

Chapter 2

A Learning Disability Is a Developmental Problem

Intelligence is an adaptation.
—PIAGET (1963)

THE DEVELOPMENTAL PERSPECTIVE

The writings of the Swiss developmental psychologist and philosopher Jean Piaget triggered a transformation of the field of *child* psychology into *developmental* psychology. Through meticulous observation, Piaget discovered that the infant uses its experience to *construct* an understanding of the world. This view stood in stark contrast to prevalent beliefs that faculties of perception and cognition either matured on a preordained timetable or were registered by the environment on a blank slate, shaped by a complex system of stimulus and reward.

According to Piaget, from his or her earliest sensorimotor interactions with the immediate physical and social environment, the child *constructs* an understanding that transforms physical action and sensation into symbolic understanding. This understanding vastly extends the child's knowledge of, and capacity to interact with, the physical and social worlds. Intelligence is thus constructed through the repeated but expectable interactions of the child with the environment. Such learning is constrained by properties of the biological systems and of the environment (Piaget, 1963).

Accordingly, cognitive development, or intelligence, is essentially a process of *adaptation*, which Piaget understood to be the establishment of equilibrium between processes of assimilation and accommodation. Processes of *assimilation* incorporate data acquired from experience, and processes of *accommodation* modify internal cognitive schemata

in relation to experiential transactions. These cognitive schemata are internally reorganized as the infant or child encounters new data that thrust the system into a state of disequilibrium. The continual process of moving toward a newly equilibrated state propels development and the associated construction of knowledge. Importantly, Piaget maintained that the “very concept of the object is far from being innate and necessitates a construction which is simultaneously assimilatory and accommodating” (1963, p. 7).

In the Piagetian view, the organism and the environment form an indissoluble entity. Elaborating on this position, Piaget made the following remarkable observation: “This is to admit the possibility of hereditary adaptations simultaneously *presupposing an action of the environment and a reaction of the organism other than the simple fixation of habits*” (1963, p. 18, emphasis added). In other words, biological systems have evolved to anticipate certain experiential regularities (e.g., objects fall down, caretakers speak). As we shall see in Chapter 3, the constancy of these expectable experiences can lead to an illusion of innateness. This intimate and ultimately indissoluble state of relationship between the organism and its environment is key to any developmental perspective. Importantly, it draws on both the Anglo-American empiricist and the European structuralist traditions to create an integrated framework that is informed by modern concepts in evolutionary and developmental biology.

Developmental neuroscience and genomics are beginning to provide empirical evidence for mechanisms that Piaget could only infer. Importantly, contemporary biological sciences also provide insight into specific constraints that can shape the adaptive processes that Piaget proposed. Piagetian theory, however, establishes basic principles that can inform a developmental paradigm for understanding and managing typical and atypical development, including learning problems. These can be summarized as follows:

1. The organism and the environment are intimately and inextricably engaged in a mutual transactional process such that *neither can exist independent of the other*.
2. These transactional processes are dynamic, resulting in the construction of cognitive structures that are continually transformed in an ongoing, nonlinear developmental process of adaptation to environmental demands.
3. Biologically based variations (e.g., genetic, neurological, endocrinological, experiential) are incorporated into this constructional process and integrated into the developing system, potentially affecting the system as a whole, not just a discrete component of cognitive functioning.

These core developmental principles have direct relevance to the learning disabilities dilemma. They can inform research, theory, and intervention, guiding a process of problem solving. Equally important, they can promote a more accurate understanding of individual children and their life narratives. Such a developmental approach entails consideration of simultaneously interacting spheres of functioning—brain, child, family, and society.

THE DEVELOPING BRAIN

Even though the human brain has a typical structural and functional architecture, each brain is a unique product of its genetic endowment and its specific experience. Because of the powerful influence of experience on brain development and the potentially infinite combinations of genes and gene expression, it follows that every brain will be unique, even within a spectrum of “normal,” much like faces or fingerprints. No two individuals, even genetically identical twins have identical brains, even though they may exhibit strong similarities.

These individual brain differences may not be evident at the gross level—most people walk, talk, and think in distinctly human ways. At a subtler level, however, there is a vast array of dynamically interacting variations. These relatively subtle variations can gain greater significance as children encounter developmental challenges, even within the range of “normal.”

To make a simple analogy, consider a basketball team. The rules of basketball pertain to every basketball game; the court has the same structure and dimensions; every team has members that fulfill each of the five key roles. This is the basic and expectable environmental constant that shapes the character of the team along with other contextual forces. Yet each game the team plays is unique. The game depends on the skill of the various players, how well they communicate with and anticipate one another, the particular court, the spirit of the fans, the physical and mental well-being of key players, the nature of the opposing team, and so on and so on. Moreover, experiences from one game can carry on to the next, transforming the team each time, so that by the end of the season, the team often looks very different than it did at the beginning. The transformations, however, are predictable to some extent, given the starting conditions. If the offensive players are relatively weak, the defensive players will try to compensate to prevent the opposition from gaining access to the basket. Drilling and coaching players to perfect their shooting and to execute plays are certainly necessary for a successful team. How the

team fares, however, will ultimately be determined by the systemic interaction of all the above factors, *including but not limited to specific skills*. Shooting practice is an essential tool, but it is only a tool.

