Models of reading comprehension and their related pedagogical practices: A discussion of the evidence and a proposal[1]

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Abstract

This paper discusses theoretical models of reading comprehension, the pedagogical practices related to them, and the empirical evidence available in connection with each model-pedagogy pair in order to evaluate the models and practices and make informed recommendations for EFL reading teachers. According to Grabe (2009) and Han and D'Angelo (2007), current-traditional EFL reading pedagogy and teacher training are based on a top-down model of the reading process, Goodman's (1967) psycholinguistic guessing game (PGG) and its pedagogical offshoot, the Whole Language approach. The pedagogical practices of the Whole Language approach emphasize building background knowledge and vocabulary and de-emphasize deep engagement with discourse. Based on our review of the research, we argue that PGG and the Whole Language approach are not supported by empirical research. We then review the literature to a) show that empirical research supports interactive models where both top-down and bottom-up processes are involved (Kintsch, 1998; Stanovich, 2000; Bernhardt, 2011), b) show that good L2 readers derive meaning primarily from deep processing of a text's language (a bottom-up process) rather than from the application of prior knowledge or information guessing techniques (Alptekin, 2004; McNeill, 2011; Perales, 2011). We then argue that EFL pedagogy and teacher training need to turn away from the Whole Language model and be more informed by traditions emphasizing bottom-up processing of texts. We also make a theoretical proposal regarding the placement of discourse-processing strategies in current models of L2 comprehension.

Resumen

Este documento analiza modelos teóricos de comprensión de lectura, las prácticas pedagógicas relacionadas con ellos y la evidencia empírica disponible en relación a cada par de modelo-pedagogía con el fin de evaluar los modelos y las prácticas y hacer recomendaciones a los maestros de lectura de inglés como lengua extranjera. Basándonos en nuestra revisión de la investigación, sostenemos que PGG y el *Whole Language approach* no son compatibles con la investigación empírica. Después revisamos la literatura para a) mostrar que la investigación empírica apoya modelos interactivos donde son los procesos *top-down y bottom-up* están involucrados (Kintsch, 1998; Stanovich, 2000; Bernhardt, 2011), b) mostrar que los buenos lectores de L2 obtienen significado principalmente de un procesamiento profundo del lenguaje del texto (*bottom-up*), en lugar de la aplicación de conocimientos previos o técnicas para adivinar información (Alptekin, 2004; McNeill, 2011; Perales, 2011). A continuación, argumentamos que la pedagogía de inglés como lengua extranjera y formación docente debe alejarse del *Whole Language approach* y sustentarse más en tradiciones que enfatizan el procesamiento de textos *bottom-up*. También planteamos una propuesta teórica acerca de la ubicación de las estrategias de procesamiento de discurso en los modelos actuales de la comprensión de la L2.

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Introduction

L2 reading comprehension is a long-standing interest of applied linguists (e.g. Koda, 2005; Grabe, 2009; Hedgcock & Ferris, 2009). This interest is justified by the fact that reading is a vital skill for educated learners of a foreign language. For example, many learners of English as a Foreign Language (EFL) are motivated to learn EFL by professional or educational needs that involve reading texts in English. It is also the case that many times texts in English are the primary source of input for EFL learners. These issues speak to the pedagogical importance of understanding reading comprehension, how it develops, and how it can be best taught. Importantly, L1 comprehension needs to be considered when researching and teaching L2 comprehension.

There is broad consensus that L2 reading ability is very strongly related with L1 reading ability (Bernhardt, 1999, 2011; Cummins, 1979, 1981, 1991; Grabe, 2009). Specifically, it has been found that reading strategies and meta-cognitive strategies developed in the L1 can assist L2 reading (Chiappe, Siegal, & Gottardo, 2002; Geva, 2006, Geva, Yaghoub-Zaheh, & Schuster, 2000 in Grabe, 2009). In other words, it seems that L2 comprehension is distinct from L1 comprehension only to the extent that it involves knowledge of a different linguistic system, i.e. a different syntax, vocabulary, pragmatics, and perhaps knowledge of culture-specific ways of organizing texts preferred by linguistic communities (Grabe, 2009). It follows that L2 comprehension can be studied from a perspective that includes other phenomena that are not limited to the vocabulary and grammar of the L2, such as the processing of meaning at the level of the whole text for the purpose of learning from texts, or discourse-level processing.

Learning from L2 texts is important, but not always easy. For learners of English in school settings in particular, research shows that, even when they are deemed proficient in spoken English, they have trouble creating patterns of meaning beyond individual clauses when reading complex school texts (Eskey,1973; Coady, 1979 in Grabe, 2009; Gibbons, 1991; Grabe, 1991; Cazden, 1992; Grabe & Gardner, 1995). This phenomenon has been attested in both small children (Buly & Valencia, 2002) and college-age learners (Stanley, 1984; Pretorious, 2005). In other words, they experience difficulties understanding discourse, in part because they fail to make inferential connections across clauses and bigger textual units like paragraphs or sections (Goigoux, 1999; in Vakilifard & Armand, 2011, 118). As Vakilifard and Armand (2011, 218) put it "les lecteurs novices, en particulier, ont tendence a être 'trop collés aux mots'." This may happen despite readers' success at parsing individual clauses, which suggests that the problems experienced by these learners do not stem exclusively from insufficient knowledge or control of English syntax and vocabulary, but from an absence of adequate, discourse-oriented reading skills and strategies. By discourse-oriented skills and strategies, we mean those that allow learners to make connections across units of the text larger than the clause.

