

READING IN A SECOND LANGUAGE

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In this article a review is given of the different types of theories that have been proposed for second language reading acquisition. Some researchers argue that reading involves a complex information processing in which a number of processes are fast and automatic, whereas others are slow and under conscious control. These authors explain the differences between monolingual and bilingual readers predominantly in terms of automatic versus controlled processes. Other authors explain the differences in reading performance in terms of 'bottom-up' versus 'top-down' processing. A third group of researchers addresses the question whether reading problems in a second language are true reading problems or language problems. Finally, a small note is given on the importance of the readers' emotions to and perception of reading.

Introduction

The strategies persons use when they learn to read a second language, are probably in many ways similar to the strategies used for first language reading acquisition. One of the most important aspects of learning to read is word recognition. Children can, in principle, use three strategies to recognise visual words (Verhoeven, 1990):

- grapheme-phoneme mapping (phonological encoding)
- recognition of word patterns as a whole (logographic encoding)
- direct visual recognition of words represented in the lexicon (orthographic encoding)

In the literature of monolingual visual word processing, there is currently much debate about (a) whether beginning readers pass through a logographic stage during the acquisition process (e.g., Wimmer & Goswami, 1994), and (b) to what extent visual word recognition in skilled readers depends on orthographic encoding or is entirely governed by phonological encoding (e.g., Frost, 1998).

Verhoeven (1990) claims that persons who learn to read in a second language, may have greater difficulties with all three word recognition processes than persons who learn to read in their first language. L2 learners may have greater difficulty in recoding letter strings phonemically because they lack the oral language knowledge. Logographic encoding may also be more difficult because the meaning of the word patterns can less easily be inferred from the semantic and the syntact context (again because there is no spoken knowledge

to rely upon). Finally, there is evidence that L2 readers may have more difficulties in using orthographic redundancies to aid word recognition (for references, see Verhoeven, 1990).

Koda (1994) also pointed to three fundamental differences between L1 and L2 reading:

1. the L2 reader has prior reading experience; she/he has thorough command of the basic reading skills, in contrast with beginning readers;
2. L2 reading involves at least two languages and, therefore, is cross-linguistic;
3. in L2 reading, ability develops before adequate oral fluency is achieved.

It should be noted that Verhoeven's and Koda's distinctions are limited to situations of successive language acquisition (see Schaerlaekens, this issue). Also, the factors listed thus far, do not include socio-cultural factors which are known to influence reading acquisition of second language readers. The attitudes towards the own language and culture on the one hand and the second language and culture on the other hand play a major role in whether or not a person will learn to read fluently in a second language.

Theories

Second Language Reading: Automatic Versus Controlled Processing

Learning to read can be viewed as the acquisition of complex cognitive skills. These skills are understood as a set of related subtasks with different processing components. The tasks at first require considerable cognitive efforts, but once they are mastered they can be accomplished with relatively little processing capacity, so that more resources become available for other subtasks. Schneider and Shiffrin (1977) called these two types of operations *controlled* versus *automatic* processes. Automatic processes occur quickly and do not require special attention, whereas controlled processes are slow and resource demanding. According to many researchers, reading acquisition can be considered as a progressive transition from controlled to automatic processing. Beginning readers handle phonological information in a controlled way (mapping graphemes one-by-one to phonemes) until they have a command of word decoding. From that moment on, the controlled processes shift to syntax and semantics. The more automatic decoding abilities the reader has, the more attention can be directed to sentence comprehension. The different strategies used by good and poor readers indicate the extent to which certain reading skills have become automatic or still require controlled processing. Good readers can use their syntactic and semantic knowledge of the language to get the main topics of the text, whereas poor readers have less efficient strategies to grasp

the meaning of the text.

Although the transition from controlled to automatic processing is an important aspect of all reading, several studies have indicated differences between first language and second language reading. McLaughlin and Baker (1985, reported in McLeod & McLaughlin, 1986) examined to what extent poor bilingual readers differ from poor monolingual readers. For the poor monolingual readers, lexical and syntactic errors occur with equal frequency. Poor bilingual readers, however, make more syntactic errors than lexical errors. McLaughlin and Baker ascribed this finding to the fact that native speakers have a well developed and automatic syntactic knowledge in spoken language, which they can call upon to prevent syntactic errors in reading. Second language readers lack the effortless access to this information.