In the same way, working with children to perfect their decoding skills, their fluency, and so forth, is undoubtedly necessary for them to become successful readers. But for many children with learning problems, focused training on specific skills will not be sufficient to guarantee a positive developmental outcome. Like a basketball coach, the educator or psychologist needs to appreciate the child at the system level in order to promote successful development. A developmental approach can be distinguished from a skill-based approach in this way, but neither, by itself, is adequate to promote adaptive success.

In the range of human variety and adaptation, learning problems fall in the “subtle” category of variants (sometimes called high frequency–low impact). Moreover, functions do not develop separately but are mutually shaped by their interactions within an integrated system in a particular environmental context. Children do not take out their reading brain when they go to school, their motor brain when they show up for soccer, and their social brain when they arrive at a birthday party. It is the same brain, functioning as a dynamic, developing *system* that encounters its world; it is continually influenced by these encounters and, in turn, influences its world. Indeed, it is a tenet of Piagetian theory that cognitive schemata and their developmental transformations are manifest relatively consistently across functional domains.

This developmental perspective also asserts that the developing brain is very different from the adult brain in that its functions are not clearly organized in a “modular” fashion—that is, as discrete, encapsulated functions. As the legendary Russian neuropsychologist A. R. Luria (1973) theorized in his *hierarchical model of function*, early and sometimes relatively subtle differences become elaborated in the course of development and incorporated systemically. Thus, in a child’s brain a relatively small variation present early in development can, like a kernel or a seed, become manifest more globally. In an adult brain the elaborated skills have already been established, and functional organization is more modular. A similar injury in an adult brain will have more specific functional effects. Equally relevant, a developing brain may compensate for early maladaptive variations, sometimes constructing alternative pathways for accomplishing the same functional goal. Such compensation, however, can incur a cost to the system as a whole. This distinction between *modular* and *developmental* approaches to functional brain development, further elaborated later, is essential to understanding the contribution of a developmental perspective.

THE DEVELOPING CHILD

The inherent tension between biologically based variation and social expectation emerges from the infant's first moments. Parents approach their newborn with expectations about feeding, sleeping, crying, fussing, and cuddling. Children typically exhibit regular developmental progressions in terms of motor and language development, state regulation, and so forth. However, a child may or may not conform to the baby manuals. Each child brings his or her unique temperament, regulatory capability, sensitivities, and ultimately personality into the world. Beyond the broad developmental trajectories, there is a vast array of individual differences, to which parents are acutely attuned. Not only does the child adapt to the structure and expectation of the parent, but equally important, the child shapes the parent's behavior. The parent-child dyad can be exquisitely sensitive to nuances in the behavior of each partner, as illustrated by the impact of maternal depression on the mother-infant interaction (Tronick & Reck, 2009). It is the dyad that develops as much as the child. Infants who are similarly irritable, may elicit different responses from different mothers, thus shaping, on a more individual basis, the longer-term consequences of that irritability. The way in which these subtle predispositions interact with the environment can influence the organization of the child's behavior in a variety of ways.

Children thus enter school with a wide variety of skills, personality characteristics, cognitive styles, experiences, and quirks. Nevertheless, there are shared cultural norms and expectations for their academic, cognitive, and social functioning, based on statistically informed models of "normal" or "typical" development. In elementary education in particular, the cultural norm is that all children should be able to meet a preconceived set of curricular standards for the age group, and that these skills should advance in lockstep. Thus, the third grader is expected to achieve certain curriculum-referenced standards in terms of reading comprehension, writing, and mathematical knowledge and computation. Although the majority of children will be able to conform to these expectations on most dimensions, a significant minority will not be able to do so, for a variety of reasons. Moreover, a child's neurocognitive profile will be carried across multiple situations, and experiences in one domain will have an impact on others. A child who has difficulty understanding complex language can struggle in mathematics, not because he or she cannot understand the concepts, but because he or she cannot understand the teacher!

The complexity of this problem is further compounded by the fact that children are constantly developing. As these powerful developmental processes unfold, children's capacities can change dramatically.

Despite superficial appearances, these changes typically do not proceed along a linear trajectory, as our second Piagetian principle emphasizes. Development is characterized by spurts and plateaus, involving a *systemic* reorganization of functions as new capacities are achieved. Understanding the causes of change is among the greatest challenges of developmental psychology (Johnson & Munakata, 2005). With development, functional systems become both better articulated and better integrated; changes in one functional system may spur reorganization of others. Therefore, the notion that there can be a "specific" developmental disorder of a skill such as reading or arithmetic lacks plausibility.

These developmental processes will have direct consequences for a child's cognitive and behavioral profile. Because of the processes of reorganization in the course of development, change can result in increased compensation in some circumstances or greater vulnerability in others. Some children may present with difficulties early in their school careers, whereas others begin to encounter difficulties later. Or a child may struggle in one aspect of the curriculum at one age and in other aspects later. Cognitive profiles that may appear dramatic at a young age may also become far less prominent with development, as compensatory systems become available, especially with effective intervention to modify the trajectory. Equally significant, well-constructed and empirically validated interventions may remediate a specific skill in the early years, only to have problems emerge in a related or other domain later. Given this complexity, it is hardly surprising that the challenge of deciding who does or does not "have" a disability has proven so daunting and often defeating.