The reasons for these difficulties are not well-understood, but may have to do with sociocultural factors (Grabe, 2009), L1 reading competence factors (Cummins, 1979, 1981, 1991 in Grabe, 2009), and teaching factors (Gibbons, 2002). For the Mexican student population, L1 reading competence factors may explain L2 reading difficulties. We make this claim because large segments of this population has been shown to have low L1 reading competence. For example, the results of the 2006 PISA test showed that a majority of Mexican students in grade 1 of elementary school through grade 3 in high-school can perform only the most basic reading tasks, such as locating discrete pieces of information (Díaz Gutiérrez et al., 2007). For college students, the results of studies conducted in some Mexican universities show that many students make implausible inferences when reading narrative and non-narrative genres in the L1 (Vaca Uribe, 2003; Perales Escudero 2010, 2011). These features of many Mexican readers probably stem from an educational system that only teaches the most basic, mechanical reading skills (Peredo Merlo, 2011). Thus, Mexican English teachers, particularly those at the college level, are confronted with a challenging task: they need to develop their learners' L2 system and reading abilities, but many of those learners do not have sufficiently developed L1 reading skills that they could transfer to L2 reading.

Grabe (2009) and Han and D'Angelo (2007) assert that current EFL reading pedagogy is very poorly developed and consists mostly of pre-teaching vocabulary, giving students background knowledge about the subject of a text, teaching how to guess the meaning of unknown words, and asking comprehension questions after reading. These pedagogical practices do not address the problems with discourse-oriented strategies (i.e., that learners fail to process language at the discourse-level and focus too much on the word and phrase levels) outlined above. Yet, pre-teaching vocabulary, activating background knowledge, guessing unknown words, and asking post-reading questions appear to be the prevalent ways of teaching EFL reading at some Mexican public universities (Perales Escudero, 2011). Addressing this issue, Gibbons (2002) asserts that these techniques do not intervene directly in the reading process, but just in pre-reading and post-reading. She suggests that what EFL learners, who are required to learn from texts, need is pedagogical interventions that work during the reading process, to which we add that such interventions, in this context, should also focus on discourse-level processing of texts.

Research Questions

Alternative ways of teaching comprehension exist, however. We use the term "alternative" to describe them because they focus on discourse-level comprehension (i.e. teaching how to comprehend whole texts) rather than background knowledge or vocabulary, which are the traditional and currently used ways to teach EFL reading in Mexico. As we have claimed above, current EFL teaching in Mexico focuses on background knowledge and vocabulary, not on discourse comprehension. So the label "alternative" here is to be understood as discourse-focused. While there are other extremely valuable, computer enhanced,

vocabulary-focused pedagogical proposals to teach L2 reading (e.g. Cobb, 2007a, 2007b), these are not addressed in this study because, despite their novelty and value, they do not deal with issues of discourse-level comprehension directly or explicitly.

These alternative, discourse-oriented pedagogies focus on raising learners' awareness of the organizational patterns of text, or text cohesion and coherence, which are discourse-level phenomena. This paper, then, seeks to address the following three questions.

> 1. What are the theoretical and empirical foundations for current EFL reading pedagogy as described by Grabe and Han and D'Angelo?
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> 2. What are the theoretical and empirical foundations of alternative (i.e. discourse-oriented) approaches focusing on text-structure awareness?
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> 3. Which approaches are best supported by theoretical and empirical research?

Questions one and two attempt to provide a characterization of pedagogical practices focused on background knowledge and vocabulary (that is, the traditional ones, not the computerized ones) vs. approaches focused on text structures. The third question seeks to establish which kind of approach appears to be most effective for teaching L2 comprehension.

Currently Influential Models and Approaches

According to Grabe (2009) and Han & D'Angelo (2007), prevalent EFL reading pedagogical practices are founded on a model of the reading process called "the psycholinguistic guessing game" (PGG). This claim is supported by Berhardt's (1991) finding that 65% of the L2 reading studies published between 1970 and 1989 cited the PGG as their theoretical foundation. First proposed by American psychologist Kenneth Goodman, this model defines reading as follows:

Reading is a selective process. It involves partial use of available minimal language cues selected from perceptual input on the basis of the reader's expectations… efficient reading does not result from precise perception and identification of all elements, but from skill in selecting the fewest, most productive cues necessary to produce guesses… the ability to anticipate that which has not been seen, of course, is vital in reading (Goodman, 1967: 127)

Goodman's definition of reading was a reaction against the idea that reading is "a sequential process involving precise identification of letters, words, spelling patterns, and large language units" (id.). The recognition of individual letters underlies a phonics approach to reading. A phonics approach consists of teaching sound-letter correspondences to children so that they can accurately perceive and decode words. The phonics approach assumes a bottom-up model of comprehension, that is, one where comprehension issues from decoding letters, words, and so on.

Goodman's model is a top-down model of comprehension (Grabe, 2009). What this means is that it presumes that the reading process is guided not by decoding of letters and parsing of syntax and semantics, but by a reader's background knowledge and expectations. That is, a reader constructs meaning from what s/he already knows and expects from the text. The model also ascribes great power to the ability to guess and anticipate. The model opposes the idea that reading involves precise and sequential parsing of letters and words. Rather, for Goodman, reading entails identifying and parsing only a minimal number of letters and words, just enough to produce accurate guesses at text meaning. According to the model, good readers would skip over several portions of the text. Thus, in this model a good reader relies on context cues, and poor readers rely on close letter and word identification.

The set of pedagogical practices that followed from Goodman's model is called Whole Language. This is an approach to the teaching of reading that, in its most extreme form, advocates that reading should not be taught at all (Pressley, 2004). Instead, learners should simply be given lots of opportunities to interact with text. That is, learners learn to read by reading a lot. In less extreme forms, a Whole Language approach involves giving learners background knowledge on the topic of a text, encouraging learners to predict the meaning of a text using context cues such as titles and sub-titles, images, and so on; it also involves teaching strategies to guess the meaning of new words (Presley, 2004).The Whole-Language movement has been the single most influential force on EFL reading pedagogy (Grabe, 2009), which may explain while the latter makes extensive use of guessing from context and providing background knowledge.

Goodman's model is not the only theoretical model of comprehension available. Other well-known models are the Construction-Integration model, the interactive-compensatory model, Carrell's version of schema theory, and Widdowson's model of comprehension. These four models are reviewed below.