Favreau and Segalowitz (1983) also explained reading differences between first and second language learning in terms of automatic and controlled processes. Fluent English/French bilinguals were divided into two groups: an "equal reading rate group", that read English and French equally fast, and an "unequal reading rate group", that read the second language more slowly than the first. Subjects finished a lexical decision task in which the semantic relation between prime and target was manipulated as well as the time interval (SOA) between prime and target. It has been shown that, in experiments with long SOAs, semantically related words prime target words by means of a controlled expectancy process, whereas short SOAs result in an automatic priming effect. This can be concluded on the basis of the finding that negative priming of unexpected target words is possible at long SOAs but not at short SOAs (Neely, 1991). Bilingual participants from the equal reading rate group showed a priming effect in their second language both at a short SOA and at a long SOA, suggesting automatic processing, whereas bilinguals from the unequal reading rate group, only showed automatic processing in their first language, but not in their second.

Chitiri and Willows (1997) investigated the reading patterns of Greek - English bilinguals. They found that advanced bilinguals (defined on the basis of language and reading proficiency tests) still needed more time and were less accurate when they were reading in their second language than when they were reading in their first language. This suggests a lack of automatization of word recognition skills in the second language, confirming the research of Favreau and Segalowitz (1983). Other support for this conclusion was provided by the difficulties bilinguals experienced when they had to discriminate between content and function words. Chitiri and Willows explained this finding by assuming that the insufficient automatization of word recognition subskills made the inclusion of syntactic information more difficult. (There were no reasons to believe that the bilinguals had insufficient syntactic knowledge, because the readers all performed well on off-line tests of syntactic knowledge).

An important issue within the discussion of automatic versus controlled processing is the question to what extent learning to read in a second language can profit from the existence of automatized reading processes in the first language. As we have seen above (McLaughlin & Baker, 1985), reading performance profits from the presence of well-mastered, automatic processing in the spoken language. A similar transfer of automatic reading processes from the first language to the second may help the reading acquisition of the latter. For instance, nowadays it is generally accepted that an important part of reading involves computing the phonology of the printed words. This is not only true for native language processing, but also for second language processing (Van Wijnendaele & Brysbaert, 1998; see Brysbaert, this issue). Languages differ in the sound conversions that are possible on the basis of the printed stimulus. In logographic scripts, characters represent information about complete words (or at least morphemes), in other languages characters represent syllables, and in alphabetical languages graphemes (individual letters or letter groups) represent phonemes (sounds that point to a difference in meaning). There is ample evidence that learning to read in a second language is easier the more similar the conversions between printed stimulus and phonological representation are between the second and the first language. Thus, it will be easier for someone who already reads an alphabetical language to learn to read another alphabetical language. There is even evidence that for some languages reading is easier to learn as a second language than as a first language. This is in particular true for languages with opaque grapheme-phoneme correspondences, where graphemes have different pronunciations depending on the word they belong to (e.g., in English, the rhyme of "have" is pronounced differently than the rhyme of "gave"). According to Campbell and Sais (1995), it may be easier to learn the English letter-sound correspondences for someone who already has experience with letter-sound conversions in a less opaque language with simpler relations between letters and sounds (e.g., Italian).

That the difficulty of grapheme-phoneme correspondences is not a trivial matter in reading acquisition, is shown by Lindgren, De Renzi, and Richman (1985). These authors made a cross-linguistic comparison of developmental dyslexia in Italy and the United States. Their aim was to determine whether the letter-sound regularity of a language influenced the prevalence and pattern of developmental dyslexia. Grapheme-phoneme conversions are much more regular in Italian than in English, which is characterised by many inconsistencies in the pronunciation of vowels (Berent & Perfetti, 1995). Lindgren et al. showed that dyslexia is considerably more prevalent among children who have to learn the English orthography than among children who have to learn the Italian orthography. In addition, the errors made by the different groups of children, suggested that the Italian children relied more on phonology during reading than the American children.

