

# A Comparative Meta-analysis on the Effect of Higher vs. Lower Level Skills in EFL Reading

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## Abstract

A successful EFL reading entails many factors. Among these, one can refer to both lower level linguistic factors such as 'overall linguistic proficiency of the learners' as well as higher level factors such as 'background knowledge' (schemata) that the learners bring to the learning situation. However, it seems that there's not a clear-cut perspective among EFL researchers as to which factors are more important on the overall process of reading comprehension in EFL settings. To clarify the issue, the authors have tried to comparatively examine the issue through a comprehensive meta-analysis for the bilateral effect of background knowledge vs. linguistic proficiency among the empirical studies done on the subject so far. Some useful pedagogical implications for an EFL reading class are discussed at the end.

**Keywords:** Schemata, Linguistic proficiency, Higher order skills, Lower order skills, EFL reading

## 1. Introduction

In EFL classroom situations, reading is, by far, the most important of the other three skills of listening, writing and speaking in a foreign language. In this short qualitative article, it's been tried to examine the effect of background knowledge (schemata) as an outside context factor among higher order skills in reading comprehension and overall linguistic proficiency from among lower level skills. The aim was to determine which one of the two factors above may have more determinative effects in the reading process. This review is based on the most recent literature in L2 reading theories in the last decade or so.

The main issue being closely followed in the present study is the due effect that linguistic proficiency (code knowledge) vs. schemata (background knowledge) have in the L2 reading process. Grabe (1986) believed that 'reading process' is consisted of abilities and knowledge, only some of which are exactly linguistic. Thus, while he acknowledged that L2 learners would be deficient in 'process strategies which involved substantial knowledge of the target language' (p. 8), he emphasized the role which may be played in comprehension by other non-L2 specific factors such as reading proficiency in the L1 and level of text-relevant background knowledge. Horiba (2000) and Taillefer (1996), on the other hand, found that linguistic ability was a more effective asset in successful L2 readers compared with outside text factors including schema knowledge.

L2 reading research studies over the last few decades have proved mixed results in this regard. Hollingsworth and Reutzel (1990), O'Hara (1987), Khalil (1989) and Oxford and Young (1997) were among those who emphasized the fact that schemata (of content type) was insignificant and language proficiency could compensate the absence of schemata in reading tasks. On the other hand, Keshavarz, Atai, & Ahmadi (2007), reported a significant improvement on their readers' comprehension and test scores because of content schema in some standardized tests like TOEFL and IELTS. They surveyed 240 Iranian male students and stated that those who were familiar with the content of the texts did a better job compared with those who were not familiar with the text content. Then, according to Carrel (2006, cited in Xiaoyan Zhang, 2008: p. 198), a quite opposing view was issued in that both prior schemata (of linguistic type and background) were effective for a successful reading task. To the authors, the rhetorical structure of the text ("formal" schemata<sup>1</sup>) were deemed also crucial.

### 1.1 Research Questions

The main question being closely followed in the present qualitative research is viewing the above mentioned contradictories in detail and finding a pedagogical answer as to the fact that which factor, background knowledge or linguistic competence development, should be more decisive in order for a language teacher to consider specific tasks in teaching reading skills for the learners. In order to reach a conclusive result in this regard, other relevant enquires were also closely followed qualitatively. Thus the questions put forward in the present study were the following:

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<sup>1</sup> Formal schemata are part of the macrostructure of a text and refer to the logical organization of the text.

1. Which group of variables has more forceful effect on reading comprehension? Inside text (linguistic) or outside text (schematic) factors?
2. In case of the inefficacy concerning lack of sufficient linguistic knowledge or background knowledge, can one of the two mediate and have any compensatory effects or not? And how?
3. What processes are involved for schemata knowledge use in the lower level learners? Can Level have any effects on poor readers benefitting more from schema or linguistic proficiency?

