CHAPTER 1
Language skills and learning to read: the dyslexia spectrum

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Children vary in the age at which they first start to talk. For many families, late talking might go unnoticed, particularly if the child in question is the first born of the family and no comparisons can be made. Later in the preschool years, children may be difficult to understand; they might have a large repertoire of their 'own words' that others find unintelligible. Such utterances are often endearing, the source of family amusement, and no one worries much because an older sibling can translate. But speech or language delay can be the first sign of reading difficulties, difficulties that will come to the fore only when the child starts school; a key issue therefore is when is 'late talking' a concern, and when is it just part of typical variation?

Language is a complex system that requires the coordinated action of four interacting subsystems. *Phonology* is the system that maps speech sounds on to meanings, and meanings are part of the *semantic system*. *Grammar* is concerned with syntax and morphology (the way in which words and word parts are combined to convey different meanings), and *pragmatics* is concerned with language use. An assumption of our educational system is that by the time children start school, the majority are competent users of their native language. This is a reasonable assumption, but those who are not 'very good with words' start out at a disadvantage, not only in speaking and listening skills, but also, as this book will demonstrate, in learning to read.

Thus, oral language abilities are the foundation for later developing literacy skills. It is, however, important to distinguish *speech skills* from *language abilities* when considering literacy development. Learning to read in an alphabetic system, such as English, requires the development of mappings between speech sounds and letters – the so-called *alphabetic principle* – and this depends on speech skills. Wider language skills are required to understand the meanings of words and sentences, to integrate these into

texts and to make inferences that go beyond the printed words. Before examining evidence concerning how language difficulties compromise literacy in dyslexia and related disorders, we begin with a short historical review of the concept of dyslexia.

The concept of dyslexia

Arguably, the scientific study of dyslexia first came to prominence in the late 1960s when one of the main issues of debate was whether 'dyslexia' was different from plain poor reading. Studies of whole-child populations, notably the epidemiological studies of Rutter and his colleagues, provided data about what differentiated children with *specific* reading problems (dyslexia) from those who were slow in reading but for whom reading was in line with general cognitive ability (Rutter and Yule, 1975). The results of these studies were not good for proponents of the 'special' condition of dyslexia. In fact, there were relatively few differences in aetiology between children with specific reading difficulty and the group they described as generally 'backward readers'. The group differences that were found included a higher preponderance of males among children with specific reading difficulties and more specific delays and difficulties with speech and language development. On the other side of the coin, the generally backward group showed more hard signs of brain damage, for example cerebral palsy and epilepsy. Important at the time, the two groups differed in the progress they had made at a 2 year follow-up. Contrary to what might have been expected on the basis of their IQ, the children with specific reading difficulties (who had a higher IQ) made less progress in reading than the generally backward readers. This finding suggested that their problems were intransigent, perhaps because of some rather specific cognitive deficit. Note, however, that this differential progress rate has not been replicated in more recent studies (Shaywitz et al., 1992), perhaps because advances in knowledge have led to better interventions (see Snowling, 2000, for a review).

Following on from these large-scale studies, the use of the term 'dyslexia' became something of a taboo in educational circles. Instead, children were described as having specific reading difficulties or specific learning disability if there was a *discrepancy* between their expected attainment in reading, as predicted by age and IQ, and their actual reading attainment. The use of IQ as part of the definition of 'dyslexia' has, however, fallen from favour. First, IQ is not strongly related to reading. Indeed, many children with a low IQ can read perfectly well even though they may encounter reading comprehension difficulties. Second, and perhaps more importantly, measures of verbal IQ may underestimate cognitive ability among poor

readers who have mild language impairments. As a result, adherence to the 'discrepancy definition' of dyslexia can disadvantage those children with the most severe problems whose apparently low verbal IQ may obscure the 'specificity' of the reading problem.

Another problem with the discrepancy definition of dyslexia is that it cannot be used to identify younger children who are too young yet to show a discrepancy. In fact, many children who fail to fulfil diagnostic criteria at one age may do so later in the school years (Snowling, Bishop and Stothard, 2000). Moreover, the definition is silent with regard to the 'risk' signs for dyslexia, and how to diagnose dyslexia in young people who may have overcome basic literacy difficulties. What is needed to get around these difficulties is a set of positive diagnostic criteria for dyslexia. It is just such criteria that have been sought by psychologists working in the field of reading disabilities.

