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Chapter 12

Relations among Oral Language, Reading, and Writing Development

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Historically, reading and writing (literacy) have been thought of as secondary form of language—highly dependent upon the more primary oral forms (listening and speaking) (Berninger, 2000). This view makes sense in terms of the ontogeny of language (Hauser, 1996), because it is well documented that some societies have never developed literacy, but oral language is inescapable. Moreover, there are societies in which reading has been prevalent, but writing has been much less available (Spufford, 1979). Archeological accounts suggest that written language developed later in human history than oral language (Schmant-Besserat, 1993), and that same pattern is *generally* true for individual development as well: Most children begin speaking around the age of 12–18 months, while written language rarely appears before 36 months, and 60–84 months is more characteristic for the onset of beginning reading (Wood, 1981).

Within this general schema, the receptive forms of language (listening and reading) are posited as being more basic than the productive forms (reading and writing), with relatively earlier onsets for listening and reading, and with more formative roles to play in overall language learning. This formative-ness has its basis in the fact that language is a social activity; thus, while language learning can be characterized as a form of invention

(see, e.g., Read, 1975), this is not a strictly accurate description of construction because of the requirement that language learning entail mastering a *shared and existing* system of language. This in no way challenges the idea that certain aspects of the language learning process may be “hardwired” into human cognition (Lenneberg, 1967), because even within that theory, it takes language input to make the language learning mechanism go—which is why children in France learn French and children in China learn Chinese (much to the relief of their parents).

The four language systems (speaking, listening, reading, writing) develop in “overlapping and parallel waves rather than in discrete, sequential stages” (Berninger, 2000, p. 66). What this means is that, though writing comes late in the language learning arc (Vygotsky, 1978) or takes longer to accomplish “full” development than the other language systems, it has the potential to be affected by oral language and reading, and likewise can influence the development of those systems, though it is less likely to affect them than to be affected by them. Understanding how the different language systems are correlated with each other can reveal the degree to which progress in writing may be determined by oral language and reading development, which students will likely do best

in writing, and why writers err in particular ways. This review examines the theory and empirical research into how oral language (speaking and listening) is related to literacy (reading, writing, and spelling), how the components of literacy, particularly reading and writing, are interconnected, and the changing nature of the empirical study of cross-language relationships.

How Writing Is Related to Oral Language Development

Writing instruction is usually not introduced until students enter school, around age 5, although certain writing behaviors—such as marking—can begin quite early (Hildreth, 1936), and nascent forms of true written composition often begin to appear prior to schooling (Bissex, 1980; Harste, Woodward, & Burke, 1984). But even when early writing does take place, oral language development is already far in advance of written forms.

Given this, it seems likely that oral language development could be a valuable foundation for writing. Young writers would likely rely on their oral knowledge of many aspects of language, including phonological awareness, lexicon, morphemes, syntactic structures, discourse organization or structure, and pragmatics. Reliance on such forms in writing would theoretically make writing development more efficient and should allow faster progress on the part of some children (those with the best developed oral language).

How related are writing and oral language? Much of the work on the relationships among the components of language comes from studies of atypical learners, usually those with serious deficiencies in one or another aspect of language. In a case study of a child who was a struggling language learner (Scott & Windsor, 2000), researchers sampled performance on various language tasks and concluded:

A child with LLD [language learning disabilities] who behaves like the average LLD participant in the present study would find it difficult to meet basic language requirements of the classroom, and would certainly attract the attention of teachers and parents. The child would produce only 40%–60% of the volume

of language of classmates in spoken or written discourse tasks. Compared to classmates, sentences would be less grammatically complex, particularly when writing, and especially when writing in an expository genre. The child still makes grammatical errors, perhaps noticeable in speaking, but certainly noticeable when writing, and blatant when writing expository material. (p. 336)

This kind of close description reveals the interconnections between oral and written language.