Wimmer and Goswami (1994) also pointed to a difference in reading acquisition due to the degree of transparency between letters and sounds. They showed that German children in the first grade make more use of phonological encoding (translating graphemes into phonemes and assembling them into a meaningful word) than English children. The greater reliance on phonology in German could be concluded from the finding that German children more easily read non-words than English children. According to Wimmer and Goswami, the logographic stage that has been so dominant in the literature on reading acquisition, may be a consequence of the opaque relations between letters and sounds in English and hence typical for this type of languages. Because of the inconsistent grapheme-phoneme mapping, phonological encoding is more error-prone in English than in German, and so there is more virtue in logographic encoding.

Because reading depends on phonology, many researchers advise to build up oral skills in a second language before reading instruction in that language starts (Schaerlaekens, this issue; Verhoeven, 1990). It is, however, important to keep in mind that good oral language skills do not suffice to read. Just as in native language reading, some persons who have good command of the oral language, still experience problems when they learn to read (e.g., Segalowitz, 1986; Segalowitz, Poulsen, & Komoda, 1991). Thus, despite a high level of oral skills, it is possible that a second language reader is hampered by deficient visual word recognition skills.

The studies reported above are but a few of the many studies that have examined how and when the first language influences the second. At first, these studies primarily examined negative outcomes of cross-linguistic transfer in reading. Later, researchers started to look for positive transfer as well. Instances of positive transfer provide information of how to optimize instructions in second language teaching, so that the learner can profit from competences already achieved in the native language. Kellerman (1983) argued that formal structural similarities between languages are not enough for transfer to occur; second language learners must be aware of these similarities.

Second Language Reading: Bottom-Up and Top-Down Approaches

There are two ways of information processing: bottom-up and top-down. Bottom-up processing is activated by the incoming data. The features of the data enter the system through the best fitting bottom level schemata (previously acquired knowledge structures are called schemata). The bottom level schemata integrate at increasingly higher levels into more general information schemata. Because the system is entirely triggered by the input, bottom-up processes are also called 'data-driven' processes. Top-down processes occur

when the system makes predictions on the basis of higher-order schemata and searches in the input for information that agrees with the predictions. Top-down processes are also called concept-based processes.

In the literature of second language reading acquisition, a lot of attention has been given to top-down (or schema theoretic; Bartlett, 1932) influences. This approach of reading emphasises the role of background knowledge for understanding written text. Understanding a text is seen as an interactive process between the reader's background knowledge and the text itself. Because the background knowledge of second language readers is heavily influenced by their culture, these readers may have difficulties because they are unable to build the right schema for the text they are reading (Carrell & Eisterhold, 1988). Especially in the 1970s and 1980s, a number of theories have been proposed in which it was claimed that reading problems in the second language were due to cultural differences rather than to "technical" problems within the reading process itself (e.g., Carrell, 1981; Goodman, 1967; Johnson, 1981; Stefensen, Joag-dev, & Anderson, 1997). Although it was acknowledged that some language proficiency is required to activate the relevant schema and that some reading problems might be due to deficiencies in language processing skills, the basic message was that reading comprehension depended critically on the reader's ability to relate information from the text to already existing background knowledge, and that problems to do so were the origin of most non-native language reading problems.

Eskey (1988), among others, pointed to the limitations of top-down models. By considering fluent reading exclusively as correct text understanding, these models tend to de-emphasise the perceptual and decoding dimension of the reading process. They may be accurate models for fluent readers whose perception and decoding have become automatic, but they underestimate the problems less proficient readers are confronted with. Eskey (1988) wrote:

... for the last few years second language researchers have almost exclusively focused on such topdown concerns as the role of culture specific assumptions or subject-matter schemata in second language reading; ... This research has resulted in many useful insights but the lack of attention to decoding problems has, I think, produced a somewhat distorted picture of the true range of problems second language readers face. (p. 95)

Verhoeven (1990) looked at developmental differences in the balance between bottom-up and top-down processes. He analysed the reading performance of children who learned to read Dutch as a second language, and compared this performance with the children's oral understanding of the text. Verhoeven concluded that the influence of bottom-up processes in word reading decreases the more experienced the children become. After two years

of school instruction (i.e., in the third grade), the bottom-up processes are more or less replaced by top-down influences in combination with socio-cultural factors.