Cognitive deficits in dyslexia

At about the same time as the first epidemiological studies were being conducted, cognitive psychologists began comparing groups of normal readers and readers with dyslexia using a range of experimental paradigms. In a landmark review, Vellutino (1979) synthesized the extant evidence to propose the *verbal deficit hypothesis*. According to this hypothesis, children with dyslexia are subject to problems centring on the verbal coding of information that create specific problems for learning to read in an alphabetic script. Arguably, since that time, the most widely accepted view of dyslexia has been that it can be considered to be part of the continuum of language disorders. There has, however, been a gradual shift from the verbal deficit hypothesis to a more specific theory: that dyslexia is characterized by phonological processing difficulties (see Vellutino et al., 2004, for an updated review).

Children with dyslexia typically have difficulties that primarily affect the phonological domain; the most consistently reported phonological difficulties are limitations of verbal short-term memory and, more directly related to their reading problems, problems with phonological awareness. There is also evidence that children with dyslexia have trouble with long-term verbal learning. This problem may account for many classroom difficulties, including problems memorizing the days of the week or the months of the year, mastering multiplication tables and learning a foreign language. In a similar vein, this problem may be responsible for the word-finding difficulties and poor vocabulary development often observed in children with dyslexia.

Before proceeding, it is important to note that a number of authors have argued that difficulties with phonological awareness are not a universal

phenomenon in dyslexia. Instead, children learning to read in more regular or transparent orthographies than English, in which the relationships between spellings and their sounds are consistent (e.g. German, Italian, Spanish or Greek), learn to decode quickly, while at the same time rapidly acquiring an awareness of the phonemic structure of spoken words (Ziegler and Goswami, 2005). It follows that, in these languages, deficits in phonological awareness are less good markers of dyslexia. Instead, impairments of phonological processing, such as rapid naming or poor verbal memory, are more sensitive diagnostic signs in these writing systems. Notwithstanding this proviso, the strength of the evidence pointing to the phonological deficits associated with dyslexia has led Stanovich and his colleagues to propose that dyslexia should be defined as a core phonological deficit. Importantly, within the *phonological core-variable difference* model of dyslexia (Stanovich and Siegel, 1994), poor phonology is related to poor reading performance irrespective of IQ and also, it seems, irrespective of language background (Caravolas, 2005; Goulandris, 2003).

Phonological representations, learning to read and dyslexia

Although the role of visual deficits in dyslexia continues to be debated (Stein and Talcott, 1999), the best candidate for the cause of dyslexia is an underlying phonological deficit. A useful way in which to think about this is that children with dyslexia come to the task of learning to read with poorly specified phonological representations – the way in which their brain codes phonology is less efficient than that of normally developing readers. As we have seen, this problem at the level of phonological representation causes a range of typical symptoms, such as those described above. It is, however, important to understand why a deficit in *spoken* language should affect the acquisition of *written* language.

Studies of normal reading development offer a framework for considering the role of phonological representations in learning to read and for understanding the problems of dyslexia. At the basic level, learning to read requires the child to establish a set of mappings between the letters (graphemes) of printed words and the speech sounds (phonemes) of spoken words. These mappings between orthography and phonology allow novel words to be decoded and provide a foundation for the acquisition of later and more automatic reading skills. In English, they also provide a scaffold for learning multi-letter (e.g. 'ough', 'igh'), morphemic ('-tion', '-cian') and inconsistent ('-ea') spelling–sound correspondences. Indeed, the early developing ability of the child to 'invent' spellings that are primitive

phonetic transcriptions of spoken words (e.g. <LEVNT> for ELEPHANT) is one of the best predictors of later reading and spelling success (Caravolas, Hulme and Snowling, 2001). More broadly, there are strong relationships between phonological skills and reading ability throughout development and into adulthood, when the phonological deficits of people with dyslexia persist (Bruck, 1992).