Alternative Models

According to the construction-integration model of reading comprehension (C-I model, Kintsch, 1998), text comprehension is defined as a mental representation, or situation model, that is the outcome of the combination of two distinct but connected components: the textbase and background knowledge relevant to the situation presented in the text. The textbase is that aspect of the mental representation that "comprises those nodes and links in the mental representation of the text that have direct correspondences in the text itself." (McNamara & Kintsch, 1996, 251). McNamara and Kintsch (1996) state that, in order to develop a textbase, both syntactic and semantic knowledge are required. That is, readers must know vocabulary and be able to parse the syntactic and semantic relations created by the language of a text in order to understand it. This understanding of a text's linguistically-encoded meaning is the textbase.

In this way, the model assumes that some sequential, linear parsing of lexis and syntax is needed to create an accurate representation of a text's meaning. The model also assumes that comprehension is primarily text-driven (bottom-up) as it is the parsing of the text that begins to generate cognitive activity and a text-base that then interacts with the situation model (Nasajji, 2002). Despite the primacy it accords to text, the C-I model also assigns great weight in comprehension to prior knowledge, because it is prior knowledge that allows for the textbase to be interpreted by the reader. That is, a reader may parse the vocabulary and syntax of a text really well but not have the relevant cultural or topic knowledge to create a good "complete picture" of what the text means. This "complete picture" is called "situation model" in the C-I.

The C-I then presumes some bottom-up processing and also some top-down processing. The bottom-up processing is involved in the creation of an accurate textbase. The top-down processing is involved in using background knowledge to interpret the textbase and create a good situation model. However, the C-I model is not explicit about the role of bottom-up and top-down processing in comprehension. This model also does not say anything about the processes of comprehension.

The interactive-compensatory model of comprehension (Stanovich, 2000 [1980], 2000 [1984]) does explain the role of top-down and bottom-up processing. The model posits that comprehension includes processes operating at many levels, e.g. letter recognition, word recognition, phrase recognition, and so on. Then, the model makes two assumptions. First, there is the assumption that "recognition [of meaning] takes place via the simultaneous amalgamation of information from many different knowledge sources" (2000 [1980], p. 49). Some of these sources can be higher-level ones, like topic knowledge, while others can be lower-level ones, like syntactic or orthographic knowledge. Second, there is the assumption that "deficiencies at any level in the processing hierarchy can be compensated for by greater use of information from other levels irrespective of the level of the deficient process" (id.). That is, failure to understand an idea using previous knowledge, for example, can trigger the application of careful syntactic and semantic analysis of the corresponding text segment to repair such failure. The model predicts that both good and poor readers may use both bottom-up and top-down processes at different times during reading based on moment-to-moment needs and difficulties.

Carrell's (1984) ESL-derived model of content and formal schemata also contributes to our understanding of comprehension. Schemata have been defined as "interacting knowledge structures" (Rumelhart & Ortony, 1977, 100; in Carrell, 1983) that shape our expectations for reality. For example, we know that restaurants usually place menus on tables and menus are used to order food. That's our "schema" or knowledge structure for how restaurants operate and the kinds of situations we can expect to occur in them. Therefore, we expect

restaurant to have menus, and we expect customers and waiters to use those when ordering food.

Carrell distinguishes between two types of schemata: content schemata and formal schemata. Content schemata refers to background knowledge of the topic of a text. Formal schemata refers to "knowledge of the rhetorical structures of different types of texts" (1984) or the ways texts are organized. This kind of knowledge is also called knowledge of text structures, or text structure awareness. According to Jiang and Grabe (2007) there is a finite number of text structures that texts can be organized by. Some of these are Problem-Solution, Cause-Effect, Description, and so on. According to Carrell (1984), formal schemata, and particularly text structure awareness, guide L2 reading of texts and play an important role in L2 comprehension.

Bernhardt's (1991, 2000, 2011) L2-focused, empirically-based version of Stanovich's interactive compensatory model integrates text structure awareness into a model of comprehension. Bernhardt adheres to a components view of L2 reading, that is, the idea that many components of cognition are involved in reading comprehension, a view that is well-accepted in the literature (Koda, 2005). Her model is based on two main sources: a) Bernhardt's own data from over 200 think-aloud protocols elicited with US college students learning European languages (mainly German, Spanish, and French), plus hundreds of protocols from previous studies" (2011, 31); and b) meta-reviews of L2 reading studies published since 1970. Her main conclusion as presented in Bernhardt (2011, 33) are that 20% of L2 reading performance is explained by L1 literacy, and 30% is explained by L2 knowledge, primarily of vocabulary. The remaining 50% of the reading process may be accounted for by factors such as motivation, affect, and other unknown ones. Berhardt places text structure awareness (a discourse-level phenomenon) within the realm of L1 literacy. This is a somewhat problematic move, but its problematic nature will be dealt with in the conclusion section.

Another main finding is that more proficient L2 readers make fewer mistakes attributable to their background knowledge overriding textual meaning. In terms of the C-I model, their bottom-up, language-based processes appear to be more operant than the use of background knowledge and produce better comprehension in more advanced L2 readers. These findings have important pedagogical implications. For Bernhardt, privileging the role of background knowledge is pedagogically undesirable because it would mean that it is "difficult if not impossible" to gain new knowledge from texts (32). If background knowledge in fact does not contribute much to proficient L2 reading but text processing appears to do so, then a more appropriate pedagogical focus is on language processing rather than providing background knowledge.

In Widdowson's (1984; in Lahuerta, 2002) model of comprehension content schemata and formal schemata are part of schematic knowledge. But in this model, reading a full text also requires the use of language-processing resources,

and they are more complex than the ones required by decoding, or simply making connections between letters and sounds. Widdowson and other comprehension researchers after him have referred to these language processing resources as reading skills and strategies and have investigated them chiefly through the use of think-aloud protocols. From the 1970s to the early 1990s, reading comprehension scholars embarked in a program of research seeking to characterize the mental activities performed by skilled readers. This line of research has been labeled "cognitive" or "metacognitive" (Hiebert & Raffael, 1996). The rationale behind this program was that such mental activities, invisible as they are in silent reading, needed to be made visible so that they could be taught in school literacy programs. To these scholars, such mental activities were the very substance of reading and should become, so to speak, the subject matter of reading instruction. According to Widdowson (1984) skills and strategies—which he calls "interpretive processes"— are the mental operations that allow readers to make inferences and draw connections across different parts of the text, thus relating schematic knowledge to discrete language items (Lahuerta, 2002).

