally, similar to other categories of disproportionality, rates vary significantly depending on each state and school district.

- **Birth month**
  In recent years, research has also pointed to disparities in identification of students based on relative age. These studies found that students who are the youngest in their class are more likely to be identified as having ADHD or a learning disability (Layton et al., 2018; New York City Independent Budget Office, 2020). However, this research is less extensive than other categories of disproportionality and still developing.

There's obviously a lot to unpack here, and it can be very confusing even for experienced educators and researchers. These statistics don't tell us *why* one group is disproportionately more likely to be identified as having a disability while another group is less likely to be identified. Are some students being misidentified when they don't actually have a disability? Are other students going undiagnosed and missing the help they need? Are there underlying causes that make one group more likely to experience a disability?

Researchers will continue digging into these questions, but what should educators be doing in the meantime? None of these statistics should stop teachers, schools, or families from referring or identifying a student for special education services when they need it. National statistics can't tell us anything about the student standing in front of us. However,

Pausing to reflect on potential stereotypes or biases and whether our instructional practices are culturally and linguistically responsive can help us ensure that students are appropriately identified.

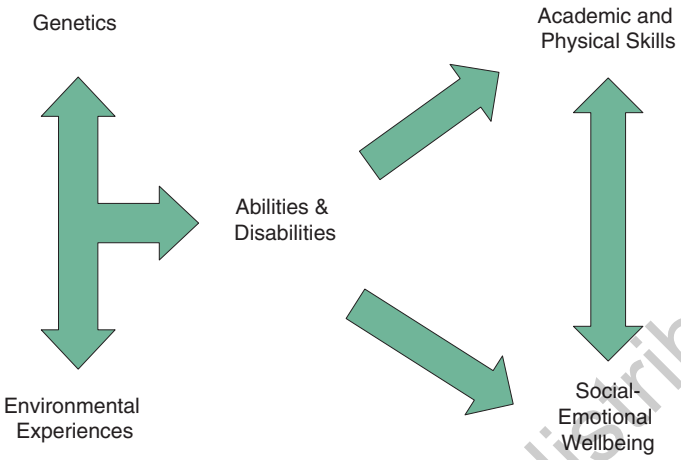
WHAT CAUSES DISABILITIES?

Our genes make us either more or less likely to develop a neurodevelopmental disability. It's a normal part of human variation, and it's not shameful or bad. Most disabilities have a kaleidoscope of genetic and environmental causes (Figure 2.2). However, some disabilities have more clear-cut origins. As discussed in Chapter 1, Down syndrome is caused wholly by genetics meaning that no matter what environment the child is raised in or taught in, the child will still have Down syndrome. Other disabilities, like those caused by a traumatic brain injury, are mainly environmental. Still, researchers have found that individuals with similar traumatic brain injuries can have very different outcomes depending at least partially on their genes (Kurowski et al., 2012).

Environmental experiences also play a key role in the severity of impact from any disability. For example, school or class placement of students with disabilities can have a significant impact on their achievement and outcomes. Students with disabilities generally make more progress when they spend more time in general education classes as compared to separate, special education classes (Hehir et al., 2016).

Neurodevelopmental disabilities aren't caused by a singular gene or chromosome mutation, like Down syndrome. Multiple genes have been associated

FIGURE 2.2 INTERPLAY OF GENETICS AND ENVIRONMENT ON LEARNING CHALLENGES AND DISABILITIES



Note: An individual's genes and environmental experiences interact with each other to determine the extent of that person's abilities and disabilities. Having a disability impacts a person's academic and physical skills as well as mental health. In turn, challenges in one area can exacerbate challenges in the other. Similarly, strengths in one area can help to make up for challenges in the other.

with their development. Environmental factors like low birth weight, birth complications, nutritional deficiencies, infections, instructional strategies, and environmental toxins like lead can also play a role. However, while environment matters, research has shown that neurodevelopmental disabilities have a strong genetic component, for example:

- ADHD has a heritability rate of 74% (Faraone & Larsson, 2019).
- Recent research on autism estimates heritability to be somewhere between 50% and 90% (Sandin et al., 2017; Tick et al., 2016; Xie et al., 2020).
- Learning disabilities also tend to run in families. For example, dyslexia co-occurs in identical twins up to 68% of the time, and children who have a parent with dyslexia have a 40%–60% chance of having dyslexia themselves (Ozernov-Palchik & Gaab, 2016; Schumacher et al., 2007).

CURRENT OUTCOMES: WHY IT MATTERS

Academic outcomes can change significantly when effective instructional practices and interventions are put in place. Unfortunately, many students with disabilities are not receiving effective instruction and interventions. Students with disabilities currently experience:

- **Less academic achievement**
  - Students with SLD or ADHD are three times as likely as their peers to drop out of high school (Horowitz et al., 2017).

- Graduation rates nationwide for students receiving special education were 68.2% in the 2018–2019 school year, compared to 85.8% of all students (NCES, 2020b).
- Approximately 21% of adults with disabilities over age 25 graduated from college with a bachelor's degree, compared to 41% of those without disabilities (U.S. Bureau of Labor Statistics, 2022).

- **Increased disciplinary action and incarceration**
  - Students with disabilities are twice as likely to be suspended from school. Most of those suspensions impact students with learning disabilities or ADHD (Horowitz et al., 2017).
  - Over 50% of individuals with a learning disability have an encounter with the criminal legal system within eight years of leaving high school (Cortiella & Horowitz, 2014).
  - Adolescents with ADHD are five times more likely to be incarcerated. By adulthood, that number jumps to 10 times more likely (Young et al., 2015).
- **Higher rates of poverty and unemployment or under-employment in adulthood**
  - Adults with disabilities are over twice as likely to live in poverty (Houtenville et al., 2022).
  - Individuals with ADHD have on average 17% lower income and higher unemployment (Jangmo et al., 2021).
  - Only 58% of young adults with ASD hold a paying job in their early 20s. Compare this to 99% of young adults without a disability, and 91%–95% for those with other types of disabilities like LD or SLI. Young adults from traditionally marginalized communities are even less likely to be gainfully employed (Roux et al., 2015).

KEY TAKEAWAYS

- Disability is not a dirty word. Disabilities are based on societal norms (remember the bilingual community on Martha's Vineyard) and may differ in different times or places. Having a disability simply means that an individual is disadvantaged by the society they live in and may need accommodations or individualized support to be successful in that society.

- Schools are required, under federal law, to identify, locate, and evaluate all students suspected of having a disability that negatively impacts academic performance. This is called Child Find. Teachers and family members should request an evaluation if they suspect a student may need special education.
- The likelihood that a student will be identified for special education differs based on their culture, background, or other identities. Pausing to reflect on potential stereotypes or biases and whether our instructional practices are culturally and linguistically responsive can help ensure that students are appropriately identified.
- Multiple genes contribute to the development of neurodevelopmental disabilities, like Autism, Learning Disabilities, Language Disorders, and ADHD. When the brain is growing new pathways during a child's development, these genes can lead to atypical brain function in specific areas of the brain. Still, brain function continues to change and develop in response to the child's environment, including instructional interventions.
- Each student with a disability has different strengths and challenges – even students who have the same disability. In addition, some students are only mildly impacted while others are more severely impacted and require more intense interventions and support.
- Academic outcomes can change significantly when effective instructional practices and interventions are put in place.