

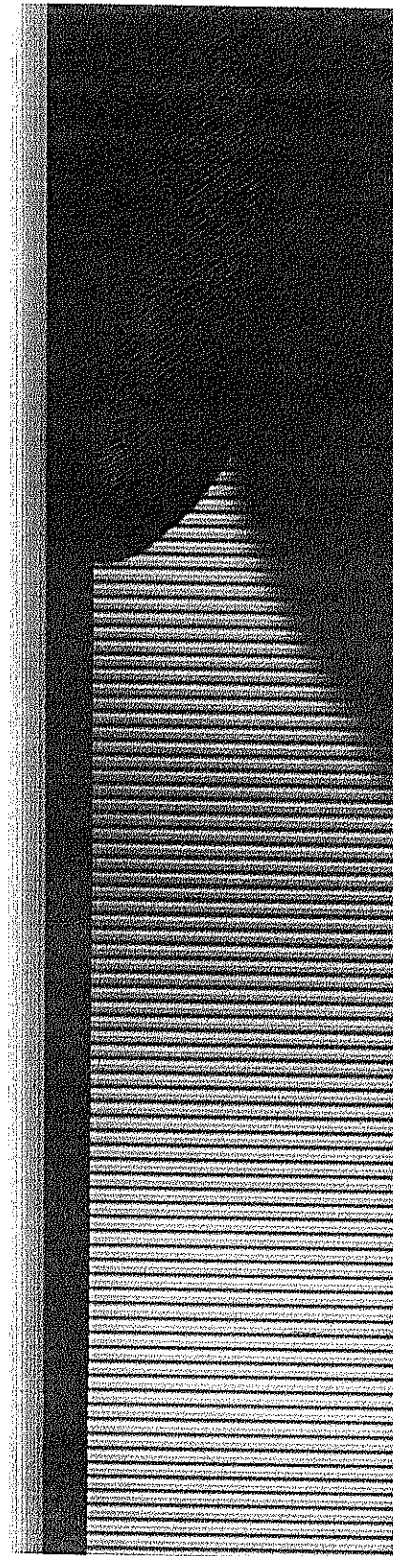
RETHINKING LEARNING DISABILITIES

*Understanding Children
Who Struggle in School*

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Chapter 4

A Lifespan Perspective on Learning Disabilities

LEARNING (READING)-DISABLED CHILDREN AS INFANTS: EARLY PREDICTORS

Unlike some developmental problems, which declare themselves clearly early in life, learning disorders can surface at almost any point in a child's development. Typically, they are identified when the child enters school and encounters unexpected difficulties with academic demands, although precursors can be evident before school starts. When this occurs in the developmental course, however, is variable:

- "He was a little slow to talk, and other people had trouble understanding him at first."
- "She talked on time, but she had a hard time learning to tie her shoes and button her clothing."
- "In kindergarten the teacher was concerned because he didn't learn his colors and letters."
- "She was happy until she got to first grade and the work got hard. By the end of the year she was often complaining of stomachaches in the morning."
- "The teacher was concerned in first grade because he wasn't catching on as fast as he should, so we decided to hold him back, but by the middle of second grade he was struggling again."
- "She never had any real problems until this year, in the fourth grade. Now she seems lost in a lot of her subjects, but it's worst in math."

- "We were always a little unsure of how things were going, but his grades were fine and the teachers never raised any concerns. Now, in the seventh grade, I'm seeing him struggling and discouraged, and his grades are dropping."

So, were the seeds of these problems always there, as the developmental theories just reviewed would suggest, or did the problems arise *de novo* at some point in the child's school career? If they were there early, why were they not apparent? How do we best understand developmental variation in the emergence of learning problems? If learning disorders are indeed developmental in origin, a lifespan perspective is required to make sense of them. But how can we study developmental precursors of learning problems if children are identified only after they begin to fail or struggle in school? To address these questions, we again turn to the scientific literature on reading, since only reading has been studied intensively. Principles derived from these studies, however, undoubtedly have broader application.