THE ECOLOGICAL CONTEXT: A CHILD-WORLD SYSTEM

The Piagetian model seeks to explain universal regularities and consistencies in child development. Understanding the individual child, however, requires an appreciation of the child's adaptation within his or her particular social and cultural niche. The developmental psychologist Urie Bronfenbrenner was especially interested in these transactions between the child and both the proximal and distal environments. His model put the child at the center and posited various levels of interaction with the social system, ranging from the nuclear family to local institutions (schools and day care centers), to the community (neighborhood, town), and to the broader social, cultural, and economic environment (Bronfenbrenner, Morris, Damon, & Lerner, 1998). This ecological perspective is essential to understanding the meaning of learning problems. Although learning disorders clearly involve features of brain develop-

ment that are associated with cognitive difficulties, the context within which the child's cognition is constructed is equally important. This context can include the language and cultural milieu provided by the immediate and extended family, family stressors, a parent's understanding of the child and interpretation of his or her actions, and, equally important, the impact of the child's responses on parent understandings and behavior. At the next level are factors such as the school environment, characteristics of particular teachers and peers, community resources, and attitudes toward differences. Of course, the legal system also impinges on the child with learning problems, as decisions are made about eligibility for potential support services. Local and state education budgets, for example, can be highly relevant to an individual child's development. Stricter or more liberal standards for eligibility for service provision, which can have repercussions in terms of the child's immediate academic environment, may shape teachers' perceptions of the child and the child's feelings toward the school and also have an impact on family functioning. School climate as well can be relevant; some school cultures are better equipped to manage differences than others or to provide a more structured and predictable environment. Likewise, teachers may themselves experience varying levels of support and appreciation or frustration and demoralization.

In addition, curricular expectations have changed substantially over the decades, such that today's children encounter academic challenges that were unimaginable for children being educated even several decades ago. Although it is, of course, important to maintain high standards and expectations for all students, it is equally important to recognize the potential consequences of such expectations and be prepared to deal with those consequences constructively. As expectations and demands change and escalate, and standards are adopted, so does the likelihood that more and more children will encounter "unexplained" learning problems.

As children emerge as outliers, especially with respect to their ability to meet criteria for academic performance, the question of a learning disability is often raised, setting into motion a series of clinical and legal involvements. Unlike other developmental disability diagnoses, however, learning disability exists as much in response to social demands as to any "defect" within the individual. To be perhaps overly simplistic, were it not for the cultural invention of text, there would be no diagnosis such as dyslexia. The same cannot be said of hearing or visual impairment.

Larger cultural values come into play as well. The U.S. education system is not unique in defining normality so as to marginalize individuals with less typical complements of cognitive strengths and weaknesses. Many other countries, however, have responded to the same dilemma

simply by creating rigid classification systems that destine children to particular strata of society from a relatively young age, with potentially significant economic consequences. The American response, however, is shaped by a deep-seated value for the individual and for the individual's access to opportunity. In order to honor that value, its strategy for managing this phenomenon has been to develop a complex system of medical diagnoses and legal entitlements, and then to grapple with the increasingly unwieldy and often contentious system thus created. One symptom of this problem is the periodic introduction of a "new definition" that is intended to be superior to the one it replaced by identifying the children who *truly* have a learning disability. Although the American approach respects the individual and the individual's right to equal opportunity, it has created its own problems, spawning confusion, competition for limited educational resources to which a great many children might legitimately be entitled, inequities for children whose families do not have the knowledge or financial resources to pursue their potential entitlements, and parental expectations that sometimes cannot be met. Importantly, it has all too frequently led to acrimony between families and schools. All of these contextual factors will inevitably affect individual children because of the systemic nature of the phenomena.

The developmental emphasis on the intimate transactional process between an organism and its environment is compatible with the vast heterogeneity of profiles observed among children for whom a diagnosis of learning disability is entertained. This infinite potential for heterogeneity, as suggested earlier, explains to some extent why the diagnostic problem has proved so resistant to solution. For pragmatic political and legal reasons, the consensual definition must fit the broader disability model, paralleling the physical disabilities. Within this framework, it makes sense to conceptualize the diagnosis as a defect in a specific component of cognition, just as visual or hearing impairment implicates a specific component of sensation. Unfortunately, however, the clinical picture is often difficult to reconcile with this conceptualization, precisely because there is so much heterogeneity and because there can be so many routes to a final common pathway of "troubles." Equally important, the extent and manifestation of the problem, as Bronfenbrenner suggested, will inevitably be a function of the context, or "world," within which the child finds him- or herself, the child-world system (Bernstein & Waber, 1990). The family, the classroom, the curriculum, the school, the community, the legal and economic constraints, and social expectations—all of these constitute the world to which the child must adapt and, equally important, that must reciprocally adapt to the child.

