12 Reading and Reading Impairments

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1 Introduction

Within the discipline of speech-language pathology, there is an increasing interest in reading and reading impairment as an area of concentration. This trend is recognizable from the professional policy statements that define the roles and responsibilities for clinicians (e.g., American Speech-Language-Hearing Association, 2001) and from the increased research and intervention publications available regarding literacy service delivery across age ranges and disability types (e.g., Beeson & Henry, 2008; Catts et al., 2002; Catts & Kamhi, 2004; Connor & Zwolan, 2004; Gillon, 2002; Iacono & Cupples, 2004; Lynch et al., in press; Mody & Silliman, 2008; Norris & Hoffman, 2002). As more societal (Gee, 2000; Goody, 1986; Ong, 1982) and educational (Cazden et al., 1996; "No Child Left Behind Act of 2001 (H.R.1)," 2002; Strauss, 2005) attention is given to literacy, it has become a more important issue for the practicing clinician.

The discipline's interest in reading, however, is not necessarily matched by the clinicians' knowledge or perceived competence regarding reading and reading impairments. A nationwide survey found that the majority of practicing speech-language pathologists surveyed indicated that they were not well trained regarding literacy issues and did not have confidence in their abilities to address literacy/reading as a clinical responsibility (Nelson & Damico, 2002). This lack of knowledge and confidence regarding reading is problematic but not surprising. Historically, speech-language pathology evolved with an initial focus on speech and only incorporated an emphasis on language much later in the development of the discipline (Damico, 1993; Duchan, 2008). It is only within the last decade that speech-language pathologists have focused on literacy as a clinical issue. Consequently, the discipline is less informed about literacy/reading than is desirable (Nelson & Damico, 2002), especially since language arts is a complex area fraught with debate.

Literacy theory and instruction is often controversial. Over the past several decades there have been suggestions of the "great debate" in language arts (Chall, 1983), the "reading wars" (Goodman, 1998; Lemann, 1997) regarding literacy

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education, and there has been a recognition of the role that politics plays in literacy research, policy, and pedagogy (e.g., Allington & Woodside-Jiron, 1999; Berliner, 1997; Davenport & Jones, 2005; Strauss, 2003). Numerous publications critique the ways that research and practice have been influenced by preconceptions based upon ideology (Allington, 2002; Coles, 2003; Garan, 2005) and there have been frequent disagreements across various perspectives within the field (e.g., Coles, 2003; Garan, 2005; Lyon, 1999; Moats, 2000; Richards, 1980; Shanahan, 2004; Stanovich, 1988; Strauss, 2001). The lack of clinician competence, whether real or perceived, linked with the controversies in the literacy field, has resulted in difficulty in determining the best course(s) of action when addressing reading as clinical practice.

The purpose of this chapter is to provide the researcher and practicing clinician with an overview of the primary issues related to reading and reading impairments. This includes a discussion of the conceptualizations of literacy as social practice and as a personal skill, a review of how definitions of reading and reading impairment (dyslexia) have evolved, how these definitions are dependent on contrastive views of how humans learn, and how these views influence aspects of research and service delivery in reading. Given the clinical nature of this handbook, the chapter will also discuss a clinically relevant resolution to some of these controversies by exploiting the advantages of clinical intervention and using these advantages to advance meaningfulness and functionality in the process of acquiring and using literacy/reading.

2 Conceptualizations of Literacy

When considering literacy and its impact, it is prudent to focus on literacy at two different levels. The first level is societal: literacy as it is employed and impacts on the social lives of people in modern bureaucratic societies (Goody, 1986; Ong, 1982) – what Olson and Torrance (2001a) referred to as *social practice*. The second level involves the individual: literacy as it is employed by individuals during reading and writing within particular social and institutional contexts (Scribner & Cole, 1981; Street, 1995) – what Olson and Torrance (2001a) referred to as *personal skill*. The first of these two levels, social practice, is primarily concerned with the implications of literacy for society, while the second level, personal skill, is interested in the implications of literacy on the mind and psychological issues. Since this is a clinically oriented chapter, the main emphasis will be placed upon reading as a personal skill; however, a brief discussion of the impact of literacy/reading as social practice is relevant, especially as it relates to our goals and aspirations in the educational context.

3 Literacy as Social Practice

When conceptualizing literacy as social practice, the group rather than the individual is the focus, and any interest in the individual is more as a societal agent than a person. This conception is considered analysis at a *macro* level, and this

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work is placed under the purview of sociologists, philosophers, and educational reformers (Sloane, 2005). At this level the roles that reading and writing play in the establishment of social processes like education, government, and jurisprudence are considered along with how literacy influences the evolution of institutions like science, literature, and religion. Olson (1994) suggests that literacy is analyzed to determine how "Our modern conception of the world and our modern conception of ourselves are, we may say, by-products of the invention of a world on paper" (p. 282). The impact of literacy on societal development has been the major focus at this level and it has been referred to as the *causal* conception of literacy (Olson & Torrance, 2001a). However, other varied roles of literacy within cultural contexts have also been examined. In addition to the role of literacy in social development, Olson and Torrance have described six other issues of particular interest, including the evolution of the scripts employed by various literacy systems across different cultures; how literacy is influenced by some functional structures in different cultures (e.g., law, science, and religion); the close and necessary interaction between oral and written modes in various cultures; the creation of a particular orientation to language through a textual strategy honed by literacy experience (i.e., meta-linguistics, meta-discourse); and the role of literacy in creating, or at least sustaining, a dichotomy of folk versus bureaucratic knowledge, superstition versus science, and myth versus history. For our purposes the history of literacy and what it means to be literate is the most relevant issue that we must consider when focusing on literacy as social practice.

3.1 A limited history of reading

When the history of reading is detailed as social practice, it is typically oriented to the development of societal literacy in Western Europe and the United States since reading is often linked to the rise of the modern Western scholarly tradition and to the Enlightenment (but see Almond & Coleman, 1960; Freire & Macedo, 1987; Olson & Torrance, 2001b; Triebel, 1997). In this vein, historical investigation primarily focuses on how reading evolved and influenced society, the ruling elite, the general public, and mass media (Olson & Torrance, 2001a). From this perspective, a review of the history of reading awareness suggests that there have been a number of changes over time regarding reading issues and the definition of what it means to be literate (Triebel, 1997).