More formally, the relationship between oral and written language skills has been simulated in computational models of the reading process. In the triangle model of Plaut and colleagues (shown in Figure 1.1), reading is conceptualized as the interaction of a *phonological pathway* mapping between letters and sounds and a *semantic pathway* mapping between letters and sounds via meanings (Plaut et al., 1996). In the early stages of learning to read, children's attention is devoted to establishing the phonological pathway ('*phonics*'). Later, children begin to rely increasingly on word meanings to gain fluency in their reading. We can think of this as an increase in the role of the semantic pathway, something which is particularly important for reading exception words in English, such as YACHT and PINT, words that cannot be processed efficiently by the phonological pathway. Arguably, however, this model is limited for considering the risk of reading difficulties among children with spoken language impairments; the model is of single-word reading, but most reading takes place in context. Language skills that encompass grammar and pragmatics are needed for making use of context. Children with dyslexia do not typically have problems with these processes, but children with wider language difficulties almost certainly do.

Within this model of reading development, deficits at the level of phonological representation constrain the reading development of children with dyslexia (Snowling, 2000). A consequence is that although such children

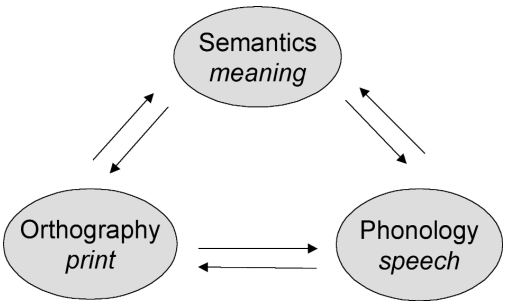

Figure 1.1 Triangle model of reading (after Seidenberg and McClelland, 1989). In this model, the mappings between orthography to phonology comprise the phonological pathway; mappings between orthography and phonology via semantics comprise the semantic pathway.

may learn to read words by rote (possibly relying heavily on context), they have difficulty generalizing this knowledge. For English readers with dyslexia, a notable consequence is poor non-word reading (Rack, Snowling and Olson, 1992). In contrast, the semantic skills of readers with dyslexia are, by definition, within the normal range, and these can be used to facilitate the development of word reading (Nation and Snowling, 1998a).

In short, learning to read is an interactive process to which the child brings all of his or her linguistic resources. It is, however, phonological processing that is most strongly related to the development of reading and the source of most dyslexic problems in reading and spelling. The phonological representations hypothesis therefore provides a parsimonious explanation of the disparate symptoms of dyslexia that persist through school to adulthood. It also makes contact with theories of normal reading development and with scientific studies of intervention. Here, the consensus view is that interventions that promote phonological awareness in the context of a highly structured approach to the teaching of reading have a positive effect in both preventing reading failure and ameliorating dyslexic reading difficulties (see Chapter 9 in this volume; Troia, 1999). There is also biological evidence in support of the theory.

Biological evidence in support of the phonological deficit hypothesis

It has been known for many years that poor reading tends to run in families, and there is now conclusive evidence that dyslexia is heritable. Gene markers have been identified on chromosomes 6, 15 and 18, but we are still a long way from understanding the precise genetic mechanisms involved. What we do know is there is as much as a 50 per cent probability of a boy becoming dyslexic if his father is dyslexic (about 40 per cent if his mother is affected) and a somewhat lower probability of a girl developing dyslexia. What is inherited is not of course reading disability *per se* but the risk of reading problems, mediated via speech and language delays and difficulties. The results of large-scale twin studies suggest that there is heritability of the phonological ('phonic') aspects of reading and that phonological awareness shares heritable variance with this (Olson, Forsberg and Wise, 1994).

Studies of readers with dyslexia using brain imaging techniques also supply a piece in the jigsaw (see Chapter 3 in this volume). In one such study, we investigated differences in brain function between dyslexic and normal readers while they performed two phonological processing tasks (Paulesu et al., 1996). This study involved five young adults with a well-documented history of dyslexia; all of these people had overcome their reading difficulties, but they had residual problems with phonological awareness. Under positron

emission tomography scanning, they completed two sets of parallel tasks. The phonological tasks were a rhyme judgement and a verbal short-term memory task; the visual tasks were visual similarity judgement and visual short-term memory. Although these adults with dyslexia performed as well as controls on the experimental tasks, they showed different patterns of left hemisphere brain activation from controls during performance on the phonological processing tasks. The brain regions associated with reduced activity were those involved in the transmission of language and, plausibly, allowed the translation between the perception and the production of speech. It is therefore possible to speculate that this area may be the 'seat' of the problems viewed at the cognitive level, as a difficulty in setting up phonological representations.