INFANT PRECURSORS OF READING PROBLEMS: INITIAL STUDIES

In an early attempt to circumvent the logical problem that learning disabilities can be identified only after a child fails in school, Hollis Scarborough (1990) devised a clever strategy. Although the genetics were only dimly understood at the time, it was common knowledge that reading problems cluster in families. Scarborough therefore recruited parents of 2-year-olds who themselves had a history of reading impairment. She then tracked the children's oral and written language development through the second grade, by which time it became clearer who had a reading disability. Three groups of children emerged: children of reading impaired parents who themselves developed reading problems; children of reading impaired parents who learned to read normally; and children of normally reading parents who also learned to read normally. Retrospectively, then, she could characterize language function as early as 30 months of age for these three groups.

It turned out that children of reading-impaired parents who themselves went on to become reading impaired displayed subtle problems in their language competence as toddlers. Although their scores on standardized language tests were unremarkable, as is often the case in this field, detailed analysis of their spontaneous language revealed subtle differences in grammar and pronunciation, differences that persisted through the preschool period.

From a developmental perspective, these reading difficulties did not spring from the blue but could be related to earlier, albeit subtle, problems in language development. Perhaps significantly, at-risk children who did not become reading impaired were more similar in their language competence to unimpaired children of normally reading parents. Thus, an early, presumably genetically influenced, neurodevelopmental variation can become elaborated epigenetically as a more florid reading problem.

Molfese and his colleagues pushed the developmental timeline back even earlier, collecting ERPs at birth. ERPs, as detailed earlier, measure the brain's neurophysiological response to different kinds of stimuli. It is a popular strategy for infant researchers because it signals whether a child can perceive different kinds of stimuli even though he or she is not yet capable of a volitional response. Newborn speech perception, as detected by ERPs, it turned out, predicted oral language function at 3 and 5 years of age (Molfese, Betz, Molfese, & Segalowitz, 1988; Molfese & Molfese, 1997) and ultimately single-word reading at 8 years of age (Molfese, 2000). These studies provided the first evidence of an endophenotype—a variation in neural function related specifically to speech perception and present from birth—that could be a developmental precursor of later reading problems. The model driving these studies, however, is still essentially *modular*: A presumed genetic risk codes for an initial difference in the language system that then affects the development of phonological awareness and ultimately reading.

The Jyväskylä Longitudinal Study of Dyslexia

The most comprehensive study of the precursors of reading is the Jyväskylä Longitudinal Study of Dyslexia (Lyytinen et al., 2001), an ambitious, population-based study from Finland that tracked children at family risk for reading impairment and a comparison group of children without known risk from birth through 9 years of age. The researchers initially surveyed all expectant families in the Finnish city of Jyväskylä and surrounding communities between 1993 and 1996, more than 8,000 in all. They eventually identified 410 parents with suspected dyslexia who were willing to participate in an individual assessment. Those who met the stringent criteria for the study (dyslexia in a parent and a close relative) were recruited. As in the Scarborough and Molfese studies, the primary hypothesis was that a speech perception deficit present at birth gives rise to dyslexia later in life. This study, however, also evaluated coexisting developmental issues, such as self-regulation, as well as infant motor development, temperament, and environmental factors that could

influence the emergence of a reading problem, thereby allowing for a more complex developmental model.

At school age, a child's risk for reading difficulty, not surprisingly, differed depending on whether the parent had reading impairment. Children in the "at-risk" group were three times as likely to be poor readers (Puolakano et al., 2007), and even adequate readers from that group were less advanced than those in the control group. As predicted, newborns in the at-risk group responded differently to speech sounds by ERP, and by 6 months, the groups displayed subtle but reliable differences in their ability to categorize speech sounds (Guttorm et al., 2005). Equally interesting, the reading-disabled parents of children in these two groups themselves perceived speech sounds differently (Lyytinen et al., 2004). By 2½ years of age, differences in receptive language skills were apparent.

Some of the findings, however, were less predictable. For example, the ERP difference was more prominent in the *right* hemisphere of the brain than in the language-dominant left hemisphere (Leppanen et al., 2002), suggesting not a defect in one part of the brain but a broader functional reorganization of the whole brain. These findings echo those of the Shaywitz group (Chapter 3), but suggest that the reorganization may not be a response to a single defective cognitive module; rather, some bias may be present early in life. If so, it would not be surprising that the cognitive issues these children display are not confined to a specific skill area, but can be more diverse.