The power of the interaction between the child and the world can be difficult to perceive in the contemporary moment, in which we make

fixed assumptions about the world that we inhabit and see learning problems as residing within the child. However, the child–world interaction becomes much easier to perceive within a historical perspective. The social and economic meaning of childhood in the United States has evolved dramatically over just the past century, and of course it continues to evolve today. In the 19th century, a child's labor was essential to the economic survival of his or her family; in today's world, parents understand that if a child does not possess facility with symbolic material (i.e., text and computation), that child's ability to enter the workforce and support his or her own family economically will be compromised. Child labor is strictly regulated, and society places high value on attending school and achieving educational success. School success, in short, holds far more significance for contemporary children than it did in the past. This natural social evolution is obviously not frozen in place, but will continue to evolve and affect how children with heterogeneous cognitive capacities and profiles interact with their worlds. The interaction itself is a continually evolving process, depending not only on the child, but on the expectations and goals of schooling.

The Child–World Interaction in Historical Context

In his chronicle of childhood in America, *Huck's Raft*, social historian Stephen Mintz (2004) provides perspective on contemporary understandings about the meaning of childhood and schooling. In 19th-century America, only a small minority of children enjoyed the middle-class ideal of a slow and nurtured development to which we aspire for most American children today. For the growing middle class, schooling extended dependency and allowed children to enter the employment pool later in life. At the same time, however, the Industrial Revolution forced poorer families to put their children to work, effectively expanding the practice of child labor.

It is no accident that what is generally regarded as the first medical report of dyslexia concerned a boy from an upper-class background. English physician Pringle-Morgan (1896) described the perplexing case of Percy, a 14-year-old boy, who had had the advantage of schooling and tutors since he was 7 years of age, but he could not read or write. Percy was competent in arithmetic and thought to be bright but could not learn to read. Pringle-Morgan reported that Percy could not learn to spell the name of his father's house, an indication of his social status. At the time, universal literacy was by no means expected, but within an upper-class social rank, literacy was the norm. Hence, the boy's striking inability to conform to that norm became a matter of great concern, eventually resulting in a new medical diagnosis, "developmental dys-

lexia." Since working-class English children had no need to read in order to fulfill their economic role as laborers, such a diagnosis would not have surfaced in that social stratum.

By the dawn of the 20th century, schooling and literacy were still far from universal, even in democratic America, despite the efforts of school reformers. School attendance was far more prevalent in the middle than in the working classes, especially at the high school level. Literacy was not a cultural expectation in the working classes, since their labor did not require it and parents did not model literacy for their children. As the 20th century progressed, child labor declined, especially in the North, where compulsory education laws were the norm and waves of immigration provided a growing supply of cheap adult labor so that child labor was no longer so essential to the economy. Still, immigrant children were less likely to attend high school than their native-born peers, and child labor continued to flourish in the South to satisfy the need for cheap labor in the textile mills. Yet even though grammar school attendance had increased significantly by the early 20th century, only a fifth of students of high school age actually attended school. Moreover, *only 10% actually graduated high school*, an astonishingly low number by contemporary standards (Caplow, Bahr, Modell, & Chadwick, 1996; Mintz, 2004). Rather than attending school, most American teenagers came from working-class backgrounds and were employed as wage earners.

Significantly, for purposes of our discussion, political advocacy for universal education, laws against child labor, and school attendance brought many more students from diverse backgrounds into the schools for longer periods of time (Doris, 1987). Not only were children from the laboring classes now required to attend school, but there were large numbers of immigrant children who were not native English speakers, especially in the cities. This larger and more diverse student population soon resulted in large groups of schoolchildren who were falling behind their peers. By 1911, more than a third of children in the public schools was classified as "laggards" (Doris, 1987). From this social mix emerged a need for what came to be known as "special education." Until that time, children, especially those from the working classes, who did not easily acquire literacy, simply stopped going to school and entered the workforce, so there was no need to devote resources to educating them.

In the progressive era, however, mission-oriented educators were eager to serve and to educate the children of the working classes. Moreover, talented women who were unable to enter other professions often became teachers, and many applied their energies eagerly to this project. From this situation emerged educational structures that are easily recognized in contemporary schools—the graded organization of the general education curriculum and segregated classes for those who lag behind.

The former included tracking, in which children's abilities were assigned to slower or faster tracks based on perceived ability, but often with considerable flexibility (Doris, 1987).

School attendance was further boosted by the Great Depression of the 1930s. The economic collapse served to remove working-class children from the labor force in order to free up jobs for adults. In the midst of the Depression, more than half of all 17-year-olds were attending school, a dramatic shift from enrollment patterns earlier in the century. This higher rate of school attendance among adolescents, in turn, changed attitudes toward high-school-age children, leading to a longer period of economic and psychological dependence and expectations for greater academic achievement (Mintz, 2004).

The curriculum and culture of schools had also evolved. Under the influence of progressive educators such as John Dewey, leaders in public education sought to make schooling relevant for their students. They rejected the private school model where the primary goal of high school was to educate students for a liberal arts college education. Rather, they opted for more practical curricula, stressing vocational skills, civics, and health education along with basic reading, writing, and mathematics skills.