Individual differences in dyslexia

A significant issue for the phonological representation view is that of individual differences. The phonological deficit theory has no difficulty explaining the problems of a child with poor word attack skills, who cannot read non-words and whose spelling is dysphonetic (Snowling, Stackhouse and Rack, 1986). There are also, however, children with dyslexia who appear to have mastered alphabetic skills. Such children have been referred to as developmental 'surface' dyslexics. The classic characteristic of these children is that, in single-word reading, they rely heavily upon a phonological strategy. They thus tend to pronounce irregular words as though they were regular (e.g. <glove> ➛ "gloave", <island> ➛ "island"), they have particular difficulty distinguishing between written homophones such as <pear> – <pair> and <leek> – <leak>, and their spelling is usually phonetic (e.g. BISCUIT ➛ <biskt>, PHARMACIST ➛ <farmasist>).

Although evidence in favour of distinct subtypes is lacking, most systematic studies of individual differences among children with dyslexia have revealed variations in their reading skills (Castles and Coltheart, 1993). One way of characterizing children's reading strategies is to assess how well they can decode words they have not seen before (e.g. using a non-word reading test) and to compare this with how well they recognize words that they cannot 'sound out', such as irregular or exception words that do not conform to English spelling rules. A number of studies have now shown that poor readers who have relatively more difficulty in reading non-words than exception words (phonological dyslexia) perform significantly less well than younger, reading age-matched controls on tests of phonological awareness. In contrast, children who have more difficulty with exception words than non-words (surface dyslexia) perform at a similar level to that of controls on these tests.

Arguably, findings of individual variation have directed the field in different ways. Some theorists have hypothesized that deficits other than the phonological deficit must be implicated in the aetiology of dyslexia, whereas others have proposed dimensions of variation. Two prominent alternate theories are the magnocellular deficit (Stein and Talcott, 1999) and the cerebellar deficit (Fawcett and Nicolson, 1999) theories. However, in contrast to the phonological deficit hypothesis, evidence in support of these theories is equivocal (Ramus et al., 2003). Moreover, it is important to note that neither theory refutes the evidence for the phonological processing problems of dyslexia. Instead, they seek a more basic cause for these deficits. It falls to these theorists to demonstrate that their theories explain both a necessary and a sufficient cause of dyslexia.

More generally, however, it does not seem useful to classify children with dyslexia into subtypes because all taxonomies leave a substantial number of children unclassified. Instead, individual differences in phonological processing, as measured by performance on tests of phonological awareness and phonological memory, predict individual differences in non-word reading, even when reading age has already been taken into account (Griffiths and Snowling, 2002). In essence, the more severe a child's phonological deficit, the greater his or her impairment in non-word reading. In contrast, variations in exception word reading appear to be tied to reading experience, reflecting the fact that print exposure is required to learn about the inconsistencies of the English orthographic system. As we saw earlier, exception-word reading builds on a foundation of grapheme–phoneme mappings, but it is also supported by semantics. To this extent, exception-word reading may develop independently of decoding skill in some children with dyslexia, forging a pattern of 'phonological dyslexia' at the behavioural level.

The issue of co-morbidity

Some of the apparent difference between children with dyslexia may depend on what is known as *co-morbidity*. Co-morbidity refers to the fact that there is a high probability that any developmental disorder will co-occur with at least one other disorder. Commonly co-occurring with dyslexia are difficulties with coordination (dyspraxia) or with attention control (attention-deficit hyperactivity disorder, or ADHD). The cause of this co-morbidity may be the sharing of brain mechanisms involved in the two disorders or the sharing of similar risk factors (e.g. family adversity).

In cases of children with co-morbid disorders, it is easy to mistake a behavioural symptom of one disorder for that of the other. Many children with dyslexia are clumsy, but not all are, by any means. It is therefore important not to build a theory of dyslexia on the assumption that motor impairments play a causal role. Similarly, one of the key cognitive features

of ADHD is a difficulty in controlling and allocating attention, both aspects of executive function. A behavioural marker of poor executive skill is a problem of organization. Many children with dyslexia are poorly organized; it is not yet known whether this difficulty is central to their dyslexia, a consequence of it or a problem associated with a mild form of co-morbid ADHD.