In discussing his historical research, Triebel (2001) posits that the societal transformation toward literacy in Europe was a protracted one. Literacy originated in scattered areas at different times and remained localized for centuries before spreading out to permeate large populations. It is interesting to note that these original centers of literacy were varied in terms of locations, occupations, and functions. Triebel describes scribes, administrators, and bookkeepers in ancient Mesopotamia, civil servants in European courts and seats of government, priests and monks in churches, monasteries, and schools, scholars in academies and universities, and merchants and artisans in developing cities as the progenitors of literacy in these pockets of opportunity and maintenance. While in the thirteenth century most priests could read and write, Triebel (2001) estimates that far fewer

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of any other class or occupation could do the same. He estimated that in the population of Middle Europe at around 1770, no more than 15 percent of the male population above 6 years of age could read. While this figure did steadily increase, 60 years later estimates indicated only a 40 percent literacy rate. Triebel estimates that literacy use among males was approximately 90 percent at the turn of the twentieth century.

In their analysis of the history of literacy awareness in the Western tradition, Resnick and Resnick (1977) discussed three major historical models for reading and reading development before the twentieth century that could be employed to explain the literacy transformations: the Protestant/religious, the elite/technical, and the civic/national models. During the Protestant/religious model of historical experience, approximately 1540 to 1800, Protestant communities intended to develop sufficient literacy in their members so that they could come into personal contact with the Bible and the Christian message. Focusing primarily on males in the community, literacy rates increased dramatically during this period in areas where literacy change was documented (e.g., New England, Scotland, Sweden). However, these mass-literacy efforts were intended to develop reading mastery over a very limited set of prescribed texts as opposed to a generalized reading capacity (Resnick & Resnick, 1977). During the elite/technical model, approximately 1400 to 1850, schools were established for the sons of the ruling elite or for sons of the aristocracy, the bourgeoisie, and a few recognized individuals from the lower classes who exhibited exceptional ability. Operated primarily by religious orders, these schools provided sufficient literacy and education necessary for successful careers in civil and military public service. Finally, the civil/national schooling model, starting approximately 1880, focused on mass education of males and females, broadened the set of texts, and encouraged a focus on citizenship through literacy. However, while some of these students did develop literacy sufficient to engage in critical and inferential reading (as in the elite schools), the vast numbers of students were not expected to employ literacy to acquire new information but only to become fluent oral readers (Resnick & Resnick, 1977).

From this cursory description, it can be noted that the societal purposes for literacy influenced how reading and writing were perceived and how literacy spread from the elite to the masses. The transformation to greater literacy was also mirrored in the materials employed for mass communication during these time periods. While Johannes Gutenberg invented the printing press around 1440, the books and documents that soon became available were primarily intended for the educated elite. It is true that many more individuals had access to literature and to information over the next several centuries due to printing; however, these resources and the skills to benefit from them were still limited to less than 20 percent of the population until the end of the eighteenth century. Analysis of the materials used for large-scale religious, political, educational, and occupational purposes during these time periods revealed that many of the materials were still dominated by pictures or depictions of spectacular events. Many tracts were little more than illustrated fliers that often had little or no text in the forms of captions or notes; this was true until late into the nineteenth century.

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3.2 What it means to be literate

Hidden within the evolution of literacy in the Western tradition was the corresponding idea of what it meant to be literate. That is, when could one be considered to have the skills necessary to meet societal requirements for being a reader and/or writer? From a societal orientation this is important since educational policy, curricular design, and pedagogical practice are often dependent on one's desired end point. Analysis of the history of literacy revealed that as society changed its standards and expectations regarding literacy, the conception of adequate literacy and the definition of being literate also changed (Resnick & Resnick, 1977). The terms "literacy," "literate," and "illiterate" are social constructs and not set categories. Consequently, these definitions changed over time and across various social contexts. Early in the sixteenth century, for example, writing one's name was the standard for literacy even if one was not able to read the document being signed. Within the Protestant/religious model, reading/reciting a simple well-known Bible passage aloud was sufficient while later, in the civil/national schooling period, reading a simple well-known set of texts aloud would enable a citizen to pass a literacy test. In such situations, there might be few illiterates and virtually no "reading deficits" in society.

With more relevance to our current understandings, reading defined as a process by which meaning is extracted from something written or printed on a page has fairly recent origins (Wolf, 1977). Newman and Beverstock (1990) investigated various definitions of literacy over historical periods and found that the conception of being literate changed from very basic skills (i.e., the ability to sign one's name), through the ability to read and write, to attainment of fourth grade reading level. Currently, there is another change regarding the criterion for becoming literate. Society is moving the definition of literacy toward the ability to read new material and glean new information from that material. Further, since the 1950s we have expected that this standard of literacy be extended beyond the socioeconomic elite to all participants in public education (Bracey, 2004). While the extension of reading adequacy is not a problem, there has not been a corresponding change in the pedagogies employed in literacy education – this has created a problem. Our current reading levels appear unacceptable because we have changed the criterion for adequate levels of reading without sufficient pedagogical support. While this issue will be discussed later in this chapter, it is important to realize that the conception of *literate* is a social construct and, as a social construct, this label is often just a mirror of the prevailing ideologies that are in vogue at any given time (Baynham, 1995).

4 Literacy as Personal Skill

More relevant to this chapter is the conceptualization of literacy at the second level, literacy as personal skill (Olson & Torrance, 2001a). Attention to this level places the individual and the social context at the center of the discussion and

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strives to determine how literacy produces psychological change and social action within those individuals who acquire and use literacy. This is the level of the *instrumental* conception of literacy wherein the focus is on what people do and can do with literacy (Olson & Torrance, 2001a). Regarding earlier reference to the controversies in literacy (section 1), these issues typically occur when considering literacy at the individual level and as a personal skill. While there are a number of topics that may be discussed at this level, we will focus primarily on reading and three topics will be highlighted: conceptions of human learning, models of reading, and definitions of dyslexia and reading impairment.

4.1 Conceptions of human learning

Whether focusing on reading or other skills, our understanding of how human learning occurs is foundational. This conceptualization influences many other decisions we make with regard to psychological and educational issues. Over the twentieth century, two conceptions of human learning have dominated much of the psychological and social sciences, and they have influenced our expectations and interpretations of human performance, our approaches to research, the way conditions and processes are defined, and how psychology, education, and other human-oriented disciplines interacted with subjects, clients, and pupils. These two major theoretical perspectives are *behaviorism* and *cognitivism*.