Cziko (1978, 1980) compared the strategies in English text reading for native speakers and French students. Advanced French/English bilinguals behaved very much like mother tongue readers: They were susceptible to syntactic, semantic, and discourse features of the text. Less proficient readers made use of less efficient strategies such as focusing on orthographic features. They seemed to make more use of bottom-up strategies in order to get information from the text, whereas more proficient bilinguals and mother tongue readers made use of graphemic and contextual features as well as more general non-textual information or higher order schemata.

Because of the problems with purely top-down models, many researchers nowadays turn to interactive models in which top-down influences coexist with bottom-up activations. An influential model in this respect has been the interactive activation model of McClelland and Rumelhart (1981; see also Dijkstra et al., this issue). This model is based on a constant interaction between bottom-up and top-down processes during reading, so that good readers are both good decoders and good interpreters of the text.

Is Second Language Reading a Language or a Reading Problem?

As indicated above, research shows that reading abilities can be transferred from the first language to the second language. This transfer research is embedded within a wider theoretical discussion whether reading processes are universal or language-specific. In particular, the question is whether problems in second language reading are reading (universal) or language (specific) problems. Alderson (1984) summarises the topics in his book *Reading in a Foreign Language*.

Defenders of the universal approach have focused their attention on the covariation between first and second language reading competence and the conditions inhibiting or facilitating the transfer of reading skills from the first to the second language (Clarke, 1980; Cummins, 1979). According to Cummin's (1981) *Threshold Hypothesis*, for instance, language transfer is only possible after a threshold level of L2 proficiency has been attained. Thus, some threshold of L2 proficiency appears to be necessary for skilled L1 readers to maintain their competence when they are reading in L2. This line of research has been criticised, because it largely ignores the cross-linguistic variation in language processing, and because it pays little attention to the precise nature of the skills that have to be transferred from one language to the other.

The language-specific view contradicts the basic assumption of the universal perspective. The main idea here is that the linguistic features essential for understanding and producing language, differ from one language to the other. Persons with different language backgrounds use different strategies when they are reading in a second language. Koda (1989, 1990), for instance, examined the reading strategies in two groups of students reading English as a second language. One group had a native language with an alphabetic spelling system, the other had a native language with a logographic system. Koda found different reading strategies in English for both groups, very similar to the strategies used in the first language.

Brisbois (1995) summarized the research on language and reading transfer and concluded that skills can be transferred between languages, especially in proficient L2 learners. This is in line with Cummins' (1981) threshold theory. Brisbois further examined the contributions of L1 reading proficiency, knowledge of L2 vocabulary, and grammatical knowledge to L2 reading comprehension, and concluded, in line with previous research, that:

... the critical nature of vocabulary knowledge to L2 reading comprehension is apparent particularly at the beginning levels of language study. A particular important skill for L2 learners to develop is the automaticity of word recognition, which allows them to employ higher levels of processing skills and strategies, such as L1 transfer. In other words, once readers achieve a threshold vocabulary base, they can begin to use L1 knowledge to make sense of the L2.

Devine (1987) made a longitudinal study of the relationship between second language proficiency and oral reading performance. She hypothesised that when general language proficiency in a second language increases, reading performance also becomes more efficient, especially with respect to the use of effective strategies. She obtained positive correlations with reading performance but only for holistic measures of language proficiency. Scores on discrete grammatical and vocabulary tests did not correlate with second language reading performance. Devine concluded that her study affirmed the relationship between language proficiency and reading proficiency, at least for oral reading. Language proficiency, however, cannot be seen as a set of isolated abilities, but has to be conceived as an interactive system. In the same vein, Berman (1984) pointed to the importance of syntactic knowledge. According to him, readers have to be able to manipulate structural aspects of the second language in order to understand a text. Successful readers are indeed able to extract meaning from text because they understand the syntactic structure of the text.