Finally, and of considerable theoretical importance, the behavioural profile of children with dyslexia may change with age. Studies of the early language development of the children who go on to become dyslexic point to language impairments outside the phonological system, encompassing slow vocabulary development and grammatical delays (Scarborough, 1990). In the same way, children who have specific difficulties in reading comprehension may develop decoding problems at a later stage in their development because their language skills are not sufficiently strong to bootstrap word recognition (Snowling, Bishop and Stothard, 2000).

Language skills and learning to read: risk and protective factors

Given that we can now take as established the fact that children with dyslexia have phonological deficits, the research agenda turns to a consideration of how this risk is shared by other groups of vulnerable children. Furthermore, we need to understand how the risk of reading problems can be modified in children who compensate well. In order to understand the interplay between risk and protective factors in children's literacy development, it is important to begin by considering the reading impairment that affects children who have been called 'poor comprehenders'. Such children (who are considered in detail in Chapter 7 in this volume) have normal decoding skills but impaired reading comprehension. Important for the present argument is the fact that poor comprehenders perform at the normal level for their age on phonological tasks but have semantic processing deficits. Indeed, as we have argued elsewhere, poor comprehenders can be considered to be the 'mirror image' of those with dyslexia (Nation and Snowling, 1998a). Where children with dyslexia have phonological deficits, poor comprehenders have semantic deficits; where children with dyslexia have decoding deficits, poor comprehenders decode well but have problems of comprehension not shared with dyslexia; where children with dyslexia reap a huge benefit from reading in context, poor comprehenders do not.

Thus, findings from children with dyslexia and children with selective deficits of reading comprehension (in its extreme form referred to as *hyperlexia*) suggest that there is a degree of modularity in the developing reading system. Furthermore, they confirm the fact that poor phonology should be considered to be a risk factor for problems of word recognition, whereas

semantic impairments (principally poor vocabulary) carry the risk of poor reading comprehension. But pure disorders are rare in development, and children's reading difficulties more commonly reflect the balance of their language strengths and weaknesses, modified by any interventions they have received.

The interaction of different language skills in determining the literacy outcomes of children at risk of reading failure can be seen clearly in studies of children at family risk of dyslexia. For example, Snowling, Gallagher and Frith (2003) followed the progress of preschool children, recruited just before their fourth birthday, who were considered to be 'at risk' of dyslexia. The risk in this case was carried by virtue of the fact that they had a parent with a history of reading difficulties, and it is interesting to note that some 38 per cent of these children were late talkers. The children in the 'at-risk' study were assessed at 4, 6 and 8 years of age on a large battery of tests of language and reading-related tasks. At each point in time, they were compared with children in a control group who came from families with no history of reading impairment but of similar socioeconomic status. As predicted, at 8 years of age, there was an increased risk of poor reading and spelling among the children at family risk of dyslexia. The definition of poor literacy was having literacy skills one standard deviation below the average of the control group of similar socioeconomic status. In relation to this norm, 66 per cent of the family sample was affected.

It was then possible to compare the developmental profiles of the at-risk affected children (who became poor readers), those 'at-risk' children who became normal readers and the control group. Figure 1.2a shows the performance of the three groups of children on the language and phonological tasks at 4 and at 6 years of age. At 4 years, the oral language development of the poor readers was slow compared with that of the two normal reader groups. At 6 years, the poor readers were already showing difficulty with phonological awareness tasks, particularly phoneme awareness, after only a short time of reading instruction. On phonological awareness tasks, the 'at-risk' normal readers were not statistically different from the control group, but it is interesting to note that there was a trend for them to be slightly worse than controls, which was not seen for oral language development.

Figure 1.2b shows the performance of the groups on tests of early literacy skill. Here, the picture is somewhat different. As expected, the poor readers were impaired in letter knowledge and on a test of phonic skill (derived from the number of non-words they could read and the phonetic accuracy of their spellings). However, the performance of the 'at-risk' children who went on to be normal readers was also less good than that of controls: it was midway between that of the controls and the poor readers on the test of letter knowledge, and as poor as the affected group on the phonetic spelling test.