Eventually, however, there was a backlash to progressive influences in education—American schools were seen as falling short and American children as inadequately taught. In 1955 Rudolph Flesch published his classic book, *Why Johnny Can't Read*, in which he advocated phonics and scorned the “look-say” method. The cover assured readers: “Use this book and you can teach your child to read in six weeks.” The book's title became a rallying cry for a new generation of education reformers. Then, in October 1957, the U.S.S.R. launched *Sputnik* and a month later sent a dog into space. The educational system, especially progressive education, was viewed as a major reason the U.S. lagged behind the Russians in technological advancement. The more practically oriented brand of education offered by high schools in the 1930s and 1940s was blamed for the failure. There was a call to increase academic rigor, not only in reading but also in science and math. Education became a primary focus of the nation's Cold War anxiety, and the more progressive, child-centered educational philosophy took a back seat (Mintz, 2004).

When Samuel Kirk coined the term “learning disability” in 1963, just a few years after the launch of *Sputnik*, there was growing pressure to raise standards in U.S. schools. There was also a social consensus that children belonged in school and not in the workforce. In the early 1960s, upwards of 60% of American children were graduating from high school. Moreover, it was becoming apparent, especially to the

middle classes, that school success would be essential to future economic success.

Over the past century, powerful economic forces have changed the complexion of labor in the United States and other developed countries. These economic forces have shaped educational expectations and conditions. Figure 2.1 shows changes in the distribution of categories of work over the past century and a half. In the late 19th century, the lion's share of employment was in agriculture, fisheries, and mining—jobs that required physical labor but little in the way of symbolic skills. In the 20th century, that sector was supplanted by manufacturing—jobs that were often less physically demanding and required basic literacy and numeracy, but were nonetheless essentially manual labor. In the latter half of the century, however, the proportion of jobs in that sector declined, replaced by information-intensive and technical jobs, with much of the rest of the economy populated by less well paying service-sector jobs. The shift from agriculture and then manufacturing to information management and technology has had direct consequences for schools. In the late 19th and early 20th centuries, a head of household, aided by adolescent children, could support a family without a high school education. In the mid-20th century, reflecting the gains of organized labor, many manufacturing jobs paid well enough to support a middle-class lifestyle. In the early 21st century, however, that is no longer the case. Families and schools feel intense pressure to educate children for a labor force that can sustain the economy and provide the means to support a middle-class family. A young person who does not complete high school and even college can be at a significant lifelong disadvantage.

The long espoused goal of universal literacy, however, still remains more a goal than an achievement. In a study carried out by the Organization for Economic Cooperation and Development (OECD), the International Adult Literacy Survey was administered to representative samples of adults in the OECD countries (OECD, 2000), the most developed in the world. Fewer than 60% of American adults met minimum standards of literacy—that is, had skills sufficient to cope with the demands of everyday life and work in a complex, information-based society. Thus, 40% of adults did not possess adequate literacy to succeed in the society in which they lived. The statistics are only slightly better among adolescents, indicating that this problem is not simply a generational one.

As the goal posts are advanced, in keeping with social and economic demands, it is likely that more individuals will be identified as deficient. Equally important, as good-paying jobs that require physical or manual labor become scarcer, the pressure from families and social institutions to assure advanced literacy and numeracy will continue to grow, and the intensity of interest in education and school achieve-

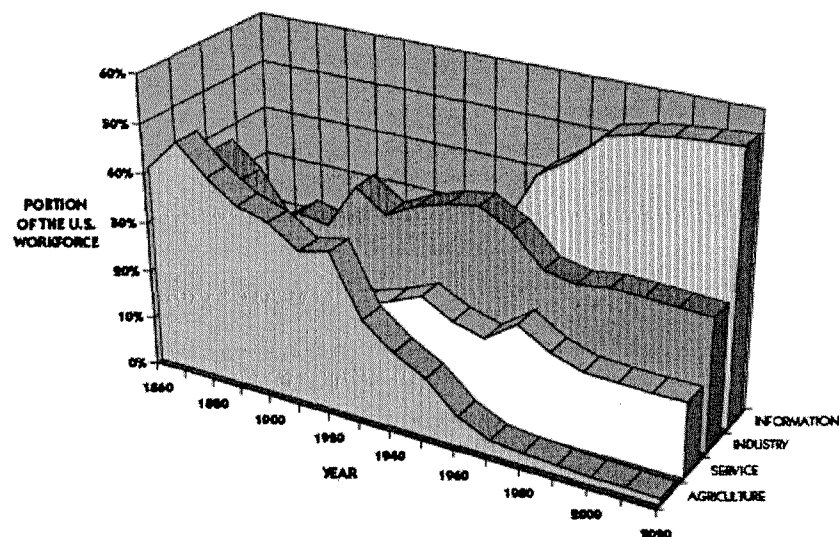


FIGURE 2.1. Proportion of the U.S. workforce engaged in agriculture, service, industry, and information from 1860 and projected to 2020. From Nilles, J. M. (1999, August 30). *Electronic commerce and new ways of working: Penetration, practice and future development in the U.S.A. and around the world*. Copyright by JALA International. Reprinted by permission.

ment will escalate. The OECD statistics suggest that nearly 40% of our schoolchildren are potential candidates for a diagnosis of learning disability. Considerable additional resources would be required were all those children to be served appropriately under existing disability and special education models. It is hardly surprising, therefore, that identification criteria continue to be so hotly debated. Moreover, despite rapid gains in the first half of the 20th century, high school graduation rates peaked at about 70% in the late 1960s and have not improved significantly since then (Seastrom, Hoffman, Chapman, & Stillwell, 2005), indicating potential risk for a learning disability diagnosis for a large segment of the population.