Clinically, children in the at-risk group who talked late continued to exhibit language delays, whereas children in the control group who talked late were likely to catch up. Language competence predicted reading at school entry, but only for the children at familial risk.

A fascinating twist emerged, however, when the researchers considered motor development (Viholainen, Ahonen, Cantell, Lyytinen, & Lyytinen, 2002; Viholainen et al., 2006). At-risk children whose motor development was delayed during the first year of life had more limited vocabularies and shorter sentences at both 18 and 24 months and poorer language competence at 3 and 5 years of age. At age 7 the at-risk children with slow motor development read more poorly than children in the control group, even children in the control group with slow motor development. Children in the genetically at-risk group with good motor development, however, read as well as children in the control group! None of these groups differed in general cognitive ability or attentional competence. Thus, the poorer language and reading skills of the children at family risk appear to be referable almost entirely to the subgroup with slow motor development!

Why should this subgroup be at such great risk? And why did children with delayed motor development read normally if they had no family history of reading problems? One possibility is that the genetic mechanism that leads to impaired reading also affects motor development. If so, delayed motor development may be a marker for that mechanism. The researchers, however, proposed another potential pathway that could help to elaborate a developmental system in ways suggested in the previous chapter. They cite developmental psychology research that shows how independent locomotion dramatically alters the child's social, cognitive, and emotional environment (Campos et al., 2000). A crawling baby has a more restricted visual range in terms of both objects and people than a walking child. As the child learns to walk and move about more freely, opportunities for interaction increase substantially; interest in distant objects, in particular, increases, stimulating language development as well as joint attention and referential gestures. This developmental perspective raises the possibility that a genetically influenced risk (e.g., affecting auditory processing, motor development) can become amplified systemically through the child's interaction with the environment—a developmental cascade. In the spirit of Gottlieb's probabilistic epigenesis, Johnson's interactive specialization, and even Nottebohm's finches, cognitive and behavioral development is embedded in a system and not a simple linear path from gene to brain to behavior.

NONLINGUISTIC AUDITORY PROCESSING AND LANGUAGE DEVELOPMENT

Variation in speech perception, detectable as early as birth, can predict later reading and language competence. Yet even as simple a function as perception of a speech sound may itself depend on an even more fundamental element of auditory perceptual processing. In the mid-1970s, Tallal and Piercy (1975) reported that children with language impairment have difficulty accurately identifying not only speech sounds but also rapidly occurring nonlinguistic tones. The experimental paradigm is simple: Two tones of different pitch (e.g., low-low, low-high) are presented in sequence and the child presses a button to indicate whether the tones are the same or different. The tone pairs are separated by varying intervals (ranging from 10 to 250 milliseconds). At very brief intervals (70 milliseconds), children with language impairment had greater difficulty perceiving the tones. Because speech perception and discrimination depend on the ability to perceive fast transitions in the speech signal, Tallal argued, this very basic "low level" difference may evolve

to become manifest in speech perception and ultimately language development. Taking the hypothesis one step further, she demonstrated that children with dyslexia had difficulty discriminating rapidly presented tones, suggesting that perhaps this mechanism contributes to reading problems as well (Tallal, 1980).

These findings have provoked considerable, often vehement, debate. Tallal and her colleagues have developed interventions to train the brain to process fast transitions in the speech stream, which she and her colleagues claim can lead to improved language competence and possibly even improved reading (Scientific Learning, 2005; Tallal et al., 1996). Others have argued strenuously against her position, stressing that reading, in particular, depends on an ability to segment sounds at a phonological level (e.g., *cat* = /k/ + /at/), that the putative defect in auditory processing is not well proven, and that functionally it is simply irrelevant (Mody, Studdert-Kennedy, & Brady, 1997).

This dispute has been clarified somewhat by functional brain imaging studies. As it turns out, the same regions of the auditory cortex that process speech sounds also process the temporal changes in these non-speech sounds (Zaehle, Wustenberg, Meyer, & Jancke, 2004). Since these functions essentially share the same "real estate" in the brain, it is entirely plausible that dysfunction in that region could affect perception of both types of auditory stimuli. Whether one bears a causal relation to the other in a developmental sense, however, is less clear and perhaps not even meaningful.