In summary, the 'at-risk' children who went on to be poor readers had impairments on a wide range of measures, including phonological awareness and letter knowledge, as well as in measures of oral language skills including vocabulary and expressive grammar. The 'at-risk' children who

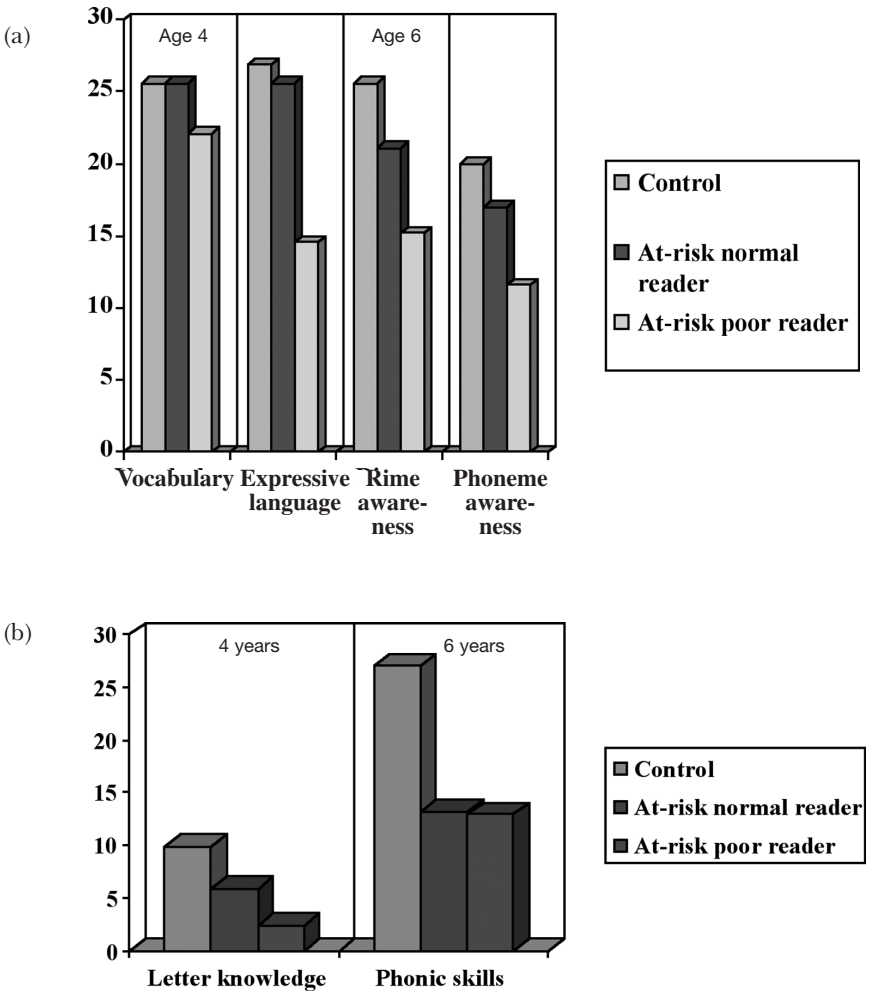

Figure 1.2 Performance of control, at-risk normal and at-risk poor readers on tests of reading and language (after Snowling, Gallagher and Frith, 2003). (a) The 'at-risk' children who went on to be poor readers were delayed in their early language development (at 4 years) and in the development of phonological awareness (at 6 years). (b) The 'at-risk' children who went on to be normal readers at 8 years of age showed early literacy problems; their letter knowledge was moderately impaired at 4 years, and they were impaired in translating between graphemes and phonemes at 6 years.

went on to be normal readers were as poor as the poor readers in phonological reading and spelling skills (phonics), and they were moderately impaired in letter knowledge, but their (non-phonological) oral language development was normal. Because these children did not succumb to reading deficits at 8 years of age, we must assume that they were able to compensate for the phonic decoding deficit they experienced, possibly by relying on their good language skills.

We can conclude that the risk of reading impairment is not all or none. Among children whose parents are dyslexic, there are a number of different outcomes. These include: a pervasive reading impairment affecting both word recognition and reading comprehension associated with poor language; classic dyslexia; a 'hidden' (compensated) reading impairment; and a pattern of normal reading. It seems that the developmental outcome for children at risk of poor reading depends not only on how severe their phonological difficulties are, but also on the other language skills they bring to the task of learning. Those who have good vocabulary and wider language skills are likely to be able to compensate better, modifying the genetic risk they carry of becoming dyslexic.