THE SOCIAL CONTEXT OF LEARNING DISABILITY DETERMINATION

From its early days, the critique has been leveled that the learning disability diagnosis is one of the middle and upper classes. There is no doubt

that this was true, especially in the early years. Advocacy groups are primarily powered by more affluent families who have knowledge and resources and who are culturally adept at advocating for their children's needs. Sociologist Annette Lareau (2003), in her book *Unequal Childhoods*, characterizes the childrearing style of higher-socioeconomic-status American parents as *concerted cultivation*, which she contrasts with that of lower-income parents, which she calls *natural development*. Inherent in these contrasting styles are parents' attitudes toward schools as institutions. With their more activist stance, higher-socioeconomic-status families feel comfortable challenging schools and their bureaucracies to respond if they feel their child is not being properly educated. Lower-socioeconomic-status families, especially new immigrants, can be more deferential, assuming that teachers and other school personnel are professionals who know best about educating their children. The fierce parental advocacy that procures special education support for more economically advantaged youngsters, therefore, may not be exercised as energetically on behalf of children from lower socioeconomic environments or for children whose parents may not have the cultural skills or economic means to advocate. Critics have also argued that in lower-income communities special education can become a repository for children with behavior problems, more typically from minority groups, often because few other options are available (Oswald, Coutinho, & Best, 2002). Indeed, the social context within which a child is schooled is potentially a significant determinant of learning disability identification, again illustrating the salience of the "world" component of the system. In more advantaged school districts, where the general level of achievement is high, a child who performs in the average range may garner more support and even special education resources than a child whose overall level of performance is lower but who is from a less advantaged district where the global need is greater.

Significantly, the legal definition of *learning disability* includes the requirement that the problem is not primarily the result of "environmental disadvantage." Thus, a child from a suburban middle-class environment whose reading is a year below grade level may be entitled to special education services, whereas a child from a lower-income environment with the same cognitive profile may be entitled only to Title I services, typically delivered by teachers without special education training, even though the two children's problems may be phenomenologically comparable. Although such a distinction may have made sense 30 years ago, we now know that brain development is materially affected by experience. By the age of 3, for example, children of low-income mothers on welfare have heard only one-fourth as many spoken words as those of high-income professional mothers (Hart & Risley, 1995). Developmentally,

the experiential differences are reflected not only in early language but eventually in reading skill (Hart & Risley, 2003).

The potential adverse impact of class on child development is not confined to lower-income children, however. The psychologist Suniya Luthar has written extensively on the mental health of children from more affluent backgrounds (e.g., Luthar & Latendresse, 2005). Although she set out to study children from economically disadvantaged circumstances, she soon discovered that many children of affluence were, in fact, in greater emotional distress than their less economically advantaged peers. Academic pressure is a major source of stress and psychological morbidity among these youngsters. Thus contextually, even though a child in a higher-income setting may exhibit academic and/or cognitive problems that seem mild on an objective basis, the psychosocial consequences can be significant, and so these need to be regarded seriously as well in relation to longer-term adaptive success.

Learning Disability Internationally

From an international perspective, the concept of a learning disability is highly dependent on the social and economic context within which schooling occurs. In Africa, where there may be 40 students in a class, teacher training is not well developed, and "under-the-tree" classes are still held in many places, the concept of a learning disability and special education is nascent in the universities but very rarely recognized or implemented in practice (Abosi, 2007). The concept of a learning disability is emergent and recognized in India, where the goal of universal education is normative and economic development is a national goal, but only limited resources are available for such children, who are greatly underserved (Crawford, 2007; Karande et al., 2007). In China, where unskilled labor has driven economic growth and education is essentially an elitist enterprise, the concept of a learning disability, or even autism, is not yet recognized; special education services are mandated only for children with deafness, blindness, or significant mental retardation (McLoughlin, Zhou, & Clark, 2005). In other Asian countries such as South Korea and Japan, however, that have a substantial middle class, thriving democracies and highly developed economies, the concept is better recognized but still emerging and gaining social acceptance on a cultural basis (Jung, 2007). Similarly, in Taiwan, there is a special education law modeled after that in the United States, but few school staff to implement it, and fewer than 1% of students are even identified (Tzeng, 2007). In the United Kingdom, the term "dyslexia" is widely used to refer to a severe reading problem, but other cognitive issues that could interfere with school adaptation are less frequently accorded official rec-

ognition. The term "learning disabled" is reserved for children whom Americans would consider to have borderline intellectual functioning.