Empirical studies

There is a wealth of evidence contradicting some of the main tenets of Goodman's model and certain aspects of schema theory. The most important tenet of Goodman's model is that good reading is about getting the meaning of texts without reading every single letter or word by guessing the meaning of only a few key segments of the text by using context cues. However, as Pressley asserts "the scientific evidence is simply overwhelming that letter-sound cues are more important in recognizing words (i.e. reading the words) than either semantic or syntactic cues" (Pressley, 2006, p. 21). Some of this evidence is presented below.

In a meta-review of several word-recognition studies with adult L1 readers, Stanovich (2000 [1980]) finds that "skill at recognizing words is strongly related to the speed of initial reading acquisition… among adults word recognition efficiency accounts for a sizable amount of variance in reading ability… word recognition skill predicts reading comprehension ability in adults." (page number missing) Specifically, Mitchell and Green (1978 in Stanovich, 1980) found that "reading rate is more dependent on the speed with which a reader can recognize words and construct a representation than on the ability to use predictions to facilitate word recognition." (in Stanovich, 2000 [1980], p. 26).

Another assumption of Goodman's model is that better readers use more context cues. In other words, one would expect that expert readers would guess more words and fixate less on individual words and letters. However, for example, Weber (1970 in Stanovich, 1980) and Biemiller (1970 in Stanovich, 1980) both found that the better L1 readers in their sample of first graders paid more attention to letters. Also, Juel (1980 in Stanovich, 1980) studied the oral errors of second- and third-graders and found that good readers actively tried to recognize all words and letters, while poor readers tended to use contextual information to

guess the meaning of words. These findings directly contradict the claim that better readers rely less on graphic information. The findings are also buttressed by second language research with adults indicating that word recognition, which depends on having a large L2 lexicon, explains 80% of the variance of L2 reading comprehension (Grabe, 2009).

We've been able to find only one study supporting Goodman's assertion that readers only read a few segments of the text. This is Duckett (2003). That there is only one study is not surprising because, according to Pressley (2004), supporters of Whole Language in general do not study their model empirically. In this study, the author examined the eye movements of L1-English pre-school children as they read a short story consisting mostly of pictures with one-sentence caption. The author found that these young readers only read a few words and looked carefully and only sections of the pictures but were able to understand the text well nonetheless. It is likely that the fact that the children were able to understand the text despite focusing on only a few words was due to the simple nature of the messages and also because of the presence of images. It is also possible that this way of reading is characteristic of young readers, but the results reviewed in Stanovich (2000) and Grabe (2009) suggest that adult L1 and L2 readers do identify most of the words in texts and rely less on context cues.

Top-down models, like Goodman's and schema theory, rely on readers' using their prior knowledge to be able to construct meaning from only a few textual cues. A research study with EFL learners that goes against Goodman's model and the part of schema theory that proposes background knowledge as a strong influence in L2 comprehension is McNeill (2011). This paper reports on a quantitative study conducted with 20 college-level EFL learners. He used regression analysis to examine the relative contributions of comprehension strategies and background knowledge to L2 comprehension. A motivation for the paper was that prior research had shown that EFL learners with either low or high command of English do not use their background knowledge when reading, but rely on text processing (Clapham, 1996; Yuet Hung Chan, 2003; Al-Shumaimeiri, 2006; all in McNeill, 2011). The explanation for this phenomenon is that low L2 knowledge EFL learners are too involved in slow processing of the text's language to use their background knowledge profitably, whereas high L2 knowledge EFL learners are very efficient at language processing and thus can reconstruct the meaning of texts from the linguistic input along and do not need to use background knowledge (Carrell, 1991; Al-Shumaimeiri, 2006; both in McNeill, 2011).

McNeill speculated that high knowledge EFL readers, because of their efficient language processing, would have more cognitive resources to devote to using strategies such as comprehension monitoring efficiently, which would be more helpful to them than background knowledge. He tested this hypothesis by training high knowledge EFL readers in the use of one specific type of strategy, self-questioning, which involves posing oneself questions about points in a text. He measured the extent to which students used self-questioning successfully by

having them create self-questions and having those rated and scored by experts. He also measured the students' background knowledge with text-specific questionnaires. After running regression analyses, he found that successful comprehension was strongly predicted by strategy use, but not at all by having background knowledge. This supports Bernhardt's (2011) assertion that good L2 readers do not use background knowledge to guide comprehension even when they have it, and also aligns with the findings from L1 reading studies suggesting that good L1 readers derive meaning from active text processing rather than just using background knowledge. These studies, however, do not yet show the role of careful language parsing in comprehension. The following sections reviews studies focused on language.

The position of Goodman's inspired Whole-Language approach is that skills and strategies should not be taught explicitly. Instead, students should just be given plenty of opportunities to read. Whole-Language assumes that these reading strategies will develop on their own. Specifically, Goodman argued that learning to read happens naturally through immersion and skills/strategies do not need to be taught, or indeed cannot be taught. However, the first set of studies discussed below strongly indicate that good L1 and L2 readers use language-parsing interpretive processes when reading. Then, the second set of studies show that both L1 and L2 readers benefit from explicit teaching of language-processing strategies.

Pressley and Afflerbach (1994) argue that good L1 readers use language-processing strategies extensively. They offer a comprehensive review of 38 think-aloud-based research studies characterizing the reading strategies employed by skilled L1 readers. The studies in their review show that skilled readers engage in deep processing of language both at the clause level and beyond. It can be said that these readers use their knowledge of text structure and the language-interpretive processes they command to build rich textbases of the texts they read.