Another way to address the relationship of oral language and writing is to look at the relationship between IQ, or the verbal parts of IQ, and writing, because this would suggest how reliant on general verbal ability writing may be. The correlation of writing and oral language has been explored with various measures, usually resulting in moderate estimates of the degree of connection. For example, verbal IQ was correlated with composition *quality* for fourth- and fifth-grade students (.35 with narrative writing, and .42 with expository writing), but it was not found to be correlated with length of compositions in words or clauses (Berninger, Cartwright, Yates, Swanson, & Abbott, 1994). In other studies, volubility in oral language and writing were related (McCarthy, 1954; Harrell, 1957; O'Donnell, Griffin, & Norris, 1967), with steady increases in wordiness in both speaking and writing across the grade levels. Typically, the number of words is higher in oral language than in written language, but the amount of difference attenuates over time, with writing eventually catching up with oral composition. Similarly, there is a significant connection between the sophistication of grammar or syntax, in terms of density and embedding used in speech and writing, with oral development leading writing, but with the difference declining steadily across the elementary school years (Hunt, 1965; Loban, 1963; O'Donnell et al., 1967).

Writing is related to general language processing, but the nature of that relationship is less certain. One conception of this connection might be, for instance, that oral language and writing are dependent upon the same basic underlying cognitive abilities; therefore, those who are low in oral language would be low in writing, but there

would be no functional value in knowing this, except that it would allow for writing and oral language to be treated equivalently for the purposes of identification and diagnosis of deficiencies. However, it appears that the reliance of written language on oral language is more direct and complex than this. For instance, it has been shown that even when early oral language problems are eventually overcome, written language continues to suffer (Naucler & Magnusson, 2002). This means that there is no threshold level of oral language performance that must be attained before writing proficiency can proceed.

Other studies have attempted to unpack or explain the connection between oral proficiency and writing by exploring the relations among the underlying abilities or component parts of language. Effective writing, for example, has been shown to be dependent upon verbal working memory (McCutchen, 1996; Swanson & Berninger, 1996); if this aspect of oral proficiency is underdeveloped, then students have difficulty producing well-formed compositions. Beginning writers, particularly young beginners, tend to be constrained in their ability to encode language fluently by hand (i.e., transcription, written encoding, text generation), which can overload their ability to hold much information in memory, giving their writing a choppy noncoherence and introducing certain kinds of syntactic errors (e.g., errors at the ends of sentences or T-units; Tetroe, 1984). Not surprisingly, young children are superior in oral composition or dictation as compared to writing, but as the limits of verbal memory expand (and some of the subprocesses such as handwriting become automatized), this difference diminishes (Bereiter & Scardamalia, 1987; Cox, Shanahan, & Tinzman, 1991; McCutchen, 1987). These studies show that verbal memory limitations impact not only the quantity of writing but also the quality. Additionally, there are similarities in beginning oral and written composing strategies (Berninger, Fuller, & Whittaker, 1996), such as selecting a topic and constructing a comment about it.

Even more cross-language mode work has been done in the area of cohesion—how speakers or writers affect coherence among the ideas they are communicating. Pappas (1985) has shown that first graders accom-

plish greater cohesive harmony in oral stories and less in writing, but with correlated performance, and Fink (1986) reports that children with oral language disabilities evidence weak cohesive harmony and density in both oral and written stories, though learning disabled children without oral language disabilities did not suffer this problem in oral language. Other studies have shown how the cohesion that develops earlier in oral language then bleeds into children's later writing (Cox, Shanahan, & Sulzby, 1990; Rentel, 1988).

Morphology is another area that has received attention with regard to the connections between oral language and writing. Children evidence earlier growth in oral morphology than in writing (Carlisle, 1994). Most investigations of morphological development—how children learn the combinations of phonemes that make up meaningful units of language—have focused on oral language learning (Berko, 1958; Brown, 1973). These investigations have shown that children shift from learning the inflections to learning morphemic derivations between school entry and grade four, an oral language change that Carlisle (1996) speculates might be explained by children's early experiences with written language, including writing. In a study that examined morpheme use in oral and written composition, Carlisle (1996) found that oral language errors explained many, but not all, of the morphemic errors that occur in writing. Salience of morphological markers in the speech stream was an important determiner of how well students represented inflections in their writing. Other research has demonstrated this close match of oral and written language performance with regard to morphological development during the early school years (Green et al., 2003), and a similar pattern was evident in a study of five adult L2 (second language) learners as well—with the adults trying new morphemic (and syntactic) forms in their writing rather than in their oral language (Weissberg, 2000).