One obvious question, however, is whether infants at familial risk for language and reading problems also process fast transitions of non-speech auditory stimuli differently. In fact, at 6 months of age infants with a family history of language learning impairment showed a poorer ERP response to rapidly presented nonlinguistic auditory stimuli (Benasich et al., 2006). Moreover, the infant's response to fast transitions, like the response to speech sounds, predicted language competence at 3 years. In Karmiloff-Smith's terms, these very subtle variations can be understood as *domain-relevant* features that become elaborated in the context of a developing system to more complex, *domain-specific* outcomes such as oral language and reading. Moreover, the same physiologically affected region of cortex could give rise to problems in multiple, more elaborated, functions. Thus, a genetic variant is likely to be associated with multiple domain-relevant neural variations. And the same genetic variant is likely to be expressed in multiple regions of the brain, as the brain is being constructed and also in adulthood. Reading may be the most prominent of these because it carries such a high social premium for today's children, but it is unlikely to be unique.

DEVELOPMENT OF LEARNING DISABILITIES

How does this research help us to understand learning problems? First, the infant studies provide convincing evidence that very early and often *subtle* biases in the system can become elaborated in the context of development, just as Gottlieb, Johnson, and Karmiloff-Smith suggest. Although the particular studies focus on language and reading, such biases are likely to occur in a variety of combinations, potentially resulting in multiple interacting pathways that could become troublesome in the school context. The outcome is further complicated by the systemic interactions that can either promote or diminish the impact of these underlying differences.

Some of the findings also lend support to a more systemic developmental approach. For example, in the Jyväskylä study, newborn ERPs detected differences in speech perception between children with or without a family history of dyslexia. However, the difference did not appear primarily in the language-dominant left hemisphere, as might be expected, but in the right, suggesting that a range of cognitive functions could be impacted by whatever the variation might be. Moreover, among the children in the at-risk group, only those with delayed motor development exhibited later language and reading problems. Again, the data from this important population-based study argue against a specific deficit and suggest a more systemic developmental process.

The intriguing role of the motor system invokes Gottlieb's concept of relational causality. Children do not develop by a program of maturational unfolding, nor is their development purely "shaped" like a Skinnerian pigeon. Rather, developmental science teaches that development is a complex transactional process. The Finnish researchers acknowledge this possibility, suggesting that a child whose motor development is advanced may be better able to *seek out* opportunities for language and communicative development—experience that can then feed back into the system. Environmental affordances could thus amplify the impact of a relatively subtle, genetically influenced, risk.

If this all sounds complex and confusing, it should! But as the vignettes at the beginning of this chapter reflect, the real-life phenomenology of children with learning problems is also complex and confusing, far more complex than much of the research and clinical literature admits. The perplexing heterogeneity of presentation by children with learning problems, however, can make far more sense in a systemic developmental framework.

So how do children diagnosed with learning disorders actually fare as they become adults? When a child encounters learning problems in

school, the parents may lie awake at night with nagging worries. They may fear that the child will become so discouraged by persistent struggles and failures that he or she will be crippled by psychological problems. They wonder whether and how the child will achieve the basic tasks of adulthood, being productive and satisfied at work, earning a good living, and having successful and rewarding friendships and family relationships. For most families, these outcomes are the bottom line, much more important than how well the child can actually read or compute. In 21st-century America, and in a competitive global economy, the educational bar is constantly being raised. Children must succeed at competency examinations to graduate from high school, and a college education is increasingly mandatory for a job that pays a good wage. Parents understandably may fear the worst when these goals appear to be in jeopardy. Is the anxiety justified, or is the reality more reassuring? Although research on long-term adult outcomes is sparse, consistent themes emerge. These themes, which are reviewed in the balance of this chapter, potentially inform the ways in which we understand and deal with children who "have" learning disorders and how we counsel their families.

WHEN LEARNING-DISABLED CHILDREN GROW UP

The Early Research on Long-Term Outcomes

The first comprehensive study of adult outcomes of learning-disabled children was conducted by Otfried Spreen in Vancouver, British Columbia. In a book entitled *Learning Disabled Children Growing Up*, Spreen (1988) described in great detail the lives of 255 young adults who had been evaluated for a learning disability when they were between 8 and 12 years of age. He evaluated these children at age 18 and then again at 25. Spreen found that the learning problems persisted to some degree in adulthood. Significantly, adjustment problems seemed to peak in adolescence and then decline. This developmental pattern would be replicated in other studies on adult outcomes.