Importantly, some studies show that skilled L2 readers do the same: they process language carefully when reading and derive meaning primarily from the language of the text rather than their own background knowledge. A recent study in that direction is Alptekin (2006). In this study, the authors compared the amount of text-parsing reading strategies used by advanced EFL readers when reading a passage in English with content that was culturally familiar to them vs content that was not familiar. They found that, although familiarity with the text's content helped comprehension, their participants still relied primarily on careful parsing of the text's language in order to comprehend the text.

With reference to the benefits of teaching text-processing skills, the results of the L1 quasi-experimental study by Palincsar and Brown (1984) support the idea that reading skills/strategies can be taught and students with reading difficulties can benefit dramatically from such teaching. The authors taught four text-parsing and

metacognitive strategies to a group of seventh graders with reading problems. The strategies were summarizing, paraphrasing, question writing, and predicting. This intervention received the name of Reciprocal Teaching. A key point in Reciprocal Teaching is that the strategies are modeled first by the teacher before the students conduct them on their own, and they focus on shorter text segments initially to then focus on larger segments. The results strongly supported the hypothesis that children with reading problems can benefit from explicit strategy training. The efficacy of Reciprocal Teaching has been investigated with EFL learners with similarly encouraging results (Song, 1998; Zhang, 2008 in McNeil, 2011), leading Taylor et al. (2006) to conclude that L2 learners can be taught text-parsing reading comprehension strategies and benefit from them.

One specific type of text-parsing strategy has to do with text structure awareness, a concept developed by British functional text linguists such as Michael Hoey and M.A.K. Halliday. As explained above, scholars posit that text are organized according to a finite and relatively small set of text structures (Jiang & Grabe, 2007, 2010). Several studies show that text structure awareness helps comprehension in both L1 and L2 readers.

Meyer, Brandt and Bluth (1980) and Meyer and Poon (2001) investigated the effects of explicit training on recognition of text structure in several L1 populations of different ages. The text structures they used were problem-solution, comparison, antecedent/consequence, description, and collection (Meyer, Brandt, & Bluth: 74). To identify text structures, students were taught to recognize the relationships between segments of the text to identify the overarching text structure. Their results overwhelmingly support the positive effects of text structure training on both comprehension and memory. The following paragraphs turn attention to L2 studies investigating the effects of text structure awareness on L2 comprehension. The first two studies (Carrell 1984; Lahuerta, 2002) did not use instructional interventions but just tested the hypothesis that text structure awareness helped L2 reading comprehension. The remaining studies did use instructional interventions focused on raising text structure awareness.

Carrell (1984) set out to investigate whether her model suggesting that formal schemata (i.e. awareness of text structure) facilitate L2 comprehension held true. Carrell (1984) reports on an experimental study on the effects of rhetorical organization on ESL readers. The subjects were 80 college-level highly proficient students who belonged to four different language groups (Spanish, Arabic, Oriental and Other).The texts used in the experiment were four different versions of a single passage; each version representing an English expository text structure (collection of descriptions, causation, problem/solution, and comparison). The texts were randomly assigned across the four language groups (20 subjects for each text structure). The experiment was held in two sessions. The results showed that those discourse structures which are more tightly organized (comparison, causation, problem/solution) were better recalled by subjects. It was also found that those subjects who recognized and utilized the text structures for their recall

protocols retrieved more information. Those subjects who did so were mainly Spanish speakers (8 out of 21). This last finding may be due to similarities between Spanish and English text structures, and also to the L1 literacy level of the Spanish speaking subjects.

Lahuerta's (2002) quasi-experimental study investigates the use of text structures as tools to facilitate and improve EFL students' reading comprehension and reproduction of information. The subjects of her study were 60 ESP Spanish-speaking college-level students. In line with Carrell's study, five versions of a single passage and topic were used in this study, for of which had clear organizational patterns. The experimental groups received the well structured texts and the control group received the text with no organization. The study showed that there is a positive relationship between the use of an organized text and comprehension, that is, the disorganized text did not help comprehension but the organized texts did. Another salient finding in this study is that awareness of the text structure seems to facilitate reading performance.

Tang (1992) reports the results of a quasi-experimental study that researched the effects of instruction focusing on graphic representation of the classification text structure. The subjects were 45 intermediate level ESL students (ages 13-14). The experimental group was shown the content of a text as a tree graph (graphic organizer), completed a graph of the same kind with gaps in it, and took a main-idea recall test. This procedure happened twice. The control group read the same text but their instruction consisted on being taught key vocabulary and being asked comprehension questions at the end. The post-test showed that the experimental group performed significantly better than the control group. Further, the students in the experimental group reported that they thought the graphic organizer had aided their comprehension.

Vakilifard and Armand (2011) report on an experimental study using a kind of graphic organizer which they call "carte conceptuelle" (akin to discourse-structure graphic organizer and different from graphic organizers, see the discussion below). The study was conducted with 69 college-age learners of French as a second language. Their treatment and design were similar to those of Tang (1992), but they distinguished between effects on literal vs. inferential comprehension and they also researched transfer effects. They found that the students in the experimental group had significantly better scores for both literal and inferential comprehension than those in the control group. Transfer effects were present for literal comprehension in the experimental group, but not for inferential comprehension.

Jiang and Grabe (2010) report on an experimental study that investigated the effectiveness of discourse-structure graphic organizers (DS-GOs), or graphic representations of text structures, to aid ESL comprehension. Their participants were 76 college learners of English as a second language at the high intermediate and advanced levels. DS-GO used in the experimental group was compared to

vocabulary and comprehension questions in two control groups. In this pedagogy, learners were taught to recognize text structures and then to fill out a discourse organizer with information from three different texts at three different times so that the visual representation of the information in the organizer matched the text structure. The results showed that the experimental group's comprehension scores were significantly better than those of the two control groups, with the two control groups showing no statistical difference between them.