Cooper (1984) compared practised and unpractised readers and examined which features of the English language would lead to difficulties for untrained

readers: affixes, word meanings in a specific context, syntactic function, grammar, ... He concluded that:

unpractised readers differed primarily from practised readers in their ability to use the linguistic clues in the larger context to determinate meaning. They found it especially difficult to deduce word meaning from context, to understand the meaning relationships between sentences. (p.133)

Another approach of reading research is to compare the reading performance of proficient and less proficient speakers of the second language. It has been shown that when second language proficiency is high, reading is faster (Favreau & Segalowitz, 1982; Haynes & Carr, 1990) and mistakes are less frequent (Bernhardt, 1991). Eye movement studies consistently show that not the number of fixations differs across proficiency levels, but the fixation times. Less proficient second language speakers have longer fixation times than proficient second language speakers (Bernhardt, 1987; Oller, 1972; Saito, 1989).

Alderson concluded his first chapter of *Reading in a Foreign Language* as follows:

Is foreign language reading a language problem or a reading problem? The answer, perhaps inevitably, is equivocal and tentative - it appears to be both a language and a reading problem, but with firmer evidence that it is a language problem, for lower levels of foreign language competence, than a reading problem. It is clear, perhaps frustratingly so, that there is a great need to further research into the relative contribution to foreign language reading performance of foreign language competence and first-language reading ability, on particular tasks, seen in relation to other factors like conceptual knowledge, to help us define more closely the nature and the level of the language competence ceiling or threshold for particular purposes. (p. 24)

The Importance of the Reader's Emotion and Perception

In his research on second language acquisition, Krashen (1985) proposed the existence of an emotional filter in the learner. This filter is to some degree responsible for performance differences between second language learners. Understanding a language is a necessary but not a sufficient condition for language acquisition. Emotional factors influence the understanding of the text. Factors like self confidence, a lack of motivation and fear for failure can block language processes. A positive emotional attitude towards the new

language and language learning is important.

Joanne Devine (1988) showed the importance of the theoretical orientation second language readers have towards reading. She made a distinction between 'sound-centered readers' (who pay attention to the graphemic and phonemic aspects of a text) versus 'meaning-centered readers' (who pay attention to text understanding), by examining the kind of information (grapheme/phoneme, syntax, semantics) readers focus on while reading a text. Devine claimed that a relationship can be found between the adhered theoretical model of reading and the reader's success in text comprehension. In particular, she made a case study of two persons who just arrived in the U.S (a Polish man and a Spanish woman) and who scored very low on an English language test. The Polish man was convinced that the correct sounds of the language were important, whereas the Spanish lady was more concerned about the understanding of the text meaning. Devine showed that the sound-based model of reading, combined with low proficiency of the second language, resulted in a strongly limited transfer of effective reading abilities from the first language to the second. The meaning-based approach helped to overcome the negative effects of poor second language knowledge and permitted the reader to transfer good reading strategies from the first language to the second language.

Conclusion

Reading in a second language is a complex process. Second language word recognition subskills tend to be less automatized than those in the first language. Less proficient second language readers rely mostly on bottom-up processes (orthographic features...), whereas proficient bilinguals and mother tongue readers also make use of more general non-textual information (top-down processes). Second language reading is most of all a language problem, but emotional and cultural factors as well as theoretical orientation may come into play.

References

- Alderson, J. C., & Urquhart, A. H. (1984). *Reading in a foreign language*. New York: Longman.
- Bartlett, F. C. (1932). *Remembering: A study in experimental and social psychology*. Cambridge: Cambridge University Press.
- Berent, I., & Perfetti, C. A. (1995). A rose is a reez: The two-cycles model of phonology assembly in reading English. *Psychological Review*, 102, 146-184.
- Berman, R. (1984). Syntactic components of the foreign language reading process. In J. C. Alderson & A. H. Urquhart (Eds.), *Reading in a foreign language* (pp. 139-156). New York: Longman.