4.1.1 Behaviorism The first theoretical perspective is behaviorism. Based upon the work of John B. Watson (1913, 1930), this perspective approached learning by focusing on behaviors rather than mental states or unconscious processes (Robinson, 1995). Watson was oriented to learning as a subject of inquiry in psychology and he developed his version of behaviorism to focus on this important topic. He stated:

> Psychology as the behaviorist views it is a purely experimental branch of natural science. Its theoretical goal is the prediction and control of behavior. Introspection forms no essential part of its methods, nor is the scientific value of its data dependent upon the readiness with which they lend themselves to interpretation in terms of consciousness. The behaviorist, in his efforts to get a unitary scheme of animal response, recognizes no dividing line between man and brute. (1913, p. 158)

Within this quote several of his stated points became a common set of beliefs for the early behaviorists. First, they denied any intrinsic life to the mind and did not believe that the mind should be an object of study in psychology. Second, they were objectivists in that they believed that the only real data is that which can be directly observed. Third, they were experimentalists, believing that all psychological constructs should be defined operationally and subjected to rigid control through experimental research. Fourth, they were quite willing to employ animal models rather than focus on human behavior. Their reasoning was that since the underlying tenets of learning involved contextual variables, behaviors, and consequences, learning would essentially be the same for any species (Mills, 1988).

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Behaviorism allowed Watson (1930) to change the focus of psychology from the consciousness (a concept he deemed subjective and ambiguous) to behavior (a preferred focus on the overt and empirical), and the methods of investigation from introspective analysis to experimentation. Watson eventually turned to classical conditioning as his way to accomplish these goals. He predicted and then confirmed through experimental research the existence of conditioned responses in infants, proposed the conditioned reflex as the unit of habit, and formulated an operant concept of learning (Rilling, 2000).

Watson's work on the mechanisms of learning, however, was not experimentally confirmed nor was it theoretically sound. When his behaviorism became untenable, Tolman (1932) and Skinner (1938) were able to modify his ideas into acceptable formulations; under the neobehaviorist label they created an approach to the study of animal and human behavior that became the zeitgeist of mid-twentieth-century American psychology and education (Amsel, 1989; Shuell, 1986). While some changes occurred, the neobehavioral perspective still held to positivism and materialism, gave top priority to prediction and control, adhered to operationalism, and was obsessed by quantification (Danziger, 1990; Mills, 1998). Importantly, based upon experimental work with a very narrow range of animal species, neobehaviorists focused on relatively simple forms of learning to advance their ideas (Mills, 1998). For example, when experimenting with human learning, memorization was often the focused experimental objective, and more complex human skills like comprehension were ignored (Burger, 1972; Shuell, 1986). By the middle of the twentieth century, Skinner's theory of operant conditioning (Skinner, 1938, 1968), which maintains that human behavior can be fostered by reinforcing selected actions, was the dominant perspective in human learning theory.

This perspective gave rise to important overall conceptions regarding learning in the educational context (Shuell, 1986; Smith, 1998). Writing on the impact of behaviorism in education, Smith (1998) contrasts the behavioral orientation – what he termed the "official theory of learning" – with a more social orientation that he termed the "classic view of learning." Several of the contrasts he discusses highlight the principles of the behaviorist learning paradigm. For example, this "official theory" includes the tendency to package learning into sets of separate skills so that there may be a fragmentation of complexity into smaller sets of component units that could be taught. It naturally follows then that learning, based upon operant principles, is often made efficient through repetitive drill and exercises; that the focus is on the behaviors one can observe rather than the underlying concepts or strategies that give rise to these behaviors (see "Cognitivism" below); that these behaviors are increased through principles of reinforcement rather than functional impact (like increased comprehensibility); that once individual behaviors and component skills are learned they can then be combined to create a functional whole; that learning is an individual activity that tends to require hard work or great effort; and that the measure of progress is through the quantification of the behaviors that make up the learning tasks.

While behaviorism, sustained within animal models of simplistic learning, flourished in many disciplines (and still has current advocates in education), the

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behaviorist (particularly Skinnerian) paradigm became problematic when more complex forms of learning and human traits like language and mind were targeted. Around the end of the 1950s and throughout the next 20 years, the behaviorist paradigm was increasingly criticized. Noam Chomsky (1959) wrote a powerful negative critique of Skinner's *Verbal Behavior* (1957) that reduced behaviorism's influence in language learning. Other critiques from the anthropological (e.g., Burger, 1972; Henry, 1960; Jones, 1972), psychological (e.g., Amsel, 1989; Gergen, 1985; Mills, 1988; Shuell, 1986; White, 1970; Zuriff, 1985), and philosophical (e.g., Blanshard, 1965; McGill, 1966; Mills, 1998; Smith, 1986) disciplines reduced the influence of behaviorism overall. As these critiques and the problems with more behaviorist practices in human learning appeared (e.g., Bruner, 1960, 1961, 1983, 1985; Searle, 1969; Shore, 1996; Wittrock, 1974), the behaviorist perspective was replaced with other perspectives, most notably, a constructivist perspective termed *cognitivism*.

4.1.2 Cognitivism Unlike behaviorism, the cognitive orientation posits the existence of internalized mental structure(s) that enable the individual to process, reconstruct, organize, and understand his/her physical, social, and biological worlds, thereby giving rise to learning. In effect, the focus was on the underlying structures from which the behavioral manifestations emerge rather than the behaviors themselves. One's mental structure(s) acts as a mediator that interprets the world relative to the individual's current conceptual system. Further, through experience with the environment (i.e., learning), the individual progressively constructs a more elaborate conceptual system to better understand and act upon the world; a system that also becomes progressively more similar to the internalized concepts of those individuals with which the child shares perceptual, epistemological, cultural, and social experiences. Two of the early advocates for this cognitive conception of learning, Jean Piaget (1968, 1970) and Lev Vygotsky (1978, 1981), tended to refer to the nature of the internal mental structure differently (internalized logic and semiotic, respectively) but much of their formulations and their primary principles in constructing what became cognitivism were quite similar (Grobecker, 1996; Pass, 2004).