Nowhere in the world is the learning disability construct as well developed and complex as in the United States. As we in the United States continue to stress universal standards of achievement and opportunity for all children, and as parents experience growing anxiety about the economic prospects of the next generation and seek to exercise legal rights, we should anticipate a continuing increase in the numbers of children for whom concerns about learning problems, most of which are legitimate, will be raised. At the same time, available resources for special education may be shrinking in response to economic pressures. In light of these particularly American social contextual pressures, it is inevitable that the stresses associated with the learning disability dilemma will only intensify, demanding better solutions than those that are currently available.

BARTHOLOMEW AND ELIZABETH: A TALE OF TWO WORLDS

To illustrate the power of the context in making sense of learning problems, consider the following scenario. Bartholomew Simpson sits in a fifth-grade classroom in a suburban Midwestern community where he lives with his parents and little sister, Elizabeth. His father, Herman, has a successful business selling flooring materials; his mother, Meg, was trained as a teacher but now works part-time as an administrator in the family business. Bartholomew struggles to make sense of the words on a page. With the benefit of early reading intervention, he can read the words, but it is hard work for him, and he does not particularly enjoy it. He gets passing grades, but even when he invests effort, his grades tend toward the bottom of his class. He has come to accept that he is not so bright and is less and less inclined to work hard at school since the prospects for success are slim anyway. When he needs to compose a short book report on a science text, he has trouble figuring out what to write and how to get the right words on the page. At home, he loves to play video games and to explore the outdoors. In school, however, he is increasingly misbehaving, not doing his work, and distracting other children.

The teacher suggests to the Simpsons that there may be "something more going on" with Bartholomew, and urges them to consult the pediatrician about whether he might have ADHD. Thus begins the familiar series of evaluations, and Bartholomew questions himself further. "What is wrong with me? Is something wrong with my brain? Why am

I dumb?" Eventually, it is declared that Bartholomew has ADHD, inattentive subtype, and dyslexia. A trial of stimulant medication is recommended and Bartholomew is once again enrolled in special education. He leaves the classroom every morning for 45 minutes in a reading support group, but continues to struggle with the rest of his subjects. Although he is still not so happy about going to school, he feels somewhat better about reading and is not quite so lost and helpless.

Bartholomew's little sister Elizabeth, in contrast, has already earned accolades as a star student by the second grade, infuriating and humiliating Bartholomew and creating ongoing tension within the family. She and Bartholomew will never be close. She breezes through school, apparently with relatively little effort.

Bartholomew goes on to middle school with his individualized education plan. He is mainstreamed for most of his subjects but continues to see the reading specialist three times a week. School remains basically boring and unappealing, and he becomes sullen and increasingly withdrawn. At home, he disappears into his room for hours to play video games or surf the Internet. In high school he eventually is tracked in the lower academic groups, where he finds the curriculum manageable but uninspiring. He continues to have periodic behavior problems, occasionally experimenting with drugs and alcohol, but never to such an extent that he is unable to attend school or to function in his typical, somewhat disengaged, fashion. Finally, to everyone's relief, Bartholomew graduates high school and, like most of his classmates, he heads to college.

His sister Elizabeth's stellar record earns her admission to a competitive private liberal arts college in the East, where she flourishes. After graduating, she spends 2 years working for a nonprofit agency that provides legal aid to new immigrants, and she then goes on to law school, where she meets her future husband. She becomes a successful lawyer, ultimately nominated to be a judge, and goes on to have a very satisfying career with many accomplishments.

Bartholomew spends several years in the state college system, where he is moderately successful but still not particularly interested or satisfied. Finally, he decides to take a break after so many years of school struggles. With his parents' blessing, he takes a leave and seeks full-time employment. Through a friend of the family, he finds a job with a company that installs heating, ventilation, and air conditioning (HVAC) systems. There he discovers that he is not as dumb as he thought—in fact, he actually has a knack for the more technically complicated installations, quickly earning the respect of his boss and coworkers. Bartholomew never returns to the state college; he enrolls instead in a program at a nearby community college to earn a certificate as an installer. Suddenly, he discovers that he is eager to go to class, and for the first time,

he is energetic and engaged in school. Although he has to invest effort at times to read the technical manuals, he does not mind.

Within 5 years he has moved to a supervisory role, teaching younger workers the trade. He marries and settles down happily to raise his family in a town not far from where he grew up. Despite his successes in the world of work, however, he continues to think of himself as unintelligent because he was not "good" at school. Nevertheless, his life is now satisfying, he is supporting his family well, and he takes pleasure from his accomplishments and the respect with which he is now regarded.

Suppose we project these children back to an earlier time in our country's history to see how they develop within their "world." Let's assume that Bartholomew was born in the late 1860s to a couple who farmed and raised livestock in the Midwest. He was the third of six children but only one of three who survived infancy. From the time they were 7 or 8 years old, Bartholomew and his brother and sister, like most local children, spent much of their time performing chores on the farm and in the home. Bartholomew helped to care for the livestock, to carry water from the well, to plant and harvest crops, and to tend the family's small apple orchard. Indeed, without their labor, the farm would not have been viable.