## 2. Empirical Studies on Schemata and Linguistic Competence: Opposing Case Studies

Every language teacher knows it well that the work of introducing pre-reading background information seems to be important for many reasons. Among all, one can refer to the fact that it can help the learners to process texts more efficiently through top-down higher-level processing that involves sufficient as well as necessary knowledge for the reading practice. This is effective since the learners may have problems because of their limited language competence in the process of decoding the meaning of some unfamiliar lexical terms. As clear, no one can deny the effect of schemata on the learners' overall understanding of the text's conceptual meaning. However, the first question that comes to one's mind might be the specific effect that this background information plays in helping linguistic knowledge among the learners. In other words, how can schemata compensate for any lack of linguistic knowledge in processing a text? Let's look at a study done by Hudson (1982) (cited in Tudor's 1990 article).

Hudson (1982) has examined the effect of three different pre-reading layouts. They were '*cue pictures plus focus questions*', '*a vocabulary list plus definitions*', and '*prior reading of the target text*' among a population of ESL learners at three proficiency levels. He reported that lower level learners had derived more benefit from the pre-reading. A case in point was that lower level learners had benefited more from the cue pictures and vocabulary list which in effect entailed formats which provided most external assistance, on the contrary, advanced learners had made best use of the read-reread format entailing schema knowledge. This was interesting in two ways as he argued. First, lower level students had made best use of formal aspects of schema to activate their necessary linguistic knowledge, while the advanced level group had activated their content aspects of schema. This means both groups had been using some sorts of schemata, one content and the other one formal. The term 'Content schemata' is related to the subject matter or topic of the text and formal schemata talks about the formal properties of the text or formal schemata including knowledge on various text types and genres, diverse text organization, language formation, sentence structure and level of formality (Jun et al. 2007).

In another experiment done by Tudor (1990), unlike the above experiment, just content pre-reading activities were provided to a group of French university students acquiring English as an L2. The intention was to investigate the effect of content background knowledge on the learners' linguistic understanding of the text specifically. Four pre-reading

formats were used in his study. In experiment 1, a text summary and a set of pre-questions were used. Both formats were composed of three numbered parts, each part relating to one of the sub-topics/paragraphs of the text concerned. The two pre-reading formats used in experiment 2 were designed more open than those in experiment 1. One topic involved a brief statement of the text topic with an instruction for subjects to make notes on what they knew about this topic prior to their reading of the text. The other one included 'Vocabulary activation' involving twelve topic-related vocabulary items (words or phrases) from each text then translated into French. Subjects were told to provide the English equivalent of each item plus one relevant phrase. The results showed that among all four pre-reading formats which were effective on the subjects' text processing, 'summary' weighed more. Tudor asserted "The results obtained on these two formats may represent a combination of both content- and formally-oriented assistance." Another indication of his study was the greater facilitative potential of pre-reading with lower proficiency learners. This finding was also in line with Hudson's 1982 study. In his statistical results, they referred whatever approach they used the lower level students benefitted more. This latter finding concerning lower level students is discussed later in this article.

While this facilitative effect for schema knowledge may be taken for granted, it is so interesting to note that sometimes quite contrary results are reported in recent research in the field. In two more recent studies by Horiba (2000) and Taillefer (1996), it was found that linguistic ability was used more by L2 readers when they were reading various L2 texts. It was even found that as the reading task became more cognitively complex, the role of linguistic ability became more prominent. They also found that as the learners in these studies became more proficient, reliance on textual and linguistic processes did not decrease. These studies suggest that linguistic deficiency constraints the reading comprehension process and limited language proficiency leads to inefficient processing of the text.

Clapham (1996) also found a stronger effect for proficiency over background knowledge. He asserted the linguistically proficient readers in his sample could 'compensate for a certain lack of background knowledge by making full use of their language resources...' (p. 196). A previous study by Haifa (1982) showed that the most pressing needs for an L2 reader was (1) vocabulary, then (2) knowledge of the subject matter (background information), then (3) the structure of sentences and paragraphs. Clapham's and Haifa's finding was true for students at various levels. So, linguistic knowledge of a semantic field and not syntactic seemed to be more decisive. This was also in line with the studies of Hollingsworth and Reutzel (1990), O'Hara (1987), Khalil (1989), and Oxford and Young (1997).