It has been suggested that the term "cognitivism" comes from the work of Piaget. Throughout his research career, he sought to understand how children construct their conceptions of the world by employing internal cognitive structures and processes (e.g., Piaget, 1968, 1970). Consequently, knowledge structures were discussed as various mental activities within cognitive processing modes such as perception, memory, and organization, and these knowledge structures were the focus of development and learning. They became important for (at least) two reasons. First, they helped give rise to the orientation toward various cognitive abilities and processes that are a hallmark of cognitivism. Second, the focus on knowledge, not behavior, was a crucial break from behaviorism. As suggested by Stevenson, if it is knowledge that one learns, "then behavior must be the result of learning, rather than that which itself is learned" (Stevenson, 1983, p. 214). These shifts weaken the concept of behaviorism.

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In discussing the influence of cognition on learning theory, Langley and Simon (1981) have provided a definition of learning from the cognitive perspective. They define learning as "any process that modifies a system so as to improve, more or less irreversibly, its subsequent performance of the same task or of tasks drawn from the same population" (p. 367). This definition emphasizes mental processes and knowledge structures (i.e., "system") rather than the behaviors themselves. Of course, the mental processes and structures are inferred based upon the patterns of behaviors, but it is exactly this focus that separates behaviorism from cognitivism. Shuell (1986) suggests that learning theory as filtered through cognitivism involves at least five different concerns or foci. First, this perspective views learning as an active and constructive process dependent primarily on the mental activities of the learner. In this regard, metacognitive processes like planning are employed to privilege certain kinds of stimuli and learning objectives and then to organize the material being learned. The result of this active processing and mental construction are responses appropriate to the learning context and the construction and employment of various learning strategies. Second, learning involves higher-level processes. These cognitive and metacognitive processes involve regulation, organization, and predictive implementation of the various activities involved in learning and an awareness of what one "does and does not know about the material being learned and the processes involved in learning it" (Shuell, 1986, p. 416). Third, learning involves reliance on cumulative and prior knowledge and on the strategies previously developed to identify, organize, and integrate knowledge. Fourth, due to the third focus, cognitive learning theory is especially concerned with the way knowledge is represented and organized in memory. This creates a significant break from behaviorism in that the emphasis is on the understanding and organization of internal knowledge structures rather than on the behavioral indices of learning. Fifth, Shuell suggests that the cognitivist perspective on learning has a concern for analyzing the learning tasks and the results of learning in terms of the cognitive processes that are involved.

Shuell (1986) discusses several differences between behaviorism and cognitivism that relate directly to human learning. Primarily, while both traditions agree that environmental factors and factors internal to the learner contribute to learning through some sort of interplay, the nature, scope and power of the "internal factors," the degree of influence between the learner versus the environment, what is learned (behaviors versus structured knowledge) and the factors that influence the learning process (reinforcement versus developed strategies for operating on the environment – including obtaining feedback) are very different within these two perspectives. Rather than focus on stimulus and response, cognitivism focuses on the thought processes and the mental activities that mediate the relationship between stimulus and response.

4.2 *Models of reading*

Based upon the two conceptions of human learning, the language arts literature has focused on reading from two distinct perspectives. The first, a *skills-based*

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model, is oriented to a behaviorist interpretation of human functioning and focuses primarily on component skills, knowledge, and attitudes that constitute a particular conception of reading. Within this model, reading is seen as a secondary skill based upon oral language coding, and the foci are the skills that enable the translation of the visual modality into oral language and the linkages between the component skills. Advocates of this model view proficient reading primarily as identification of words automatically and fluently (e.g., Adams, 1990; Apel & Swank, 1999; Lyon, 1999; Stanovich, 1991). This perspective has as its target what is termed "conventional literacy" (Whitehurst & Lonigan, 1998). The second perspective is based upon cognitive interpretations of human learning and is oriented to a process of active construction of meaning through a set of strategies that enable the linkage of one's background knowledge of language and the world to create comprehensibility (e.g., Goodman, 1967; Goodman & Goodman, 1994; Goodman, Watson, & Burke, 1996; Meek, 1982; Smith, 1977; Smith, 2004; Weaver, 1990, 1998). This perspective has been termed the "naturalistic" or "*meaning-based*" approach to reading.

4.2.1 The skills-based model The skills-based model employs a behaviorist approach to linguistics (Bloomfield, 1939) and learning theory that results in a view of reading as a straightforward process of decoding and encoding visual text through one's oral language system. This is necessary because reading is viewed as a secondary language system that employs systematically and explicitly taught component skills (e.g., phonemic awareness, phonics, fluency) to create readers and writers (Bloomfield & Barnhart, 1961; Moats, 1996).

One of the early proponents of the skills-based model was Jeanne Chall. In her book *Learning to read: The great debate* (Chall, 1967), she advocated a fragmented and behavioral model of individual reading competence that focused on five successive stages in reading development. These stages – decoding, confirmation and fluency, reading to learn, multiple viewpoints, and construction and judgment – were intended to describe the process of reading development and learning from a child's pre-literate period of development through college age or adulthood. Within these stages one can see the principles of the skills-based model of reading in which the individual skills or components are emphasized rather than the process of constructing meaning. For example, at the initial stage (decoding) the focus is on the relationship between the letters and sounds, how the alphabetic principle is learned and applied, and how the learner becomes aware of the relationship between sound–symbol correspondences so that he/she can begin to apply this knowledge to the text. Chall emphasized the role of separate knowledge systems and application skills like phonemic awareness and phonics as important precursors to the higher stages. At this stage (and the pre-literate stage) the focus of the learners (4–8 years of age) is on visual code and not meaning during the reading process. The object is to sufficiently learn the code so a direct translation to oral language can eventually occur.

The second stage, confirmation and fluency, builds upon the component skills learned and applied in the earlier stages. The focus is on practice to gain efficiency

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and fluency, and, as the decoding skills improve, greater efficiency and accuracy in word recognition occurs. Although there is a discussion directed toward giving attention to both the code and meaning, in practice the focus is still on decoding and single word recognition. These first two stages are primarily emphasized until the third or fourth grade, and then the other three stages – reading to learn (around 9 years old), developing multiple viewpoints (around 14–19 years of age), and construction and judgment (college age or older) – are emphasized.