Oral language and writing are closely connected in a general way—with children who have well developed oral language doing better with writing. More particularly, writing appears to draw on oral language, such as in the development of cohesion. However, writing has been found to impact oral lan-

guage as well—at least with later developing forms, such as morphemes, where the writing can make certain language characteristics more salient to the learner.

At this time, there is not much more to review on the connections between oral language and writing. This literature is more provocative than comprehensive. It is impossible to answer questions about whether programs aimed at oral language improvement would have an impact on writing achievement, or to track the connections of any aspect of development across the years. There simply has been too limited an amount of research into the connections of writing and oral language, with little attention devoted to instructional questions (e.g., whether students can use, in their writing, their oral language development to surmount problems that might be apparent in their reading skills).

Some of this inattention is likely due to the lack of focus on formal oral language development in schooling coupled with the historical neglect of writing instruction (Clifford, 1989). Modest amounts of school time have been devoted to speaking and listening instruction, so perhaps it has seemed that there is little reason to attend to these issues. Similarly, although there has been greater attention accorded to oral language during the preschool years, the correlations of early language growth and later writing may not be obvious. Research has shown that the correlations of preschool language development and primary grade reading are low, but that this relationship increases later (Strickland & Shanahan, 2004). Oral language skills seem to have little to do with the word recognition and production tasks that are paramount to early literacy development, but they are more implicated in later literacy growth. It is possible that some aspects of writing (e.g., certain syntactic forms) might develop more quickly through teaching that stresses oral composition, though it would be unwise to neglect the role writing may play in the growth of these oral forms. There is a need for more research into these issues.

How Writing Is Related to Reading

The relationships between writing and reading have a longer and more extensive re-

search history, and this work has been reviewed numerous times (Berninger, Abbott, Abbott, Graham, & Richards, 2002; Berninger et al., 1994; Fitzgerald & Shanahan, 2000; Nelson & Calfee, 1998; Stotsky, 1983; Shanahan & Tierney, 1990; Tierney & Shanahan, 1996). The reason that researchers have been more concerned about the connections within written language than between oral and written language has much to do with theories that emphasize the unique qualities of literacy: Spoken language is ephemeral, or temporary, and takes place in real time, while literacy leaves a permanent record that can be pondered and reflected upon; oral language is fragmentary and social, while written language is not only more complete but also socially distant, because of the opportunities it allows a writer to revise; there are clear differences in vocabulary, grammatical structures, and discourse cohesion between oral and written language, and there is a much greater repertoire of intonation patterns and nonlinguistic features in oral language (Chafe, 1985; Garton & Pratt, 1998; Olson, 1994). Given this great chasm between literacy and oracy, researchers have tended to emphasize connections among the parts that seem most similar—both in terms of surface features and social uses.

Rather than attempting to recast all of the past research studies that have been synthesized, it would be more worthwhile to summarize and update some of the major points of these earlier reviews to provide a sound description of what has gone before, and to synthesize some of the newer empirical work that has accumulated concerning the relations of reading and writing.

One basic idea that has emerged repeatedly in this literature is that reading and writing are dependent upon common cognitive substrata of abilities (e.g., visual, phonological, and semantic systems or short- and long-term memory), and anything that improves these abilities may have implications for both reading and writing development (Berninger & Swanson, 1994; Ellis, 1985, 1987; Just & Daneman, 1992; McCutchen, 2000; Swanson & Berninger, 1996). The same can be said for the reliance of both reading and writing on a common base of knowledge (Fitzgerald, 1990, 1992). Given these commonalities, it should not be sur-

prising that reading and writing are correlated with each other. In fact, in a study of beginning literacy learning, kindergartners' writing behaviors were found to be predictive of subsequent (grade 1) reading achievement, even after controlling for the effects of IQ (Shatil, Share, & Levin, 2000).

According to Fitzgerald and Shanahan (2000), readers and writers rely on four common knowledge bases. The most obvious of these—domain or content knowledge—has received the least attention from researchers interested in reading–writing relations. Although the need for knowledge is especially obvious in writing (Flower & Hayes, 1984; Hillocks, 1986)—because writing has to be about something, research has not often pursued the role of domain knowledge in composition, and when it has, the measured relationship has been rather attenuated (Langer, 1984). Our understanding of how domain knowledge is used by readers has received much greater attention, and it is clear that prior knowledge influences reading comprehension to a great extent (Spivey, 1997), with domain knowledge undergirding the ability to infer, organize, and remember information. Cognition appears to rely upon a single universe of substantive content knowledge that can be drawn upon for various functional purposes, including reading and writing. As with basic processes of memory, domain knowledge serves as a kind of generalizable substratum, available to both reading and writing.