On the contrary, Johnson (1982) examined the effect of the cultural origin of prose on the reading comprehension of some Iranian intermediate and advanced ESL students at the tertiary level. The results revealed that the cultural origin of the stories had a greater effect on comprehension than the syntactic or semantic complexity of the text. In a similar study by Parker and Chaudron (1987), it was proved that linguistic simplification can't by itself make a text easier to understand.

Two questions here emerge. First, in the previous studies no clear indication is made as to

how this happens? i.e., how schema bears fruit on text linguistic processing and vice versa? Then, the second question here is what processes are involved for so doing in the lower level learners. Maybe it's good to look at the issue from the outset. It can be of primary concern to consider what happens in poor readers' mind in this regard. In the following two sections, these two topics are further discussed in more details.

### *2.1 Bi-directional Effects of Schema And Proficiency in L2 Reading*

The opposing views mentioned thus far as the interaction of background knowledge and linguistic proficiency may be viewed from top-down vs. bottom-up text processing in reading skill theories.

In order to show how such top background knowledge has an effect on L2 reading comprehension, first let's have a look at the term "schema" and its meaning. Schema theory was originally suggested by Bartlett (1932). He asserted that human memory consists of high level structures known as schemas, each of which is responsible for our knowledge of the outside world and phenomena. These schemas represent the general knowledge which aids the understanding of conversations and texts, as well as real-life events. Such knowledge is stored in terms of various meaningful units in the mind.

Concerning the interaction of schemata (Top) and language proficiency (Bottom) mentioned above, we are so sure of the role that schema plays on better performance in the process of reading in L2. However, as to the effect bottom (linguistic knowledge) can have on activating knowledge schema as a top level process, maybe it's good to consider the issue in L1 reading among native speakers of the same language. That is, in case the common background knowledge on a subject is similar, can higher level readers be more successful in their L2? Research has proved that the bi-directionality of L1 text processing (top-down/bottom-up) cannot effectively occur. This is the essence of Threshold Hypothesis proposed by Lahuerta, 2011. She asserts: "... These researchers argue that the good reading skills of the L1 reader are not directly transferred to L2 reading."(149-158). Maybe that's because we know there are many factors affecting text processing such as proficiency level, age as well as literacy, etc.

Keshavarz Atai & Ahmadi (2007) also working on linguistic simplification and content schemata on reading comprehension and recall found that a language proficiency threshold exists above which content and proficiency interaction appears. They had investigated the effects of linguistic simplification and content schemata on reading comprehension and recall among a group of English students as a foreign language. Data analyses showed a significant effect of the content and EFL proficiency, but not of the linguistic simplification, on reading comprehension and recall. This implies when some linguistic proficiency threshold is passed, content schemata interact with language proficiency.

Though more research is needed to shed light on this issue, we might consider compensatory efforts that L2 readers might take to put up with their due lack of linguistic knowledge and that is nothing but developing their content knowledge of the text. As Bernhardt (2005) in his most recent L2 reading has noted, he talks of 'switching process' through which we

understand as long as the learning process progresses, some compensatory mechanisms come to the forefront.

For the complex hidden processes as such, maybe it's better to consider them from a cognitive viewpoint. The psychologists mention inferencing, remembering, problem solving and reasoning that occur in the brain while the mind is processing the text. The very interesting point, here, is that even mind gives clues to the relevant syntactic and lexical information of the message coming to it apart from the message itself (Kintsch & Bates 1977). This clearly indicates the interrelation of schemata with linguistic knowledge and why they both interact together. However, more research data is needed to support it in detail.

Nassaji (2002) mentions connectionist computational models through which he refers to the information processing system in that schematic representation of knowledge in our minds is selective not predictive. He means that when the relevant data is activated, different levels ranging from letter feature, word, syntactic, thematic and then discourse levels are gone through by the mind respectively. Construction –integration model is another model then discussed by Nassaji to resolve the contradictories existing in the literature at linguistic proficiency or knowledge schema to take precedence over one another. This issue has been explained in more details below.