Two points regarding the skills-based model that warrant further discussion involve the conception of reading as a secondary language system and the place that meaning and comprehension play in the model itself. Throughout the literature on the skills-based model there is the suggestion that reading is a secondary language system and that comprehension and meaning construction is typically based upon the process of intermodal transfer through the oral language system (e.g., Adams, 1990; Catts, 1996; Chall, 1967; Critchley, 1970; Foorman et al., 1997; Gillon, 2000; Orton, 1937; Whitehurst & Lonigan, 1998). Mattingly (1972), citing Liberman, even suggested that reading is "parasitic" on spoken language (p. 145). Within this perspective, the primary skill is the ability to decipher printed symbols based upon the individual's success in establishing phonetic or sound representations of those symbols. Within communicative disorders this view is also represented. For example, Catts (1996) advanced this view by stating that, "If dyslexia were only a reading disability, it would imply that humans are somehow biologically predisposed to read and write and that in some individuals this predisposition is disrupted. Such a proposal is highly unlikely" (p. 15).

This tendency to create modules or components of language skills that may be considered primary and secondary to one another is characteristic of the influence of behaviorism evident beginning with the work of the American structural linguist Leonard Bloomfield (1939), and is quite different from the current constructivist conception of oral and visual language as emergent manifestations of a deeper level of semiotic and/or symbolic functioning that views these emergent properties as generally equivalent (e.g., Bruner, 1990; Damico, 2003; Halliday, 1993; Holtgraves, 2002; Iran-Nejad, 1995; O'Connell & Kowal, 2003; Perkins, 1998; Vygotsky, 1978). Within the constructivist orientation, one semiotic and/or symbolic system (e.g., oral language, gestural language, literacy) is as primary and capable of abstract representation as any other. All, however, are conceptualized as cultural tools that have been created through sociocultural necessity and preferences (e.g., Bruner, 1991; Halliday, 1978; Olson, 1996; Ong, 1982; Tomasello, 1999, 2003; Vygotsky, 1978, 1981; Wells, 1994). It is at the level of cultural need and construction that one system may gain primacy over another in a particular temporal and/or spatial context. This does not mean, however, that there are biological dispositions, except in non-interesting ways (e.g., employment of different modalities across two symbolic systems). The modular perspective, though not supported in recent constructivist theoretical formulations, not only provides the impetus for reading as a secondary system, thereby lending credence to a perceived need to engage in intermodal transfer; it also enables orientation to discrete components or skills like phonemic awareness, phonics, and fluency so

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that these are not seen as emergent dimensions of a synergistic language system but, rather, as separate components to be discretely and explicitly taught. Such an orientation is not consistent with the other model of reading nor is it supported by current constructivist ideas in language arts (e.g., Cambourne, 1988; Damico et al., in review; Geekie, Cambroune, & Fitzsimmons, 1999; Goodman, 1994; Meek, 1982; Oldfather & Dahl, 1994; Smith, 2004; Wells, 1990).

The second issue that warrants further discussion is the place of meaning and comprehension in this skill-based model of reading. Chall (1967) and others (e.g., Adams, 1990, 1991; Adams & Bruck, 1993; Catts et al., 1999; Foorman et al., 1997; Kamhi & Catts, 1986; Rasinski & Padak, 2001; Stanovich et al., 1985; Whitehurst & Lonigan, 1998) have all suggested that in addition to the component skills like phonemic awareness and phonics, there should be an emphasis on meaning. However, within each of these recommendations, the early and significant aspects of reading acquisition and pedagogy focus on the component skills so that there is greater facility to create an intermodal transfer. Consequently, the focus on meaning and attention to it comes too little and too late. Whitehurst and Lonigan (1998) are illustrative even when talking about the importance of the semantic and grammatical systems. First, their primary focus here is on sounds and words. They state that the initial variable is vocabulary, and reading is defined as a "process of translating visual codes into meaningful language. In the earliest stages, reading in an alphabetic system involves decoding letters into corresponding sounds and linking those sounds to single words." (p. 849). When these authors state that "a child's semantic and syntactic abilities assume greater importance later in the sequence of learning to read, when the child is reading for meaning, than early in the sequence, when the child is learning to sound out single words" (p. 850), they are actually emphasizing component skills to the reduction of initial attention on meaning. Even though these writers state that reading is a process motivated by the extraction of meaning, the way that they conceptualize this makes all the difference. Implementation reveals the behaviorist approach with the idea of translation of single words rather than the whole of the linguistic system. This is not synergistic nor is it guided by meaning. Rather, meaning construction based on translation of visual symbols into oral vocabulary is the goal.

4.2.1.1 The component skills approach to teaching For the purposes of this chapter, the most important application of the skills-based model involves the methods and approaches for teaching and intervention in reading. Consistent with the behaviorist agenda discussed by Smith (1998), Shuell (1986), and Mills (1998), the skills-based model tends to break the process of reading (and writing) into separate components that may be arranged according to some perceived developmental order and then explicitly taught in a decontextualized manner. This teaching and learning is often expected to be effortful and to require diligence on the part of both the teacher and the learner. This is variously referred to as the "component skills approach," the "phonics approach," or the "bottom-up approach."

This component skills approach is the outgrowth of the conception of reading and writing as a set of discrete skills that can be applied incrementally to work

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toward eventual comprehension. Based upon largely atheoretical experimental studies, component skills reading instruction isolates reading from other language processes, decontextualizes this phenomenon, and focuses on how to read words accurately as the object of instruction. Consequently, the experimental research has tended to focus on building a word-identification technology (Goodman, 1994). It is this focus that has led current reading intervention to spend far too much time on the precursor skills of phonemic awareness, phonics, and/or reading and rehearsing single words to the detriment of authentic reading and writing for beginners in reading.

One of the most influential classroom documents used to advance this component skills approach, *Teaching our children to read: The role of skills in a comprehensive reading program* (Honig, 1996), emphasized phonics and word research and pedagogy, misinterpreted the work of several literacy theorists (Goodman and Smith), and created the following implications for classroom instruction: (1) phonics and word knowledge are prerequisites to successful reading; (2) each grade level has specific skill components that should be taught; and (3) one should use decodable texts for teaching phonics and use other, predictable texts for motivating children, teaching the concept of a word, and teaching other concepts of print. For example, acquiring basic phonemic awareness in kindergarten, being able to decode simple CVC words and non-words, followed by CCVC combinations and long vowels in the first grade, and reading and understanding reduced textbooks by the beginning of the second grade were considered important benchmarks. Within this book there was also a call for a balanced reading program that included time for both separate, explicit skill instruction and language-rich literature instruction. However, the early emphasis was on the component skills themselves both in the pedagogy and in the selection of the materials for reading.