Spreen painted a bleak picture. As adults, the learning-disabled individuals fared less well than their typically developing peers on nearly every life dimension: employment, income, physical and mental health, independent living, and social relationships. As young adults, a substantial number were living in supervised housing or with their parents. To quote Spreen, "Not only do these youngsters suffer through a miserable and usually shortened school career, live a discouraging social life, full of disappointments and failures, they also have fewer chances for adequate employment and advanced training" (p. 133).

The children in this study, however, were not representative of the universe of children with learning disorders. Although Spreen had excluded children with low IQ or significant emotional disturbance, approximately two-thirds of his participants had some kind of neurological impairment, such as epilepsy, accompanying the learning problems, and these more impaired children accounted for the poorer outcomes. Moreover, the children were first evaluated between 1966 and 1972, when there was little support for, or understanding of, children with learning problems, and the impact of the learning problems on life outcomes would presumably have been exacerbated.

Several years later, Maggie Bruck (1985) described a group of young adults from predominantly middle-class backgrounds in Montreal who had also been referred for diagnosis as children. Unlike Spreen, however, she excluded neurologically impaired children from the study. Her conclusions were very different. Although the learning issues persisted, they were by no means disabling in terms of fundamental life outcomes, work and family, when these individuals were compared to their unaffected siblings. As young adults, they had generally managed their learning issues well and were leading productive and satisfying lives despite their academic troubles as children. The absence of neurological impairment and their socioeconomic advantage presumably worked in their favor.

These early studies provided the first answers to questions at the heart of our concerns about learning disorders. Although the studies differed significantly in their methods and conclusions, both treated the early learning disorder and the adult outcome as a straightforward cause-and-effect relationship: learning disorder as cause, adult outcome as effect.

The next generation of researchers adopted a more nuanced developmental perspective, recognizing that the *context* within which a learning problem occurs—including factors internal to the child, such as temperament, and factors external to the child, such as family relationships—can also shape adult outcome. A child with a particular cognitive profile in one context can have a poor outcome as an adult, whereas a child in another context with a very similar profile can do quite well. In a developmental framework, in which the focus is broadly on the child rather than narrowly on the skill, *context is fundamental*. Its role in shaping the developmental course of learning disorders cannot be overemphasized.

Risk and Resilience in Children with Learning Disorders

Within this more developmental framework, researchers shifted their focus to factors that could *increase risk* or *promote resilience* for children with learning problems. The risk and resilience model, borrowed

from developmental psychopathology research (Garmezy, Garmezy, & Rutter, 1983), was most clearly articulated in relation to learning-disabled children by Morrison and Cosden (1997). For both the child and the family, they suggested, a learning disorder constitutes a developmental *risk*. The *significance and meaning* of this risk, however, depends to a great extent on contextual factors (within the child, within the family, within the community), which can themselves carry risk or, equally important, protect the child from adverse outcomes. Thus, for example, a child who is at familial risk for anxiety or depression may have greater difficulty coping with the effects of a learning disorder than a child who is more resilient affectively. Or a child from an immigrant family who does not have a parent who is able to advocate on his or her behalf can have greater difficulty coping with a learning disorder than will a child from a well-aculturated middle-class family with a strong parent advocate. At the same time, a child who has well-developed social skills and a supportive school environment may cope better with a learning disorder. In the long run, these risk and protective factors, many of which can be substantially influenced by the school and family, often have a far more potent impact on adult outcome and adjustment than the learning disorder itself.

Morrison and Cosden (1997) also noted the importance of the “fit” of the individual with the environment. The ecocultural system (Keogh & Weisner, 1993), they point out, can define the meaning of the learning disorder, and this meaning can have powerful effects on long-term outcome. As with many childhood problems, family context can be especially important. Parental acceptance of the learning problem and acknowledgment of the child’s strengths, be they in or out of school, can moderate the adverse impact of in-school stress. Whereas parental understanding can be protective, parental disappointment and rigidity about expectations can increase long-term psychosocial risk. Schools can also play a role. Children whose families become embroiled in contentious interactions with schools experience more stress, with adverse developmental consequences.