It is important to mention that part of the impetus behind Vakilifard and Armand came from L1 studies showing that graphic organizers did not increase comprehension, notably Griffin, Malone and Kameenui (1995). Jiang and Grabe (2007, 2010) claim that these results of Griffin, Malone and Kameenui (1995) may be due to the fact that the graphic organizers in their study did not reflect visually the text structure of the target texts. For that reason, Jiang and Grabe suggest that the graphic organizers that do enhance comprehension are those who visually match text structure, which they call DS-GOs, akin to Vakilifard & Armand's "cartes conceptuelles." Their results (2010, presented above) appear to support their claim, as do those of Vakilifard and Armand, who claim that graphic organizers should be designed by experts, presumably so that their visual layout will match the organization of information in texts.

Another study focusing on EFL text processing is Perales Escudero (2011). In this study, a group of 27 UJAT students were trained to parse the semantic constituents of evaluative language segments according to Appraisal Theory (Martin & White, 2005, a model of evaluative language that shows how language conveying evaluation or emotion contributes to the creation of discursive patterns of coherence in texts) in order to encourage critical reading of political opinion texts. The students had very limited experience with the target genre in the L1 and also limited ability to parse Appraisal patterns in the L1 as shown by L1 reading questionnaires and tests. The students use discourse organizers to this end. Discourse organizers do not represent a text's structure graphically, (i.e. they are not graphic organizers or DS-GOs). Instead, they represent the semantic constituents in Appraisal sequences that can be local or global in a text. The results showed that students were not used to processing evaluative language semantically, either within the clause or across clauses (i.e. at the discourse level). The use of the discourse organizers coupled with conversations about text organization and rhetorical functions greatly enabled the construction of rich textbases and the making of plausible inferences across text segments.

These results suggest that careful, semantic text-processing at the discourse-level should be encouraged with EFL learners in this context, and that functional language theories such as Appraisal Theory can be helpful in that regard. While the study did not investigate transfer to the L1, the findings suggest that it is possible to develop awareness of patterns of textual organization in the L2 even if such awareness is absent in the L1. This lends support to the notion put forward

above that discourse-level knowledge may be better accounted for by not ascribing it to a specific L1 or L2.

Discussion and Conclusion

In this section, the research questions are addressed in light of the research reviewed above. Below is question one and its answer.

1. What are the theoretical and empirical foundations for current EFL reading pedagogy as described by Grabe and Han &D'Angelo?

The review of theoretical research above suggests two sources for prevalent EFL reading pedagogy. These are Goodman's Psycholinguistic Guessing Game model/Whole Language and Schuder's (1993) definition of skills vs. strategies, his equation of careful language processing with skills, and his recommendation that skills not be taught explicitly. Recall that one practice in prevalent EFL reading pedagogy is to provide or activate background knowledge before reading. This recommendation matches Goodman's assumption that teaching is primarily driven by readers' prior knowledge and expectations and therefore does not required deep language processing. In this model readers can construct a patchy representation of the text from just reading a few letters and words, and then fill in the gaps with their background knowledge. Recall too that, according to Pressley's review, less extreme versions of Whole Language focus on strategies such as predicting meaning from titles and subheading.

With regard to the vocabulary-focused practices in current-traditional teaching (pre-teaching vocabulary and teaching how to guess new words from context), these pedagogical practices are well-supported by empirical findings suggesting that automatic word-recognition, which is dependent upon having a large lexicon, is crucial for comprehension. Computerized instruction can greatly accelerate L2 lexis acquisition, thus enabling automatic word-recognition and comprehension (Cobb, 2007a, 2007b).

2. What are the theoretical and empirical foundations of alternative (discourse-oriented) pedagogical approaches focusing on textual awareness and language parsing?

The alternative approaches to prevailing EFL reading pedagogy reviewed in this paper focus on rich engagement with the text. This engagement can be either indirectly focused on language, as in Reciprocal Teaching (Palincsar& Brown, 1982; Song, 1998; Zhang, 2006 in McNeil, 2011) or directly focused on language as in text structure awareness (Carrell, 1984, 1985), use of discourse organizers (Jiang & Grabe, 2007; Jiang &Grabe, 2010), or Appraisal semantic parsing (Perales Escudero, 2011).

In the first case, the pedagogical practices are not founded on any linguistic theory and are cast as strategies. In the second case, a text linguistics theory guides the pedagogical approach and specific pedagogical tools, such as discourse organizers, are designed and used guided by the theory; the language-processing behaviors

encouraged by these interventions are not usually described as skills or strategies. The linguistic theories underlying these approaches are functional and text-based. Simultaneously, these text linguistics-informed studies are compatible with the C-I model of comprehension and aspects of schema theory. Recall that the C-I model posits that comprehension is built from parsing the text's language and then integrating the developing textbase with background knowledge to form a situation model. This process is what seems to happen when learners process texts using the interpretive processes encouraged by the alternative pedagogies. For example, when learners summarize and paraphrase as they do in Reciprocal Teaching, they parse language to build a robust textbase. The same happens when they parse both local and global semantic patterns as in Appraisal parsing. The same also happens when they identify how large segments of the text relate to other large segments in patterned ways as in text structure awareness. This latter process is also compatible with Carrell's (1981, 1984, 1985) version of schema theory, as she posits that a kind of schemata readers use to interpret texts is formal schemata, or their knowledge of text structures.

3. Which theoretical and empirical approaches are best supported by the findings of empirical research?

There is very little empirical support for the PGG model, the only study being Duckett. This study is problematic because it focused on very young readers (playschool ones) and an extremely simple text. It is plausible to think that the patchy parsing of the text they engaged in didn't affect the comprehension because of the simplicity of the text, and it seems wrong to assume that older, more experienced readers would do the same kind of patchy parsing. Indeed, both the L1 and L2 empirical studies reviewed above show the opposite: good L1 and L2 readers engage deeply with texts. For example, on the L1 front, Stanovich finds that accuracy at identifying words and letters is a typical behavior of good readers and a more powerful predictor of good comprehension than using context cues is. At a more textual level, Pressley and Afflerbach (1995) report that good L1 readers engage in deep parsing of the text's language.