This conception of reading instruction with its focus on explicitly drilled and trained component skills provides a view of the reader as a passive agent that simply responds to the stimuli and consequences provided. In this sense the text, since it contains the visual symbols that need to be translated into oral language, controls the reader in terms of understanding. The familiar distinction between a skills-based model as having meaning *residing in the text* as opposed to the meaning-based model which posits meaning *residing in the reader* highlights this reader passivity (Goodman, 1994; Smith, 2004).

The result of this conception of reading from a behavioral skills-based perspective, with its component skills approach to reading instruction, has been aggressively advocated over the past eight years with "No Child Left Behind" (2001; Allington, 2002; Strauss, 2005). By linking psychological behaviorism and its operant conditioning with a behaviorist approach to linguistics (Bloomfield, 1939; Fries, 1963), reading education became focused on teaching the sounds of letters and then single words, and programs like *Success for All* and *Open Court* were marketed. Since these programs are based upon the experimental word-identification technology and its precursors, the component skills approach was further established (Strauss, 2005). Just as with the approach itself, these programs (and others) were

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based upon a separation of the various linguistic elements into discrete categories (phonology, morphology, syntax, semantics) and patterned drills and exercises became the methodology to establish learning.

This application greatly impacts the speech-language pathologist, who often chooses some version of the component skills approach and places a focus on the training of the phonological system (e.g., phonemic awareness) as a precursor to the development of other literacy skills (e.g., Beeson & Henry, 2008; Catts, 1996; Catts & Kamhi, 2004; Foorman et al., 1997; Gillon, 2000, 2002; Iacono & Cupples, 2004; Moats, 1996). While there have been numerous claims regarding the validity of such an approach to intervention, especially with special populations, the focus on phonological/phonemic awareness and its justification as an efficacious approach to reading intervention has not been well documented in the literature. The studies on which the claims rest are often poorly conceived and/or biased toward the behaviorist orientation in which there is little or no focus on meaning and an underlying assumption that one must first learn the component skills before reading can occur. The reader is directed to the work of numerous researchers (e.g., Camilli & Wolfe, 2004; Coles, 2000, 2003; Garan, 2001, 2002; Krashen, 2001a, 2001b, 2001c, 2002a, 2002b, 2003a, 2003b, 2004; Strauss, 2003; Troia, 1999) for further information on the limits of phonological/phonemic awareness in reading education and intervention.

4.2.2 The meaning-based model With the development of cognitivism, the approaches to reading took on a particular focus very different from the behaviorist model of reading. While the goal is still to make sense of written language, this was not a process of intermodal transfer. Rather, reading is viewed as a primary constructive process that is parallel to oral language in that the development of reading, especially prior to schooling, is a socially constructed process (e.g., Clark, 1976; Cochran-Smith, 1984; Ferreiro & Teberosky, 1979; Geekie, Cambroune, & Fitzsimmons, 1999; Wells, 1986). The parallelism is reflective of the fact that reading acquisition also involves a similar social interaction; the same kinds of mediating events and access to the same kinds of meaningful components described by Bruner (1983) in the acquisition of oral language are employed. This means that the child acquiring reading is recurrently exposed to authentic reading skills successfully modeled by proficient readers/writers. For his/her part, the child, when ready, has an opportunity to attempt the authentic reading skills him/herself with the mediation and corrective feedback of the more capable reader/writer. So, for example, during the period of emerging reading, a child and his/her caregiver may pick up a book together and engage in the social act of reading. When this occurs, there is an underlying (and meaningful) social interaction that is employed so that the caregiver collaborates with the child to construct meaning from print. In engaging in this social framework, the caregiver can assist the child's internalization of what the author was trying to say by reading, discussing, questioning, and inviting the child to participate, and by responding to the child's questions and other contributions. Clearly, it is through such socialized literacy activities that the child eventually acquires authentic reading and writing

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skills (Cambourne, 1988; Clay, 1998; Clay, 1991; Meek, 1982; Teale & Sulzby, 1986). That is, the social acts of reading and writing provide many of the conditions necessary for literacy acquisition and learning discussed by Cambourne (1988): the child may be exposed to excellent models of reading and writing; the child is exposed to the specific behaviors that are employed in reading and/or writing; the child can observe and internalize the functionality and meaningfulness of this social act; the child will have the chance to practice and perform; and the child will be able to observe and recognize the joys of reading – all through social modeling by individuals important to the child. As with all other forms of meaning making, reading acquisition is social, natural, and continual. It takes place within a recurrent and meaningful context through social interactions with people the child identifies with and, within any such reading encounter, the individuals and their personal relationships are at the heart of the process (Smith, 1998, 2003).

Given the orientation to this developmental constructivism and to the acquisition and use of internalized structures and strategies (Piaget, 1968; 1970), the reading process is strategic wherein visual input from the page is juxtaposed with the reader's background information to construct meaning within the text (Smith, 2004). This constructive process has been described as a "psycholinguistics guessing game" (Goodman, 1967). Within this model, all of the internalized processes occur quickly and primarily at a subconscious level, allowing for a reader's focus to remain on comprehension (Goodman, 1996). The key is not the code on the page or the development of component skills. Rather, the focus is on meaning. At all times and at all stages of the process of reading, meaning is both the objective and it is the context within which the reader strives toward comprehension. The reader creates understanding of the text within his/her conceptualization and while doing this, he/she is constantly guided by the expectation that the text is meaningful and that this meaning can be accessed.

One representative of this more meaning-based orientation is the transactional sociopsycholinguistic (TSP) model (Goodman, 1994) which emphasizes that reading is accomplished when an individual uses all aspects of his/her knowledge system, environment, and culture to help construct meaning out of print. During this meaning-focused approach the reader constructs an internalized representation through transactions with the targeted text, and the reader's schemata are also transformed in the process of transacting with text through the general strategies of assimilation and accommodation (Piaget, 1970). With any specific written text, however, the individual also employs strategies that have been developed to advance the thrust of meaningfulness onto texts of all forms. Such strategies include sampling just enough of the text to confirm or disconfirm the inferences and predictions they are simultaneously implementing based on the particular text being read, their background experience of the world, and their knowledge about how language works. Importantly, this model has numerous clinical and pedagogical implications and applications that have served the language arts community well during reading instruction and intervention (Calkins, 2001; Damico, Nelson, & Bryan, 2005; Smith, 1977; Weaver, 1990).