- Bernhardt, E. (1987). Cognitive processes in L2: An examination of reading behaviors. In J. Lantolf & A. Labarca (Eds.), *Delaware symposia on language studies: Research in second language acquisition in the classroom setting* (pp. 35-50). Norwood, NJ: Ablex.
- Bernhardt, E. (1991). A psycholinguistic perspective on second language literacy. *AILA Review*, 8, 31-44.
- Brisbois, J. E. (1995). Connections between first- and second-language reading. *Journal of Reading Behavior*, 27, 565-584.
- Campbell, R., & Sais, E. (1995). Accelerated metalinguistic (phonological) awareness in bilingual children. *British Journal of Developmental Psychology*, 13, 61-68.
- Carrell, P. L. (1981). Culture-specific schemata in L2 comprehension. In R. Orem & J. Haskell (Eds.), *Selected papers from the ninth Illinois TESOL/BE annual convention, the first Mid west TESOL conference* (pp. 123-132). Chicago: Illinois TESOL/BE.
- Carrell, P. L., & Eisterhold, J. C. (1988). Schema theory and ESL reading pedagogy. In P. L. Carrell, J. Devine, & D. E. Eskey (Eds.), *Interactive approaches to second language reading* (pp. 73-91). Cambridge: Cambridge University Press.
- Chitiri, H.-F., & Willows, D. M. (1997). Bilingual word recognition in English and Greek. *Applied Psycholinguistics*, 18, 139-156.
- Clarke, M. (1980). The short circuit hypothesis of ESL reading - or when language competence interferes with reading performance. *Modern Language Journal*, 64, 203-209.
- Cooper, M. (1984). Linguistic competence of practiced and unpracticed nonnative readers of English. In J. C. Alderson & A. H. Urquhart (Eds.), *Reading in a foreign language* (pp. 122-138). New York: Longman.
- Cummins, J. (1979). Linguistic interdependence and the educational development of bilingual children. *Review of Educational Research*, 49, 222-251.
- Cummins, J. (1981). *Bilingualism and minority-language children: Language and literacy series*. Toronto: Ontario Institute for Studies in Education. ERIC document reproduction service no. ED 215557.
- Cziko, G. A. (1978). Differences in first and second language reading: The use of syntactic, semantic and discourse constraints. *Canadian Modern Language Review*, 34, 473-489.
- Cziko, G. A. (1980). Language competence and reading strategies: A comparison of first- and second-language oral errors. *Language Learning*, 30, 101-116.
- Devine, J. (1987). General language competence and adult second language reading. In J. Devine, P. L. Carrell, & D. E. Eskey (Eds.), *Research on reading English as a second language*. Washington, DC: TESOL.
- Devine, J. (1988). A case study of two readers: Models of reading and reading performance. In P. L. Carrell, J. Devine, & D. E. Eskey (Eds.), *Interactive approaches to second language reading* (pp. 127-139). Cambridge: Cambridge University Press.
- Eskey, D. E. (1988). Holding in the bottom: An interactive approach to the language problems of second language readers. In P. L. Carrell, J. Devine, & D. E. Eskey (Eds.), *Interactive approaches to second language reading* (pp. 93-100). Cambridge: Cambridge University Press.