Cognitive scholars explain higher order processes in the mind are understood well better than the lower level processes in this hierarchy. Cross-linguistic research demonstrates that L2 readers, even excellent fluent reader they be in their L1, they can't read fluently as that in their L2, i.e. they are slower in L2 than in L1 comparatively (Favreau & Segalowitz 1982). Thus, they are more bound to text in L2. And they need to read a text more than once to understand. This indicates to schema theorists that such inefficiency is because of L2 problem in processing higher level strategies in their L2 compared with L1. Nassaji asserts there is no supporting views for such conclusions and cites a study by Horiba, Van den Broek & Fletcher (1993). In their study, they have found support for the existence of good performance of higher level information such as the overall casual structure of the text. Based on these findings, one may doubt the nonexistence or mal-functioning of such higher order processes among L2 readers.

In still another study, the distinction between higher and lower order skills needed for a text processing was differently looked upon. Nassaji (2003) discussed the role that higher-level syntactic and semantic processes and on the other hand lower-level word recognition and graphophonic processes in adult English have as a second language (ESL) in reading comprehension. He concluded efficient lower-level word recognition processes could be the essential elements for the L2 reading comprehension. This could also be another proof for the significance of linguistic elements of text processing. In his study, Nassaji compares Farsi with English and makes the following assertions:

A: Persian language is orthographically different from English in terms of their physical shape, manner of word formation and the direction of writing and reading.

B: Persian language is quite different from English in terms of grapheme-phoneme regularity.



C: When reading in Farsi, Persian readers are more orthographically-oriented vs. phonologically-oriented. All this might be the reason why L1 speakers of Persian do differently in their L2 reading habits. In other words, simply knowing the meanings of words or having a good knowledge of L2 grammar may not suffice. A fluent reader is one who is also able to process words and their relationships in texts as efficiently as required for fluent processing and understanding the given text.

So, the question here is what probable reasons there are behind L1 readers as better performers. To answer this question, maybe it's good to make a clear distinction between having knowledge including syntactic, lexical, and pragmatic ability on the one hand and utilizing such knowledge in comprehending the text on the other.

Let's consider the issue from the viewpoint of inefficient L2 reading performance among poor readers. Maybe it clarifies the issue as to why the linguistic inefficacy can't activate upper level schematic knowledge; nevertheless why this moves from the top level and can activate the bottom level, here linguistic proficiency.

### *2.2 Inefficient Readers' Performance*

Considering the second question posed above, we can see the issue from what happens in a poor reader' mind. Maybe this clarifies the situation as to which one schema or linguistic proficiency takes precedence in his/her processing a text in a second language. We are certain from the outset that reading comprehension is a complex, multi-faceted and active process, which relies on word knowledge, sentence knowledge (micro skills) as well as a variety of skills like decoding, attitudes, text features, various general cognitive abilities, motivation, and even meta-cognition.

Alderson (1984) claims that ' the difficulties in L2 reading derive both from linguistic proficiency and reading problem including *'schema knowledge'* (*emphasis mine*);

*'L2 reading is more like a language problem at the lower levels of L2 proficiency and is more a reading problem at the higher levels of L2 proficiency'. (pp. 1-227)*

This issue has been more discussed in the next section of the present survey.

### **3. A Comparison of L1 and L2 Reading**

Concerning the third research question, here, closely related to this disputing era is the research on the comparison of L1 and L2 reading. While there is bulk of research in L1 processing, research into the reading behavior of L2 learners is ambiguous with respect to their ability to make use of their text-relevant background knowledge in the processing of texts in the L2.

Here, one might ask this question as to if a person is a good L1 reader can s/he transfer his/her habits to L2 or not? Again there is incongruity in the literature for supporting skill L1 transfer to that of L2. Barik and Swain (1975) showed in their study that the English speaking children taught in French immersion programs developed reading ability in English similar to their monolingual peers. These results seem to imply that reading ability transfers

across languages. Here the other hypothesis by Cummins needs mentioning as 'developmental interdependence hypothesis'. Cummins combines this idea with his previous so-called 'threshold hypothesis' and states that development of L2 competence is a function of L1 competence (Cummins, 1979, p.222). He means when the learners' L1 competence including vocabulary, grammar is fully grown, then he is ready to attain a high level of competence in L2.