The role of reading in learning content or domain knowledge is self-evident; in fact, learning new information is often given as one of the basic purposes for reading. The role of writing in the development of content knowledge is less secure. The idea that writing could increase content knowledge is widely discussed (Shanahan, 2004), and empirical study is somewhat supportive of this approach. In a meta-analysis of 48 writing-to-learn studies, researchers concluded that writing had a small, positive impact on various outcome measures of school learning (Bangert-Drowns, Hurley, & Wilkinson, 2004).

A second knowledge base that likely connects reading and writing is metaknowledge about written language, including pragmatics. "Metaknowledge refers to several subcategories of knowledge, including knowing

about the functions and purposes of reading and writing; knowing that readers and writers interact; monitoring one's own meaning-making" (Fitzgerald & Shanahan, 2000). Tierney and Shanahan (1996) provided a thorough review of how being a writer can influence the process of reading (by giving readers insights into the intentions of the writer), and how being a reader helps a writer to anticipate confusion and miscommunication and, thus, to write better. To improve reading comprehension, it would make sense to encourage author awareness among readers; conversely, to improve writing, it is useful to inculcate audience awareness (Shanahan, 1992). However, it has been shown that certain cultural disassociations of reading and writing may limit these meta-knowledge connections. Brandt (1994) has shown that the settings in which reading and writing are learned and used, and the feelings surrounding early encounters with reading and writing, can differ dramatically: "People typically remembered their first reading experiences as pleasurable occasions, endorsed if not organized by adults. On the other hand, many early writing experiences . . . were remembered as occurring out of the eye of adult supervision and, often, feelings of loneliness, secrecy, and resistance" (p. 461).

A third area of investigation has been the study of the knowledge of specific features or components of written language that may underlie reading and writing. Studies have shown substantial correlations between linguistic features in reading and writing, including phonemic, orthographic, morphological, lexical, syntactic, and discourse features (Berninger, 2000; Shanahan, 1984; Shanahan & Lomax, 1986, 1988). Phonological and orthographic knowledge are closely linked in developing readers and writers (Abbott & Berninger, 1993; Shanahan, 1984), and handwriting is also implicated in spelling ability (Abbott & Berninger, 1993), but only for the younger children (Berninger et al., 1994). Word recognition skills provide a consistent, substantial prediction of the abilities to spell and write at all elementary grade levels (Abbott & Berninger, 1993; Berninger, Abbott, et al., 1998; Berninger, Vaughan, et al., 1998), and spelling is implicated in writing fluency at all elementary levels (Graham, Berninger, Abbott, Abbott, & Whittaker, 1997). Spelling also influences

reading comprehension (Berninger et al., 2002; Shanahan, 1984), as do the vocabulary and discourse features of writing, including cohesion and organization (Cox et al., 1990, 1991; Shanahan, 1984). "In both children and adults the correlations between word recognition and word-level transcription factors were high, and the correlations between text-level reading comprehension and composition factors were high" (Berninger et al., 2002, p. 48).

Typically, the amounts of linguistic variance shared across reading and writing have rarely exceeded 50% (Fitzgerald & Shanahan, 2000), but in recent studies with multiple measures of *each* linguistic characteristic, estimates have risen to as high as 72–85% shared variance for word factors and about 65% for text factors (Berninger et al., 2002). Even in these best-case scenarios, it is evident that there are aspects of reading and writing that are unique rather than shared. This pattern of higher measurable relations among word-level as opposed to text-level variables is a consistent pattern across a wide range of populations and studies (Juel, 1988; Shanahan, 1984), and appears to be only weakly linked to age level (Berninger et al., 2002; Shanahan, 1984); however, some studies have reported variation in this pattern for adult literacy students versus comparable, in terms of reading level, normal developing children. Word recognition and spelling appear to be more closely linked for normal developing children, with the low-literacy adults showing much less use of phonological strategies—particularly for spelling (Greenberg, Ehri, & Perrin, 2002).