- Favreau, M., & Segalowitz, N. (1982). Second language reading in fluent bilinguals. *Applied Psycholinguistics*, 3, 329-341.
- Favreau, M., & Segalowitz, N. (1983). Automatic and controlled processes in reading a second language. *Memory and Cognition*, 11, 565-574.
- Frost, R. (1998). Toward a strong phonological theory of visual word recognition: True issues and false trails. *Psychological Bulletin*, 123, 71-99.
- Goodman, K. S. (1967). Reading: A psycholinguistic guessing game. *Journal of the Reading Specialist*, 6, 126-135.
- Haynes, M., & Carr, T. H. (1990). Writing system background and second language reading: A component skills analysis of English reading by native speaker-readers of Chinese. In T. H. Carr & B. A. Levy (Eds.), *Reading and its development: Component skills approaches* (pp. 375-421). San Diego, CA: Academic.
- Johnson, P. (1981). Effects on reading comprehension of language complexity and cultural background of a text. *TESOL Quarterly*, 15, 169-181.
- Kellerman, E. (1983). Now you see, now you don't. In S. Gass & L. Selinker (Eds.), *Language transfer in language learning* (pp. 112-134). Rowley, MA: Newbury House.
- Koda, K. (1989). Effects of L1 orthographic representation on L2 phonological coding strategies. *Journal of Psycholinguistic Research*, 18, 201-222.
- Koda, K. (1990). The use of L1 reading strategies in L2 reading: Effects of L1 orthographic structures on L2 phonological recoding strategies. *Studies in Second Language Acquisition*, 2, 293-410.
- Koda, K. (1994). Second language reading research: Problems and possibilities. *Applied Psycholinguistics*, 15, 1-28.
- Krashen, S. (1985). *The input hypothesis: Issues and implications*. New York: Longman.
- Lindgren, S. D., De Renzi, E., & Ichman, L. C. (1985). Cross-national comparisons of developmental dyslexia in Italy and the United States. *Child Development*, 56, 1404-1417.
- McClelland, J. L., & Rumelhart, D. E. (1981). An interactive-activation model of context effects in better perception. Part I: An account of basic findings. *Psychological Review*, 88, 375-405.
- McLaughlin, B., & Baker, C. (1985). *Are poor readers all the same? A comparison of monolingual and bilingual readers in the upper elementary grades*. Unpublished manuscript.
- McLeod, B., & McLaughlin, B. (1986). Restructuring or automatization? Reading in a second language. *Language Learning*, 36, 109-126.
- Neely, J.H. (1991). Semantic priming effects in visual word recognition: A selective review of current findings and theories. In D. Besner & G.H. Humphreys (Eds.), *Basic processes in reading: Visual word recognition* (pp. 264-336). Hillsdale, NJ: Erlbaum.
- Oller, J. W., jr. (1972). Assessing competence in ESL reading. *TESOL Quarterly*, 6, 313-323.
- Saito, Y. (1989). The effects of article deletion in English on the cognitive processes reflected in eye movements and metacognitive awareness of native readers and Japanese readers of English: An eye-tracker study. *Annual meeting of the National Reading Conference*.

- Schneider, W., & Shiffrin, R. M. (1977). Controlled and automatic human information processing: I. Detection, search, and attention. *Psychological Review*, 1-66.
- Segalowitz, N. (1986). Skilled reading in a second language. In J. Vaid (Ed.), *Language processing in bilinguals: Psycholinguistic and neuropsychological perspectives* (pp. 3-19). Hillsdale NJ: Erlbaum.
- Segalowitz, N., Poulsen, C., & Komoda, M. (1991). Lower level components of reading skill in higher level bilinguals: Implications for reading instruction. *AILA Review*, 8, 15-30.
- Schneider, W., & Shiffrin, R. M., (1977). Controlled and automatic human information processing: II. Perceptual learning, automatic attending, and a general theory. *Psychological Review*, 84, 127-190.
- Steffensen, M.S., Joag-dev, C., & Anderson, R.C. (1979). A cross-cultural perspective on reading comprehension. *Reading Research Quarterly*, 15, 10-29.
- Van Wijnendaele, I., & Brysbaert, M. (1998, September). *Language representation in bilingual brain: Evidence from masked phonological priming*. Poster presented at the 10th Congress of the European Society for Cognitive Psychology, Jerusalem.
- Verhoeven, L. (1990). Acquisition of reading in a second language. *Reading Research Quarterly*, 25, 90-114.
- Wimmer, H., & Goswami, U. (1994). The influence of orthographic consistency on reading development: Word recognition in English and German children. *Cognition*, 51, 91-103.