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4.2.2.1 The meaning-based approach to teaching Based upon the development of the meaning-based model of reading, several relevant approaches to reading teaching and intervention have emerged. While it is not quite correct to consider these as merely techniques or approaches, given the fact that many aspects of the learning process must be altered if the tenets of cognitivism are to be followed, these terms will be employed as a practical facet of the meaning-based model. Variously described as the "whole-language approach," "naturalistic approach," the "apprenticeship approach," the "constructivist approach," or the "top-down approach" to reading intervention, the meaning-based approach is consistent with the cognitivist and constructivist model: proficient reading is conceptualized as a matter of "orchestrating various reading strategies to construct meaning" (Weaver, 1998, p. 293), and each literacy activity involves authentic reading with a focus on meaning rather than accuracy (e.g., Allington, 2001; Allington et al., 1986; Calkins, 2001; Routman, 1994; Waterland, 1985; Weaver, 1990). Consequently, rather than attending to letters, words, or sounds within drills and decontextualized exercises, the focus is on the collaborative reading of meaningful material with the stress on the story narrative and the message within the text.

Consistent with the cognitivism perspective, Cambourne (1988) has drawn our attention to the conditions under which students learn best. These "conditions for engagement to learn literacy" address important considerations from the material to be used in learning, the actions of the learner, and the actions of the mediator. In a constructivist model, all three of these elements must be present and working. While the Cambourne conditions are not always explicitly discussed in the meaning-based approaches to teaching reading, they are often directly or indirectly employed. The first condition involves the extent to which the individual is *immersed* in text of all kinds. If the process of learning to read is a transactional one (Goodman, 1994), then there must be plenty of material from which to draw meaning and significance. Further, these materials need to cover the scope of the different styles and genres that the individual may encounter as a reader. Second, there must be many *demonstrations* of how authentic written texts are constructed and used. Without these two initial conditions, there is not enough authentic experiential input for acquisition/learning to occur.

Throughout the exposure and experience with text, the individual learner must recognize that he/she is capable of becoming a proficient reader and writer, and this recognition, in a social context, most frequently arises from the expectations that others have for the individual. As Cambourne (1988) stated, the *expectations of significant others* are powerful determiners of performance. These expectations alone, however, are not sufficient. The individual learner, as an active participant in the acquisition process, must also take *responsibility* for his/her own decisions about how, when, and what bits to learn in any learning task. Further, the learner needs time and opportunity to *use, employ, and practice* their developing reading in functional, realistic, and authentic ways if he/she is to progress in proficiency. These three conditions – expectations, responsibility, and use – all conspire within the rich context provided by immersion in material and demonstrations to create the process by which the individual learner progresses in reading proficiency. However, the progression also requires assistance from others. In addition to

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setting the conditions and providing demonstrations, the individual needs the more proficient readers to mediate for them. Indeed, this is essential in a constructivist format. The internalized knowledge and the developing strategies employed as the individual becomes a reader must be progressively acquired and honed, and this process occurs when the learner practices in an authentic reading context with meaningful material and where a more proficient reader accepts *approximations* and provides frequent and consistent *feedback* in context when such feedback and instruction are needed. When these conditions are met, then the final condition of *engagement* occurs. This happens when the individual learner believes that he/she is a potential "doer," and that acquisition of these powerful meaning-making skills will further opportunity and life experiences – that is, there is a functional pay-off.

Within the meaning-based approaches, these conditions are typically met through a particular instructional format. Routman (1994) discusses this format as a balanced reading program, and if it is employed, authentic and mediated reading opportunities that cover Cambourne's conditions for engagement typically occur. The format is one of consistent and repeated exposure to meaningful material by engaging in actual reading and writing activities that are strategically manipulated as the individual becomes more proficient. As a beginner, the individual is exposed to literacy and strong demonstrations through *reading and writing aloud* activities. Once the individual learner receives sufficient mediated experience with meaningful literature and the literacy processes from the continual models that being read to and demonstrations of writing provide, then the individual receives more exposure, more opportunity to read and write him/herself, and more targeted and appropriate feedback when needed during *shared reading* and *shared writing* activities. These activities are at the core of working with struggling readers and writers in that they enable the child to engage in progressively independent reading while being monitored by a more proficient reader and writer who mediates the literacy process when needed (Damico, 2006). Similarly, as the individual learner progresses, the other instructional/acquisitional formats are employed (*guided reading* and *guided writing*, *independent reading* and *independent writing*). For a full description of these formats and the ways to strategically weave the formats together to assist in building a meaning-based approach to reading instruction, see the work of Waterland (1985), Routman (1988; 1994; 2003), Weaver (1990), Goodman, Watson, and Burke (1996), and Lynch et al. (in press). Based upon the principles of cognitivism and social constructivism, the meaning-based approach to reading has proven to be effective for various types of struggling readers including those with reading impairments (e.g., Dahl & Freppon, 1995; Damico, 1991, 2006; Damico & Damico, 1993; Freppon & McIntrye, 1999; Kasten, 1998; Lynch et al., in press; Weaver, 1998).

4.3 Dyslexia

Within the focus on literacy as a personal skill, specific attention has been given to the issues of acquisition/learning of reading skills in average and struggling readers and writers. From the beginnings of the twentieth century there has been

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an awareness that some individuals exhibit extreme difficulty in learning to read (e.g., Hinshelwood, 1917; Huey, 1908; Morgan, 1896). Orton (1925, 1937) used the term "dyslexia" when discussing this condition and his use of the term has continued to be applied with a few alterations so that an individual with dyslexia can be distinguished from struggling readers. Critchley's definition (1970) of dyslexia as a disability in learning to read despite adequate intelligence, sufficient instruction, and sociocultural emphasis and opportunity is still the primary definition used in the field (Catts, 1996; Weaver, 1998; Whitehurst & Lonigan, 1998).

In his review of the conceptualizations of dyslexia, Vellutino (1977) described three primary alternative explanations of dyslexia. The traditional conceptualization is that dyslexia is primarily due to visual system deficits, what Orton referred to as the perceptual-deficit hypothesis (1937). This conceptualization focuses primarily on visual organization or visual memory problems (Bender, 1957; Young & Lindsley, 1971), and it is from this orientation that the familiar signs that so worry parents, such as perceiving *d* as *b*, *was* as *saw*, and letter reversals in writing, have been implicated as symptoms of possible dyslexia. Close scrutiny of the predictions made by this hypothesis, however, shows that they do not hold up to empirical evidence (e.g., Liberman et al., 1971; Smith, 2006; Vellutino, 1977; Vellutino et al., 1975).