The findings of high-risk studies, such as the one described above (see also Pennington and Lefly, 2001) have implications for the way in which we conceptualize dyslexia. Throughout its history, dyslexia has defied definition, and perhaps rightly so. There are no strict criteria that can be used to make a cut-off between dyslexia and other forms of reading difficulty that affect decoding skills. In almost all such cases, the disorders are associated with phonological deficits, albeit to varying degrees. Although it is true that a relatively small proportion of children (the prevalence depending upon the exact criteria used) fulfil the formal criteria for reading disorder (e.g. American Psychiatric Association, 1994), others may fulfil the criteria at one time and not another, and others may be just below the threshold for 'diagnosis'. One way out of this dilemma is to talk of degrees of dyslexia, for example *mild*, *moderate* and *severe*, but again the criteria would not be readily agreed. Instead, it seems appropriate to begin to abandon categorical diagnoses for cognitive disorders that are, by definition, both developmental and interactive (Bishop and Snowling, 2004).

In short, children come to the task of learning to read with differing patterns of language strength and difficulty. The language skills they bring to reading will determine how easily they can learn, the pitfalls they will face and the compensatory strategies they will use. But learning to read does not take place in a vacuum. The nature of children's difficulty in learning to read will be conditioned by the language in which they learn – some languages are 'transparent' and easier to learn than others – and the family, school and culture in which they learn will also have a profound influence. Importantly for children who have phonological weaknesses and

are therefore at risk of reading problems, wider language skills can mitigate that risk. It goes without saying that another critical protective factor is early intervention, as clearly demonstrated by the evidence reviewed in Chapter 9 in this volume.

Conclusions

This chapter began by distinguishing the role of speech and of language skills in the development of reading: whereas phonological skills are the foundation of word-recognition processes in reading, wider language skills are critical to text comprehension (Muter et al., 2004). We currently know something about the role of vocabulary and semantic skills in learning to read, but grammar and pragmatics are likely to be important too, particularly in explaining how children use context during their reading. The findings from developmental disorders suggest that speech and language skills work in interaction to determine literacy outcomes. At the core of reading difficulties are phonological problems, but children with good language skills can use these to bootstrap their ineffective phonic skills, probably by using context in reading. This is why interventions that train phoneme awareness and at the same time encourage children to make full use of phonological, semantic and syntactic cues in text are effective for children with reading difficulties (Hatcher, Hulme and Snowling, 2004).

Given the evidence that we have reviewed, the concept of dyslexia might be usefully reinterpreted as a spectrum of disorder, as depicted in Figure 1.3. In line with the large body of evidence suggesting that phonological skills are the foundation of decoding skills and are deficient in classic

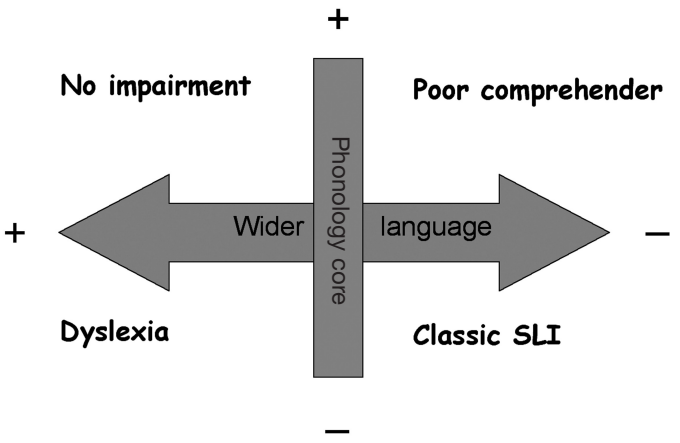

Figure 1.3 The dyslexia spectrum. SLI, specific language impairment.

forms of 'discrepancy-defined' dyslexia, phonological skills are the core dimension in this spectrum. Children with poor phonology (irrespective of IQ or other wider forms of language impairment) are at high risk of reading problems; this risk may be mitigated when wider language skills are proficient and exacerbated when oral language skills are also impaired, as for example in specific language impairment (Bishop and Snowling, 2004).

Finally, let us return to our initial question: When does 'late talking' become a cause for concern? Findings from recent research on children who have speech difficulties suggest that, for them too, having good language mitigates the risk of reading failure (Raitano et al., 2004; Stothard et al., 1998). However, as Stackhouse argues in this volume (see Chapter 2), if a speech difficulty is severe and persists into the school years, poor literacy is a likely concomitant regardless of whether wider language skills are also impaired (Carroll and Snowling, 2004; Nathan et al., 2004a).