A one-room school had been established in town, and Bartholomew was enrolled, attending more regularly in the winter months when there was less need for his labor on the farm. The Simpson children walked several miles into town each day to attend school, but when the weather was harsh they stayed home. Bartholomew, like many of the other boys, bridled at the tedium and drill of schoolwork. He spent much of his time in school pursuing mischief with his friends and waiting for the snow to melt so that he could spend more time on the farm and exploring the outdoors. By the time he was 10, he could sound out some words, write his name and simple sentences, and do basic calculations, enough to get by. His younger sister Elizabeth, however, loved school. She grasped reading easily and by the time she was 8 or 9 years of age, she was devouring whatever books her teacher could find for her.

Out of school, Bartholomew disappeared into the barn, tinkering with the tools and fussing over the animals. He had a knack for farm equipment and fixing things, and he loved caring for the animals. When Bartholomew was 12, his father arranged an apprenticeship for him with a blacksmith in town, and he was no longer expected to attend school. Because it took so long for him to walk back and forth from town to the farm, he went to live with the blacksmith and his wife, but frequently visited the farm and pitched in wherever he was needed, spending more time there in planting and harvest seasons. Bartholomew's father could

not afford for both boys to leave home and apprentice, but the farm would not support everyone as the children grew up. The money Bartholomew could eventually earn as a smith would help the family make ends meet.

Bartholomew was a quick study, learning the trade easily and soon becoming a valued member of the blacksmith's household. The blacksmith increasingly relied on Bartholomew to operate his business. By the time he was 16, Bartholomew had taken over much of the work. Bartholomew's rudimentary reading and math skills were more than adequate to keep track of accounts and manage the business. Moreover, his work was valued and in demand in the area, so it was clear that he would earn a good livelihood in his trade. When the blacksmith could no longer work, Bartholomew took over the business and was very successful, becoming a well-respected citizen of his town and county.

Elizabeth, the scholar, spent whatever time she could helping the teacher in the schoolhouse until she herself married and had to devote herself full time to managing her own household on a nearby farm and raising her family. She loved her books with a passion, but her duties as a mother and wife left little time for reading. She also loved her children, but she grew disconsolate as she became increasingly isolated on the farm and worn down by the tedium of chores. She was often sick with headaches, spending days at a time in a darkened room, and even when she was pain free, she tired easily. The doctors tried various medicines and cures, but with little success. For the rest of her life, Elizabeth was periodically confined to bed. She came to be known as a sickly and disabled woman, and many remembered with sadness the lively young girl they had known.

Although the stories of Bartholomew and Elizabeth present an extreme case, spanning centuries, they illustrate the importance and fluidity of social context. Assumptions that are true today are different from assumptions that were true even a decade or two ago. More troubling, assumptions made in one town often differ substantially from those made in a town a few miles away. These assumptions can have direct impact on the lives of children. This contextual perspective helps to explain why the "specific learning disability" diagnosis has been so elusive.

DIAGNOSING THE DEFICIT OR DIAGNOSING THE INTERACTION?

The developmental perspective views the organism and the environment as a seamless system. Thus, a learning problem is not a discrete entity

that resides within the child, but a problem in the interaction between the child and the child's world. From this more systemic perspective, the learning disability diagnosis is best understood as *a social construction that serves to correct for the inherent incompatibility between* normally occurring *biological heterogeneity and socially determined expectations*. It is not a problem of *disability* but of *adaptation*. In this developmental paradigm, the location of the problem similarly does not lie in a defect or disability *in the child*, but in the *interaction between the child and the world*. That is, the problem is located in the dynamic relationship between a particular child's complement of skills and the particular environment in which that child is developing. It is precisely because the phenomena associated with learning disability reflect a *failed interaction* rather than a discrete defect in the child that implementation of the legal protections and entitlements has been so troubled and contentious.

This developmentally informed child-world notion (Bernstein & Waber, 1990) is not novel. Two decades ago, Gerald Senf (1987) suggested that the learning disability diagnosis is a "sponge" that serves to wipe up life's spills. Although the metaphor may have been inept, it was also prescient of the dilemma that was to ensue for the following decades, as researchers and policymakers struggled to find the perfect but elusive formula that would solve the dilemma of identification. Senf's view that a learning disability reflects a mismatch between the child's competencies and socially determined expectations, however, never received serious consideration. This lack of attention was largely attributable to the overriding pragmatic need to define a diagnosis in such a way that it retained its disability status, compatible with the requirements of the legal system. To admit that *learning disability* is essentially indefinable—the most expeditious conclusion from a neurodevelopmental and clinical standpoint—would risk losing the enormous gains achieved for children who once languished in an educational system that erroneously and cruelly branded them as cognitively limited or lazy. Yet by allowing legal requirements to dominate the direction of research, theory, and practice, we have ceded our ability as educators, scientists, and clinicians to honestly describe the phenomenology of "learning disability." The domination of legal requirements has also condemned the field to an endless preoccupation with the search for the perfect and inevitably elusive definition. After so many years of struggling to make sense of the phenomena, however, we may have reached a historical moment that allows us to reconsider learning problems with a more informed scientific understanding of relevant developmental processes. The next chapter reviews some of what science is telling us about developmental processes and the implications of that knowledge for understanding learning disabilities.