Importantly, within this framework of risk and resilience, Morrison and Cosden (1997) stress the crucial role that schools can play, above and beyond their didactic function, in the psychosocial development of children with learning disorders:

To date many interventions have focused on remediation of academic problems associated with a learning disability. The diagnosis of a learning disability typically sets into motion a set of academic and school structure modifications. These interventions have a heavy emphasis on the academic needs. However, what can be done to prevent complications beyond these

academic needs? Further knowledge about risk and protective factors may help guide programs in these areas. (p. 56)

In other words, schools and families need to focus on children, not just skills.

The Children of Kauai

Although Morrison and Cosden (1997) articulated a well-developed version of a risk and resilience model for understanding learning disorders, it was Werner and Smith who first applied this approach to learning problems in their landmark epidemiological study of child development (Werner, 1993; Werner & Smith, 1992). This study tracked the development of 698 children on the Hawaiian Island of Kauai from their birth in 1955 until they were 40 years old. Epidemiological studies are particularly valuable because their findings are representative of the population at large and are not plagued by the potential bias inherent in studies that use other methods to assemble a sample. Werner and Smith followed the development of every child in the birth cohort. The remarkable length of this study, moreover, provided an opportunity to observe lifespan developmental trajectories.

Within this large epidemiological sample, 22 children were found to be learning disabled at 10 years of age (Werner, 1993). The schools had identified them for special services, and they also met a variety of clinical criteria. By today's standards, these children would be considered significantly learning impaired. As is typical in populations of children with learning disabilities, there were almost twice as many boys (14) as girls (8). Equally important, 75% came from low-income families. A control group, matched for sex, socioeconomic status, and ethnicity, was selected from the larger sample.

Because these children had been followed from birth, their early development could be examined retrospectively. Not surprisingly, the learning-disabled children had an increased history of biological risk (e.g., low birthweight, perinatal complications), and they already exhibited behavioral differences by 1 year of age. They were less affectionate and cuddly, and their mothers were viewed by social workers as more erratic and worrisome. To what extent these differences in parenting skills were a characteristic of the mothers themselves, reflected their response to a difficult baby, or both, is important to consider. This question highlights the social dynamic that can emerge in response to a child's neurodevelopmental trajectory, and, moreover, the tightly knit and potentially cascading interactions between biology and environment that can play themselves out through development. By age 2 these chil-

dren were described as more awkward, distractible, and fearful. Their mothers were described either as careless and indifferent or as overprotective, again suggesting potential effects of caring for a difficult infant on the mother-child dynamic. Their physical and motor development was also more likely to have been delayed.

At age 10, the children's mean IQ was only 88, compared to 100 for the controls. Given their combined social disadvantage and developmental course, this was indeed a high-risk group. Between the ages of 10 and 18, 80% had contact with a community agency, more than any other risk group in the study and nine times higher than the controls. One of three had been referred to the Department of Education for truancy and poor school attendance, indicative of a poorly managed learning disorder; children become discouraged and disengaged from school as they encounter repeated failure. These children were twice as likely as the children in the larger cohort to have had contact with the judicial system, mostly for repetitive, impulsive behavior.

At age 18 their academic skills were still significantly delayed, particularly in reading and writing; they exhibited persistent visuomotor deficits; and they had significant psychosocial problems. They had little sense of agency: they believed that events controlled them, not that they had the power to control, or even affect, the events in their own lives. Most had only vague plans for the future, had poor social relations, and felt limited support or understanding from their parents. Only a quarter had shown improvement in their general functioning; the individuals who did show progress cited the emotional support that they had received from family members, peers, or elders who had bolstered their self-esteem. Most felt that the counselors or mental health professionals they encountered had not been particularly helpful.

What the researchers discovered when they next visited these young adults at age 32 surprised them, however (Werner & Smith, 2001). Their situations had improved dramatically. Fewer than 10% had persistent mental health problems or criminal records; the majority (75%) were satisfied with their job performance, social relationships, and marriages; and none was unemployed or on welfare. Most worked in service jobs or as skilled technicians, and half had undertaken further education after high school. By age 40 the same 75% continued to enjoy successful adaptation to the challenges of adulthood. The men were working as skilled workers or technicians in construction, and the women were engaged predominantly in service jobs or health care. Most were very satisfied with their lives.