These linguistic feature relationships that connect reading and writing appear to be bidirectional (Berninger et al., 2002; Shanahan & Lomax, 1986, 1988). This means that not only can word recognition abilities of reading influence the spelling (and fluency) of composition, but also that learning to spell influences children's word recognition. Similar bidirectional patterns of growth were evident in the other linguistic features as well.

That so much linguistic knowledge underlies reading and writing, and that the use of such knowledge in one domain of language can facilitate performance in another is not to say that these relationships are symmetrical. Reading and writing draw on a common

base of linguistic features, but it is likely not as simple as the sharing of domain knowledge. For example, students who are reading or writing about restaurants—and who know something about restaurants—might vary in their ability to draw on this knowledge in reading or writing (since in reading the author stimulates the reader to draw on prior knowledge and in writing the writer must self-stimulate these memories), but it is hard to imagine that the actual declarative knowledge about restaurants would vary much across reading and writing. The same does not appear to be true with regard to knowledge of language features, at least in terms of the phonemic and orthographic systems. It has been shown that there are different numbers and types of paths that run from analogous sounds to letters and from letters to sounds. For example, when a reader comes across a word such as *sure*, the potential underlying phonemic representations of the first letter would include /s/, /z/, and /sh/, as well as no specific sound ("a silent letter"). However, when a writer going from sound to letters wants to spell *sure*, he or she would choose only from the *s*, *sh*, or *ch* paths. The paths are not symmetrical, and reading and writing could not simply be inverse processes of each other (Cronnell, 1970; Ehri, 1997; Reed, 1981).

Finally, the shared knowledge underlying reading and writing includes procedural knowledge, which refers to knowing how to access, use, and generate information during reading and writing. This includes awareness of intentional strategies such as prediction, questioning, and summarizing. Langer (1986) conducted an analysis of the connections between these kinds of procedural actions during comparable reading and writing activities, and found similar levels of correlation to what was evident in the linguistic knowledge literature. This study had students carrying out think-alouds during and after various reading and writing activities. As with linguistic knowledge, a lack of symmetry was evident across reading and writing in procedural action. The reasons for these differences in knowledge use likely were bound up in the different purposes of reading and writing and the differences in starting places, since writers can begin with no more than a blank page and few constraints, while readers have to try to follow

and stay within the leads and constraints placed on interpretation by the writer.

As should be obvious, empirical research has so far provided a much richer understanding of the connections between reading and writing than between oral language and reading. Unlike oral language research, with reading-writing connections, there are experimental studies showing that reading instruction can improve writing, and that writing instruction can have a positive impact on reading development (Tierney & Shanahan, 1996). For example, in an instructional study of reading-writing relationships, it was reported that instructional approach had an impact on reading (with traditional approaches to instruction having more impact than process or whole-language approaches), but that variations in writing performance were accounted for by reading achievement alone, not by the instruction (Stahl, Pagnucco, & Suttles, 1996). This kind of cross-domain language improvement is not found consistently, however, and there are published examples of such teaching impacting only the language domain that the instruction directly addressed (Shanahan, 1988).

A common finding has been that some reading-to-writing or writing-to-reading learning is possible, but that instruction targeting skills in one or the other tends to be most effective at improving that dimension. For example, handwriting instruction had a positive impact on word recognition skills, but not as much of an effect as is usually obtained from direct training in word recognition skills (Berninger et al., 1997). This, together with the earlier reviewed correlational data and a growing body of evidence that reveals both the overlapping but separable nature of reading and writing at a neurological level (Beaton, Guest, & Ved, 1997; Berninger et al., 2002; Boget & Marcos, 1997; Chan, 1992; Frith, 1980; Dejerine, 1891; Niemi, Poskiparta, Vaurus, & Maeki, 1998), suggests the complexity of combining reading and writing instructionally, and the need for design experiments that show how to do that most productively. Reading and writing instruction can be usefully combined, but instruction in one or the other is unlikely to be an adequate replacement for the other if the goal is to develop students who can read *and* write well.