The second conceptualization is that dyslexia is due to neurological problems less visual and more intersensory integrative in nature. Based upon the work of Birch (e.g., Birch & Belmont, 1965), data were presented suggesting significant problems with the integration of visual and auditory input such that there was a difficulty focusing on the sound–symbol associations. Again, however, the data for this conceptualization was found to be scant. The supportive studies themselves were poorly designed so that other variables (e.g., memory, experience, age) could not be ruled out, and in better-controlled studies the results were equivocal at best (Vellutino, 1977).

The third view of dyslexia focused on various aspects of verbal/linguistic processing, and this conceptualization of dyslexia has had the strongest extended support. Based on the assumption that there might be a speech production or language basis for dyslexia, several researchers investigated the relationship between verbal processing of various kinds and struggling readers (e.g., Lyle, 1970; Mattingly, 1972; Perfetti & Hogaboam, 1975; Savin, 1972). While this work typically focused on phonologic deficiencies, other variables were considered as well. In her research on subtypes of dyslexia, Boder (1973) has presented some of the primary data in support of the verbal processing thesis. Employing methods that focus on reading isolated words and focusing on strategies for word decoding as her measures, she has suggested three subtypes of dyslexia. The largest group that her research revealed (69 percent of subjects) was comprised of individuals who lacked word-analysis skills and compensated by attempting to employ a more global visual processing strategy to identify words. The remainder of her subjects either exhibited visual memory problems (9 percent) or a combination of poor linguistic analytic skills and visual memory problems. Other researchers (Elbro, 1991; Goswami & Bryant, 1990; Vellutino & Denckla, 1991) have continued to stress the role of the phonological system in dyslexia, and recently this has

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focused primarily upon the component skill of phonemic awareness (e.g., Catts, 1991; Mody & Silliman, 2008; Stackhouse, 1997).

As with the models of reading and the approaches to reading instruction, however, one's conception of human learning also influences how dyslexia is conceived. As with any diagnostic category or label (see Chapter 1), "dyslexia" is a constructed term. Monaghan (1980) found that a number of definitions for dyslexia have been employed and that they are always reflective of the current social conditions and "received knowledge" of the time. Boder's (1973) definition, for example, employed a heavy reliance on standardized tests and strategies for reading isolated words and for word decoding rather than authentic reading and writing. This tendency for the social construction of disability and handicapping labels has also been documented in the area of learning disabilities (Coles, 1987). Consequently, we should not simply reify labels such as "literacy" and "dyslexia." Rather, as suggested by Street (1995), the conception of literacy should not be dichotomous (have/have not), but it should be viewed along a continuum that attempts to account for the complexity of this symbolic and social process.

From the meaning-based model, for example, Weaver (1998) has proposed a reconceptualization of dyslexia that is consistent with the perspective of reading as constructing meaning. Her research and that of others (e.g., Brown, Goodman, & Marek, 1996; Davenport, 2002; Goodman, Watson, & Burke, 1987, 1996; Nelson, Damico, & Smith, 2008; Rhodes & Shanklin, 1990), based upon descriptive studies involving miscue analysis, suggests that rather than viewing dyslexia from a deficit perspective involving various components of reading, particularly the phonological aspects, dyslexia can be conceived as "the ineffective use and/or coordination of strategies for constructing meaning" (1998, p. 320). This reconceptualization will enable a more proactive pedagogy, enable a greater focus on meaning-based intervention, and not allow unsupported deficit models (such as the traditional definition of dyslexia) to reduce expectations for overcoming the reading difficulties (Coles, 1987; Fink, 1995/1996; Weaver, 1998).

5 Solutions and Conclusions

This chapter has reviewed the vast area of reading and reading impairments in terms of the issues in the field pertinent to the practicing speech-language pathologist. Importantly, the focus was primarily on how one's conception of human learning orients one's model of reading and subsequent service delivery (Smith, 1998). With behaviorism losing validity across the psychological and social sciences and cognitivism on the ascendency, it is reasonable to move toward the more meaning-based model of reading and its associated approaches to intervention and descriptions of impairment.

For the speech-language pathologist this may be especially relevant. As experts in language impairment, we do recognize the importance of meaning making and the crucial aspects of the context in helping an individual, impaired or normal, in constructing meaning in all of the various meaning-making manifestations (e.g.,

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speaking, reading, memory, cognition). Further, we recognize that individuals with deficits can gain access to meaningfulness and contextualization by means of appropriate and effective mediation by their clinicians and significant others (e.g., Allington, 2001; Bruner, 1981; Damico & Damico, 1993; Damico, Nelson, & Bryan, 2005; Halliday, 1978; Norris, 1988; Routman, 1998; Vygotsky, 1978; Wells, 1990). By employing a meaning-based model of reading we can exploit the very capacities that should assist individuals with exceptionalities (see Chapter 6). Since our case loads and our foci are oriented to smaller numbers of students and to the crucial strengths and weaknesses of our clients and students, individualized attention and careful mediation during authentic reading and writing are both possible and warranted.

This proposed solution may appear to favor the meaning-based approach to a greater extent than it does the component skills approach to intervention. Such is the case. However, if the clinician determines that there are difficulties with some aspects of the linguistic system that should be addressed, this is often best accomplished in more holistic and contextualized ways that are consistent with the meaning-based approach to reading. Consequently, we should transcend our controversies by recognizing that the targets of our service delivery (i.e., what is missing in the abilities of the impaired and what we should focus on) are less controversial than how we approach these targets. Regardless of our orientation we all recognize that struggling readers are missing some of the strategies necessary to construct meaning. With careful description of the individual's authentic reading we can determine which of the various strategies are problematic and we can move to strengthen or compensate for them. The approaches employed to strengthen or compensate, however, should be consistent with the orientation that best assists our clientele.

While researchers and clinicians in speech-language pathology focus on literacy in the research lab, classroom, or therapy suite, it is necessary to take a broader perspective if we are to gain a sufficient understanding of this field of study. Given the influence of literacy on our society, we should strive to provide the most timely and defensible service delivery possible. This chapter has attempted to provide the necessary overview as a context for further learning. Hopefully, the acquired learning will enhance our service delivery to our clients.

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