Yamashita (1999), quite interestingly, after quoting the two opposing hypotheses as "Linguistic interdependence hypothesis" vs. the "linguistic threshold hypothesis" by Cummins proposes three different varying levels of the linguistic threshold that is responsive to the interaction of L1 reading transfer habits to L2. The so-called levels are: 1. the fundamental level, 2. the minimum level and 3. the maximum level. He states that before the fundamental level, readers' L2 language ability is very low and thus cannot aid any reading habits from L1 to L2. After reaching the fundamental level, L2 linguistic ability starts its own job; contribution of L2 linguistic knowledge to L2 reading and not yet the L1 reading shows any transferring. When readers reach the minimum level, L1 reading ability starts switching. Then in the maximum level, the contribution of L1 reading ability is the sole reason for reading variations among fully proficient readers, i.e. L2 readers read in L2 as well as in L1. Now higher order skills including predicting, analyzing, synthesizing, inferencing, and retrieving relevant background knowledge, which are supposed to operate universally across languages operate.

Interesting as the results are above, we shouldn't forget reading in an L1 is both similar and different from L2 reading. Reading in both contexts requires knowledge of context, formal and linguistic schemata. Successful L1 and L2 readers will consciously or unconsciously engage in specific behaviors to enhance their comprehension of texts. Text readability level, content range, text features, various micro-skills of 'reading' in L1 vs. L2 might also cause variations which might, on the other hand, be considered grounds for variations in processing in the two languages.

#### **4. Summary and Conclusion**

In the present survey, the authors tried to address the L2 reading process concerning the internal and external factors that happen for an L2 reader. In other words, the main line of enquiry was to prove if reading is product or process-oriented. Many research records were considered in order to find an appropriate answer for this question as to which factors are more important in the process reading in a second language; inside factors (linguistic proficiency) or outside factors (schemata).

What is clear is that the second language may contain a linguistic base that is syntactically, phonetically, semantically and rhetorically distinct from the target language. Grabe (1991) believes that students begin reading in an L2 with a different knowledge stand than they had when starting to read in their L1. Vocabulary base and grammatical knowledge in the learners' L1 is already sufficient to start reading. L2 readers, on the other hand, act defectively in this regard. However, though the viewpoints were to some extent contradictory some combating to take the linguistic end and some readers' schema knowledge, in recent years there has been



interest in reading as a social, critical process (Wallace 1992; Baynham 1995). Ideological factors which mediate in readers' access to the authors' communicative intents are considered more important.

#### *4.1 Revisiting the Research Questions*

Concerning some possible propositions to the posed research questions above, the authors believe that though the research findings are all inclusive as the due effect of schema knowledge vs. linguistic proficiency effect on L2 reading, the following results could be posed for further discussion.

As to the first Question above "Which group of variables has more forceful effect on reading comprehension? Inside text (linguistic) or outside text (schematic) factors?" one may say that based on the findings, it seems that there is a hierarchy of factors: based on the readers/level, higher-level syntactic and semantic processes and on the other hand lower-level word recognition and graphophonic processes in adult English in their reading comprehension might be the cause of linguistic and schema factors to take precedence over one another. Overall since we know all schema types (content, formal and cultural) play a key role in an L2 reading task, appropriate employment of each by the teachers could extremely improve the learners' performance. Explicit instruction of the text structure can improve students' knowledge of formal schema. Overall, as June et. al (2007) previously asserted the precise helping of each schema types could be specified as:

" content schemata affect comprehension and remembering more than formal schemata do for text organization. Readers remembered the most when both the content and rhetorical forms were familiar to them while unfamiliar content may cause more difficulties in correct comprehension." (p.21)

All in all, it can be said that it is urgent for ESL/EFL teachers to supply suitable schema building to effectively reach the goal of building and activating learners' schema knowledge. However, this doesn't necessarily mean to forget the role that linguistic form-focused approaches advocate. As Brown 2001 (cited in Hinkel, 2006) and other researchers like Larsen-Freeman, (2002) all attest, *'practically all teacher education textbooks on the essentials of language instruction include material on how to address both bottom-up and top-down abilities'* ( Hinkel, 2006, p.111) thus this is good clue for all EFL researchers to achieve a balance between the linguistic and the schematic aspects of learner language development.