On the L2 front, several studies report that advanced L2 readers use primarily rich text parsing to understand texts. This goes against the tenets of the PGG in two ways. Recall that the PGG proposes that patchy parsing is enough to understand because good readers use both context cues and their background knowledge. The L2 studies show that good L2 readers parse the text carefully and do not use their background knowledge much. This means that, as Alptekin (2006) claims, L2 readers do not engage in compensatory processing of the kind proposed by Stanovich. Thus, it seems from this review of the literature that the C-I model is the model that most accurately describes the reading processes of good L2 readers.

This assertion is supported by the empirical research showing that pedagogical interventions promoting rich engagement with the text, either by using a linguistic

theory and graphic aids (e.g. Jiang &Grabe, 2007; Vakilifard & Armand, 2011; Perales Escudero, 2011) or not (e.g. Palincsar & Brown, 1982; Song, 1998; McNeil, 2011) produce excellent results in terms of aiding text comprehension and inference-making. In C-I terms, encouraging engagement with the text results in robust text-bases that have better chances of being integrated into a coherent situation model for the text, resulting in improved comprehension. A further strength of these pedagogies is that they have been used with diverse, adult EFL populations such as speakers of Korean, Spanish, and Arabic, showing equally encouraging results. Another strength is that complex texts such as textbook chapters or opinion articles have been used in the studies. That is, it seems they and their theoretical underpinnings are equally applicable to all adult EFL readers in most adult reading situations.

The same cannot be said of Whole Language, whose theoretical model, the PGG, has been shown to be applicable only with preschoolers reading simple texts (Duckett, 2003). We couldn't find any empirical studies examining explicitly the efficacy of Whole Language to teach EFL reading. Thus, the application of PGG/Whole Language, despite their prevalence in pedagogical practices around the world (Han & D'Angelo, 2007) does not have any empirical support.

L1 literacy should be factored into discussions of text structures. Being a native speaker of a given L1 does not entail good knowledge of the text structures present in L1 texts because L1 speakers vary in their degree of familiarity with different text types and text structures according to their L1 literacy experiences. In other words, even if similar text structures exist between two languages across a text type, like the research article, learners who are not aware of the L1 text structures because of their limited exposure to L1 texts of the target type are unlikely to experience facilitative transfer effects. It is also possible that a learner may develop awareness of a text structure in the L2 even if that structure exists in L1 texts if the learner encounters the L2 texts first in her life. That appears to be the case with learners who learn how to read academic genres in English before having sufficient exposure to those genres in Spanish. It is for this reason that it is problematic to ascribe text structure awareness to L1 literacy as Bernhardt's (2011) model does. We propose that an additional layer is needed in her model to account for discourse-level knowledge irrespective of the language context in which such knowledge has its origin. We hope that this discussion will provide EFL teachers and scholars with material for reflecting on and improving their practice.

References

Alptekin, C. (2006). Cultural familiarity in inferential and literal comprehension in L2 reading. *System*, 34, 494-508.

Barriga, R. (2010). Una hidra de 7 cabezas y más: La enseñanza del Español en el siglo XX mexicano. In Barriga, R & Butragueño, P. (dir), *Historia sociolingüística de México* (pp. 1095-1194). México: El Colegio de México.

Bernhardt, E.B., & Kamil, M.L. (1995) Interpreting relationships between L1 and L2 reading: Consolidating the linguistic threshold and the linguistic interdependence hypotheses. *Applied Linguistics,* 16(1), 15 -34.

Bernhardt, E. (2011). *Understanding advanced second language reading*. New York: Routledge.

Buly, M.R. & Valencia, S.W. (2002). Below the bar: Profiles of students who fail state reading assessments. *Educational Evaluation and Policy Analysis*, 24, 219-239.

Carrell, P.L. & Eisterhold, J. (1983).Schema theory and ESL reading pedagogy. *TESOL Quarterly*, 17, 553-573.

Carrell, P.L. (1984).The effects of rhetorical organization on ESL readers.*TESOL Quarterly*, 18, 441-465.

Chiappe, P., Siegal, L., & Gottardo, A. (2002). Reading-related skills of kindergartners from diverse linguistic backgrounds. *Applied Psycholinguistics*, 23, 95-116.

Cobb, T. (2007a). Necessary or nice? Computers in second language reading. In Z, Han, N.J. Anderson & D. Freeman (Eds.), *Second language reading research and instruction: Crossing the boundaries* (pp. 173-191). Ann Arbor, MI: the University of Michigan Press.

Cobb, T. (2007b). Computing the vocabulary demands of L2 reading. Language Learning and Technology, 11 (3), 38-64.

Cummins, J. (1991). Interdependence of first- and second- language proficiency in bilingual children. In E. Bialystok (Ed.), *Language processing in bilingual children* (p. 70-89). New York: Cambridge University Press.

Díaz Gutiérrez, M.A., Flores Vázquez, G., & Martínez Rizo, F. (2007). *PISA 2006 en México.* México, DF: INEE.

Dole, J., Duffy, G., Roehler, L., & Pearson, D. (1991). Moving from the old to the new: Research on reading comprehension instruction. *Review of Educational Research*, 61(2), 239-264.

Duckett, P. (2003). Envisioning story: The eye movements of beginning readers. *Literacy Teaching and Learning*, 7(1/2), 77-89.

Ferreiro, E (1996). La revolución informática y los procesos de lectura y escritura. *Avance y Perspectiva*, 15, 260-267.

Gibbons, P. (2002). *Scaffolding Language*, *Scaffolding Learning*. Portsmouth, NH: Heinemann.

Goodman, K. S. (1967). Reading: A psycholinguistic guessing game. *Journal of the Reading Specialist*, 6, 126-135.

Grabe, W. (2009).*Reading in a second language: Moving from theory to practice*. Cambridge: Cambridge University Press.