There are two basic explanations for why it can be beneficial or more efficient to combine reading and writing instructionally. One has to do with the shared knowledge or skills required in reading and writing, and the cross-domain language practice that can occur through these literacy acts. For example, writers often read and reread what they are writing, and readers and writers certainly are practicing the use of a plethora of content information, linguistic features, and processes, though the differences in the nature of this practice may reduce its ultimate cross-language transfer potential, as earlier noted. A second benefit, however, may redound from the differences between reading and writing. One learning theory holds that learning is achieved through examining and reexamining information from a variety of cognitive perspectives (McKinley & Tierney, 1989). Within this theory, each reconsideration of information is deepened, not from repetition (that is a memory issue), but from thinking about the information in a new way. Since reading and writing have a somewhat different cognitive footprint, as shown in these various investigations, it is possible that reading and writing can provide these separate advantages for learning. In fact, research suggests that individuals combine reading and writing in different ways for various tasks, and that these interactions between reading and writing operate somewhat as this theory predicts, at least with regard to content information and meta-knowledge (Tierney, Soter, O'Flahavan, & McKinley, 1989).

The separability or uniqueness of reading and writing is also an important issue within assessment design and interpretation when students are asked to show their reading comprehension through writing as opposed to oral reading or multiple-choice marking. Increasingly, large-scale assessments, such as the National Assessment of Educational Progress, use constructive response items that require students to write brief essays about stories or articles they have read. Even state accountability tests are using such formats on a large scale. This is potentially problematic, because the probability of doing well in both reading and writing is lower than the probability of doing well in either. This means that students will not appear to read as well as they can under other test-

ing conditions, because writing may exacerbate the issue. If reading and writing possess unique qualities, the reading outcomes would be influenced deleteriously by the writing demands of the assessment. In fact, that is exactly what studies show (Jenkins, Johnson, & Hileman, 2004; McCormick, 1992):

After controlling for word identification and listening, writing ability accounted for no variance in multiple-choice reading scores. By contrast, writing ability accounted for unique variance in reading ability, even after controlling for word identification and listening skill, and explained more variance in constructed-response reading scores than did either word identification or listening skill. (Jenkins et al., 2004, p. 125)

New Directions in Considering Relationships with Writing

Certainly one of the most important developments of the past 10–15 years has been the growing body of investigations into the nature of reading–writing relationships within children and adults who have problems learning to read. Historically, most of the reading and writing relationship studies were based on data drawn from regular classrooms and usually included a full performance range from the normal population. The burgeoning and high-quality work of Virginia W. Berninger and her colleagues over the last decade has helped to redress this imbalance to some extent. Their work has examined learning disabled populations but has avoided the problems of constrained variance usually evident with such groups (and constrained variance tends to lower correlations) through the careful identification of a large and varied population of research subjects and the estimation of parameters based on multiple measures. One of the most important and remarkable outcomes of this work is the insight that the patterns of reading–writing relationship tend not to differ much from those identified in a wider ranging population of subjects.

Of course, the neglect of special learners with regard to reading–writing relationships is due in part to the dearth of work on writing disabilities or similar topics. While there is a large literature devoted to the etiology,

identification, and remediation of various types of reading problems, no comparable literature of any scope has yet developed in the area of writing. If students struggle in reading lessons, they are likely to receive additional instruction, but no similar educational response is yet in place for writing.

Another relatively recent development in the study of reading–writing relationships has been the consideration of these relations with L2 learners. One of these studies (Ball, 2003) examined these relationships in children in grades 3–6. A series of statistical analyses revealed few differences between either the patterns of literacy development or how reading and writing related to each other for both native English or English-as-a-second-language students. However, this study found sizable differences in oral language performance for the two groups, an important finding, because the oral language measures were closely related to higher level reading comprehension and story construction. This suggests that greater oral language development might be needed to allow L2 students to progress successfully at the highest levels of literacy learning, but that the ways that reading and writing are taught and combined might not need to vary much from usual practice with native language learners. This finding contradicts theories reviewed earlier that posit a closer relationship among the written aspects of language, than between literacy and oral language. Furthermore, this study found that a composite measure of cognitive ability did not reveal differences across these groups, and this measure predicted comparable performance on both spelling and word recognition measures—the same pattern evident in first-language (L1) learners.