This outcome is surprising and remarkable, given the very grim start to these children's lives, their predominant social disadvantage, and their troubled and unhappy school careers. To quote Werner and Smith

(2001), "Truly, the 'odds were against them,' yet with few exceptions they have grown into responsible adults who hold down a steady job, have stable marriages and are caring parents" (p. 139). This story is not one of bleak outcomes but of individuals with a desire for a successful life, who apparently understood that they could be more successful in the world of employment and family than they had been in their demoralizing lives as students.

Werner and Smith (2001) identified factors that protected children who overcame their early problems: a temperament that elicited positive responses from caring people around them, special skills and talents, mothers who nurtured self-esteem, supportive adults outside the family who helped them find their path to a satisfying future, and opportunities at major life transitions. Like Morrison and Cosden (1997), Werner and Smith point out "the need to *look beyond the horizons of special education* to ways in which we can provide a continuum of services that reduce the likelihood of negative chain reactions associated with a learning disability" (p. 140, emphasis added). In other words, interventions need to be oriented toward the potential developmental cascade, not just the discrete skill.

The children of Kauai teach another key lesson: Children whose skill set may be ill adapted to the very narrow and specific academic requirements of school can be well adapted as adults for the more diverse world of work, if they can identify their niche. Yet school can be so discouraging, at times irrelevant, and blind to their assets that it can take many years for them to recover a sense of self-efficacy and find their way.

The Frostig Center

These same themes emerged from another study, which collected the life stories of children who had attended a school for the learning disabled. The Frostig Center was established in 1951 in California by Marianne Frostig, well before the learning disability diagnosis was formalized and accepted. Researchers wanted to find out what had become of children who had left the school between 1958 and 1965, when they became young adults, and subsequently as mature adults. In this era preceding the formal acceptance of learning disabilities, these students were likely to have been severely affected. In contrast to the Kauai sample, these children mostly came from families with significant economic resources, who had the means to support the substantial private school tuition.

The children were followed up 10 years (Spekman, Goldberg, & Herman, 1992) and then 20 years after they left the school (Goldberg,

Higgins, Raskind, & Herman, 2003; Raskind, Goldberg, Higgins, & Herman, 1999). Although this project was not as large or methodologically sophisticated as the Kauai study and the children were not representative of the population, its conclusions echoed those of the Kauai study.

At 10 years after graduation, when the children were between 18 and 25 years old, the researchers classified the young adults as either successful or not successful based on a collection of life tasks (e.g., employment, education, family relationships, community relations/interests). They then identified the factors that accounted for success or lack of success. There were surprisingly few differences between the groups in quantifiable background variables, such as cognitive ability, academic achievement, or socioeconomic status. What primarily differentiated them were what the researchers called "success attributes." Specifically, successful young adults had made a realistic adaptation to their learning problems, had greater self-awareness of their problems and how they affected them, were more proactive and persevering, and were more emotionally stable. They were also good at setting goals for themselves and pursuing them. Finally, these people had effective supports (e.g., family members, other supportive adults or peers), and they used these supports well.

Ten years later, that is, 20 years after these individuals had left the school, the researchers once again contacted them, obtained current academic and cognitive testing, and explored further the "success attributes" that they had previously observed (Goldberg et al., 2003). Perhaps the most significant finding from the entire study emerged from the participants' responses to a simple question: "Rate in retrospect how stressful the learning disability was during different periods in your life." The trajectory of this rating tells the essential story: The learning disability was highly stressful in elementary school, then declined in adolescence and even more in adulthood, becoming relatively minor by the time of the interviews (Figure 4.1). Thus, rather than becoming more disabling, as parents so often fear, the reverse was actually the case! The stress of the learning disability in the early years seemed to have cascading effects for many children, involving frequent changes of school, the need to make new friends, and teasing from peers. Even though their academic skills had continued to improve, these adults' skills nonetheless remained quite diminished (only 10th-grade reading level and 9th-grade math). Thus, the stress levels did not decline because they had outgrown the learning disability; rather, these people had discovered niches and strategies for themselves that made academic skills less of an issue. Once school was out of the picture, they found ways to be productive and satisfied with their lives that allowed them to draw on their strengths.