Han, Z. & D'Angelo, A. (2007). Balancing between comprehension and acquisition: Proposing a dual approach. In Z, Han, N.J. Anderson & D. Freeman (Eds.), *Second language reading research and instruction: Crossing the boundaries* (pp. 173-191). Ann Arbor, MI: the University of Michigan Press.

Hedgcock, J. & Ferris, D. (2009). *Teaching readers of English: Students, texts, and contexts*. New York: Routledge

Hiebert, E.H., & Raphael, T.E. (1996). Psychological perspectives on literacy and extensions to educational practice. In D.C. Berliner and R.C. Calfee (Eds.), *Handbook of Educational Psychology*, 550-592.

Jiang, X. & Grabe, W. (2007). Graphic organizers in reading instruction: Research findings and issues. *Reading in a foreign language*, 19, 34-55.

Jiang. X, & Grabe, W. (2010) The effectiveness of reading activities in text comprehension. Paper presented at the *Conference of American association of applied linguistics.* Chicago, Illinois.

Kintsch, W. (1998). *Comprehension: A framework for cognition*. New York: Cambridge University Press.

Koda, K. (2005). *Insights into second language reading*. Cambridge: Cambridge University Press.

Lahuerta, A. (2002). Empirical examination of EFL readers' use of rhetorical information. *English for Specific Purposes*, 21, 81-98.

Larsen-Freeman, D. & Cameron, L. (2008). *Complex systems and applied linguistics.* Oxford: Oxford Applied Linguistics.

Lesaux, N., Lipka, O., & Siegal, L. (2006). Investigating cognitive and linguistic abilities that influence the reading comprehension skills of children from diverse linguistic backgrounds. *Reading and Writing*, 19, 99-131.

Martin, J. R., & White, P. R. (2005).*The Language of Evaluation*. New York: Palgrave Macmillan.

McNamara, D.S. & Kintsch, W. (1996). Learning from texts: Effects of prior knowledge and text coherence. Discourse processes, 22, 247-288.

McNamara, D.S. & Magliano, J. P. (2009). Towards a comprehensive model of comprehension. In Ross, B. (Ed.), *The psychology of learning and motivation.* New York, NY: Elsevier Science.

McNeil, L. (2011). Investigating the contributions of background knowledge and reading comprehension strategies to L2 reading comprehension: An exploratory study. *Reading and Writing*, 83, 883-902.

Meyer, B., Brandt, D. & Bluth, G. (1980). Use of top-level structure in text: Key for reading comprehension of ninth-grade students. *Reading research quarterly*, 16, 72-103.

Meyer, B. & Poon, L. (2001). Effects of structure strategy training and signaling on recall of texts. *Journal of educational psychology*, 93, 141-159.

Nassaji, H. (2007). Schema theory and knowledge-based processes in second language reading comprehension: A need for alternative perspectives. *Language Learning*, 57, 79-113.

Palincsar, A., & Brown, A. (1984). Reciprocal teaching of comprehension-monitoring and comprehension-fostering activities. *Cognition and Instruction* 1, 117-175.

Perales Escudero, M.; De Ita Reyes, E., & Hernández Fuentes, M. (2010). An analysis of texts used at a self-access center: opportunities for teacher training in reading comprehension. In Perales Escudero, M. (ed.), *Literacy in Mexican Higher Education: Texts and Contexts.* Puebla: BUAP.

Perales Escudero, M.D. (2010). Una aproximación a la lectura retórica: la prueba PISA y los alumnos de la Licenciatura en Idiomas de la UJAT. *Perspectivas Docentes,* 43, 42-52.

Perales Escudero, M.D. (2011). *Teaching and learning EFL critical reading at a Mexican university: An emergentist Case Study*. (Unpublished doctoral dissertation). University of Michigan, Ann Arbor, MI.

Peredo Merlo, A. (2011). Representaciones docentes del déficit lector de los estudiantes. Revista Mexicana de Investigación Educativa 16(48), 221-242.

Pressley, M. (2004). The need for research on secondary literacy education. In T. Jetton & J. Dole (Eds.) *Adolescent literacy research and practice* (p. 415-432). New York: Guilford Press.

Pressley, M. (2006). *Reading instruction that works* (3rd ed.). New York: Guilford Press.

Pressley, M. & Afflerbach, P. (1994).*Verbal protocols of reading: The nature of constructively responsive reading*. Mahwah, NJ: Lawrence Erlbaum.

Pretorious, E. (2005). English as a second language differences in anaphoric resolution: Reading to learn in academic context. *Applied Psycholinguistics*, 26, 521-539.

Schuder (1993).The genesis of transactional strategies instruction in a reading program for at-risk students. *The Elementary school journal*, 94 (2),183-200.

Song, M. (1998). Teaching reading strategies in an ongoing EFL university classroom. *Asian Journal of English Language Teaching 8*, 41-54.

Stanley, R.M. (1984). The recognition of macrostructure: A pilot study. *Reading in a Foreign Language*, 2, 156-168.

Stanovich, K. (1980). Toward an interactive-compensatory model of individual differences in the development of reading fluency. *Reading research quarterly,* 21, 360-407.

Tang, G. (1992). The effect of graphic representation of knowledge structure on ESL reading comprehension. *Studies in Second Language Acquisition*, 14, 177-195.

Taylor, A., Stevens, J., & Asher, J. W. (2006). The effects of explicit reading strategy training on L2 reading comprehension. in J. Norris & L. Ortega (Eds.), *Synthesizing research on language learning and teaching* (p. 213-244). Philadelphia: J. Benjamins.

Vaca Uribe, Jorge. (2003). Descripción psicolingüística de la lectura de estudiantes universitarios. *Lectura y Vida* 24, 4, pp. 24-37.

Vakilifard, A. & Armand, F. (2011). Les effets de la carte conceptuelle hiérarchique sur la compréhension litérale et inférentielle des textes informatifs en langue séconde. The Canadian Modern Language Review/La Revue Canadienne des Langues Vivantes, 67 (2), 217-245.