In another study of reading–writing relations, in this case, between composition quality and reading comprehension, measurable relationships were evident with English language learners (ELL) (from a variety of home languages) in the L2 (Carell & Connor, 1991). A somewhat different pattern was suggested in a third ELL study (Hedgcock & Atkinson, 1993), which attempted to connect various environmental reading variables in an L2, such as connecting how much pleasure reading and textbook reading was taking place to writing achievement in the L1 and L2. The reading

measures were predictive of reading and writing performance in L1 but were not connected to L2 performance. The authors concluded that acquiring L2 literacy may be different than acquiring L1 literacy in terms of these particular relationships, and that lots of print exposure alone will not be sufficient to develop L2 writing skills.

Summary and Conclusions

Studies of the relationship of oral language and writing have demonstrated a clear and consistent connection between verbal intelligence and writing, and have provided sufficient evidence to suggest that both forms of language draw on a common set of cognitive abilities, including working memory, linguistic cohesion, and morphological knowledge. It is evident that early language problems are a harbinger to later writing problems, even when the early oral language deficiencies are overcome.

Unfortunately, there continues to be a paucity of research into the relations between oral language development and literacy, particularly with regard to studies that show how to use oral language toward better reading and writing skills or how to teach or support language development in ways that positively impact literacy. Although there are sufficient investigations into the oral language-writing relationship to suggest the potential value of these connections to understanding or improving literacy, there has not been a sufficiently ambitious program of research into these issues to provide a definitive portrait of the role of oral language within writing, and how reliance on oral language features can allow writers to surpass deficiencies from their reading skills that could block writing performance, or how oral language instruction can improve writing.

There are likely many reasons for this lack of attention to these issues, one of which may be the peculiar role of early vocabulary development—which is often used as the measure of oral language proficiency—in subsequent literacy skills. The pattern of relationship between this measure of oral language and early reading and writing skills is minimal, and this low correlation may suggest that early instructional emphasis on oral

language development would be a waste of time in terms of literacy learning. However, the importance of this early vocabulary variable to reading and writing increases as attention turns toward text reading and writing, as opposed to word recognition and production. The message seems clear: Early and continued attention to oral language development may not be necessary for early literacy growth, but it is probably essential for sustaining that growth in the later school years. More research is clearly needed into issues of oral language and its role in literacy learning.

In contrast, there is a richer empirical research base available for examining the relationships between reading and writing. These studies show that reading and writing depend upon a common base of cognitive processes and knowledge, and we have a particularly fertile understanding of what kinds of linguistic knowledge are shared between reading and writing, how the patterns of this knowledge sharing change with development, and how reading and writing influence each other. These studies have revealed even closer relations between reading and writing than those previously found and have extended our understanding of the bidirectionality of these relations (e.g., the sharing of knowledge between reading and writing can go either way, from reading to writing, or from writing to reading), as well as of the nonsymmetrical nature of the relations. While recent research has expanded our notions of the potential sharing that can take place among reading, writing, spelling, and handwriting, anthropological and neurological investigations continue to expand our awareness of the ultimate separability of reading and writing; that is, it is possible to read without knowing how to write and vice versa.

Studies have shown that it is possible to teach reading so that it improves writing and to teach writing so that it improves reading, but we do not know how to do this consistently. We still lack a thorough understanding of how various reading or writing experiences may be beneficial to the other, though studies certainly show that such cross-language improvement is possible. However, it is also apparent that learning outcomes in reading and writing tend to be more powerfully influenced by direct instruction within

those dimensions of language rather than across them. In other words, reading instruction does more for reading achievement, and writing instruction does more for writing achievement than would be expected from cross-language efforts. An exception to this may occur at the beginnings of literacy, when reading growth might actually be more important for writing achievement than writing instruction (Stahl et al., 1996). Particularly useful in sorting out this issue are the growing bodies of research on struggling learners and L2 learners. Although these studies often show similar patterns of performance across types of learners, there are some differences as well. For example, at the text levels of processing for L2 learners, comprehension and composition quality are more likely to depend upon oral language skills than upon the cross-domain aspects of reading and writing (this was not true for word-level processing, and it may not be true within an L1). In any event, there is a need for more theory development and systematic study of the nature of the relations within and across these special populations, because these efforts may reveal important insights for how reading and writing can be combined most productively within instruction.

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