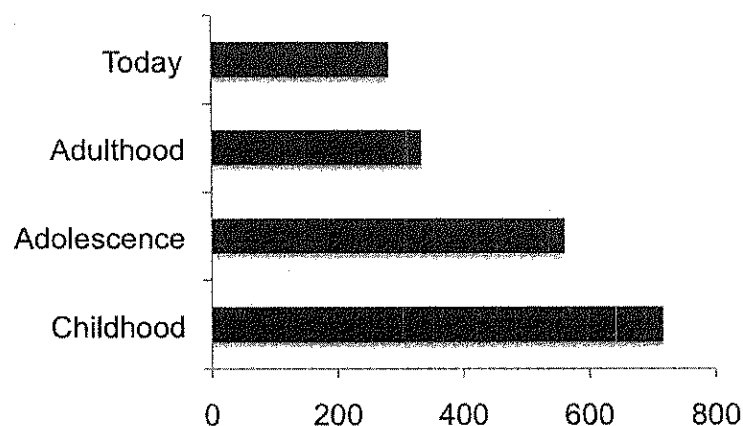


FIGURE 4.1. Retrospective ratings among adults, on a scale of 0 to 1,000, of the stressfulness of a learning disability during different life periods. From Raskind, Goldberg, Higgins, and Herman (1999, Table 2). Copyright 1999 by the Division for Learning Disabilities of the Council for Exceptional Children. Adapted by permission.

In terms of successful adaptation to adulthood, as in the Kauai study, there was considerable continuity over time; individuals who had been unsuccessful at 10 years had not changed their status at 20 years. Despite their academic difficulties, approximately half the individuals had attended college and a quarter had graduated. Whereas 75% were still living with their parents at year 10, this number had dropped to 42% by year 20, a number that is still high relative to the general population. There was a high rate of psychiatric disturbances (approximately 40%), but these diagnoses also did not differentiate the groups. The researchers speculated, however, that special education settings during the era when these people had attended the Frostig School were much more likely to have included children with significant comorbid behavioral or emotional problems.

Again, at 20 years, quantifiable background variables generally did not discriminate the groups. What did discriminate clearly were the same "success attributes"—self-awareness, proactivity, perseverance, goal setting, and use of support systems. These personal attributes were actually far more closely linked to adult success than were IQ, academic achievement, life stressors, age, gender, socioeconomic status, or ethnicity. Noting this primary finding, the researchers comment provocatively, in the vein of Morrison and Cosden (1997), that "one might question the

validity of approaches that *focus almost exclusively on remediation of academic deficits*" (p. 46).

COMMENTARY

Several key themes emerge from these studies. First, a learning disability, whatever its specifics, has a *developmental course*. Children are most distressed by their learning disabilities in the early years of school. As time goes on, for many, especially after they leave school, the learning issues are of less concern, as they choose vocations for which their skill set is more appropriate. As these individuals settle into adulthood, they find their niche, and their successful adaptation is related as much to personal qualities as to academic skills. Moreover, early adulthood appears to be a watershed developmental moment in terms of adaptation; in both studies, those who were doing well in their 20s continued to do well, and those who were not doing well did not recover.

Second, and related, children can be protected from risks as they mature into adulthood by the *social context*, primarily supportive adults (parents and other key adults), and *personal qualities* (perseverance, other nonacademic skills, insight into themselves). Although a learning disorder is a risk, other important factors can either diminish or exacerbate its impact. Third, although impaired academic skills are an important piece of the picture, *academic skills are only one component*, and broader personal and ecological factors can have a far more significant impact on life outcomes.

A developmental approach conceptualizes learning problems as an issue of *adaptation*, rather than as a discrete deficit in need of repair. A child's ability to successfully adapt to the demands of schooling depends in part on his or her complement of skills (including academic skills, of course), attitudes, emotions, and proclivities and in part on the demands of the environment. When learning problems are defined in this way, what then does the child with learning problems look like? The next chapter reviews research that addresses this question.