Also important is another justification that might be useful to make a clear distinction between having knowledge including syntactic, lexical, and pragmatic ability on the one hand and utilizing such knowledge in comprehending the text on the other. This implies that an L1 reader knows exactly when, where, how and why s/he uses or activates the relevant knowledge but when it comes to L2, he is perplexed as to which knowledge and/or process can come to his/her aid.

Then the second question emerged as to *"In case of deficiency in sufficient linguistic knowledge or background knowledge, can one of the two mediate and have any*

*compensatory effects or not? And how?* " Considering this second question posed above, we saw the issue from what happened in a poor reader' mind. Alderson (1984) claims that ' the difficulties in L2 reading derive both from linguistic proficiency and reading problem including 'schema knowledge';

'L2 reading is more like a language problem at the lower levels of L2 proficiency and is more a reading problem at the higher levels of L2 proficiency'.

The interesting pedagogical point for the FL teachers to remember is that by so doing, poor readers activate some sorts of syntactic knowledge along with semantic and pragmatic knowledge, then higher order skills take care of themselves. This is so since reading habits can transfer across language.

Another still important study by Bernhardt (2005) showed that in L2 reading a 'switching process' exists through which we understand that as the learning process progresses, compensatory mechanisms he asserts vary according to the needs.

And finally the third question posed was *"What processes are involved for schemata knowledge use in the lower level learners? Can Level have any effects on poor readers benefitting more from schema or linguistic proficiency?"*

A second thought here came to mind as to if a person is a good L1 reader can s/he transfer his/her habits to L2 or not?

Lahuerta (2011) asserts in her study that "good reading skills of the L1 reader are not directly transferred to L2 reading." (p.p. 149-158). Maybe that's because we know there are many factors affecting text processing such as proficiency level, age as well as literacy aspects.

Concerning the threshold hypothesis, we might resolve the problem this way: a language proficiency threshold exists above which content and proficiency interaction appears. Text readability level, content range, text features, various micro-skills of 'reading' in L1 vs. L2 might also cause variations which might on the other hand be considered grounds for variations in processing in the two languages. From cognitive viewpoints, psychologists mention inferencing, remembering, problem solving and reasoning that occur in the brain while the mind is processing the text.

Cognitivists mentioned five major processes by schematic views to show how knowledge is stored in the mind: Selection, abstraction, interpretation, integration and reconstruction. For the information to reside in the mind, relevant processes are activated. The very interesting point, here, was that even mind gave clues to the relevant syntactic and lexical information of the message coming to it apart from the message itself. This clearly indicates the interrelation of schemata with linguistic knowledge and why they both interact together.

For pedagogical purposes, an important distinction can be made in the L2 classroom between language processing difficulties and information processing difficulties. The teacher may want to choose materials that reflect this useful distinction. These texts would contain carefully controlled language patterns when unfamiliar and conceptually demanding material is introduced. At other times, when conceptual content is more familiar, either because of a

reader's background or as a result of explicit instruction, the text would contain complex language patterns. Increasingly, it is believed that readers would be expected to become more independent, i.e. fully capable of dealing with both conceptually and linguistically complex material in the second language. It can be claimed that it is then not just a question of how the text is put together this way, but also why it is put together this way. Based on the above discussion, the authors believe in the term "bi-literate reader". Bi-literary, here, means that one can read in two more languages. This ability implies both text understanding and knowledge of reading strategies and abilities within a two-folded linguistic- pragmatic framework using both content and formal schema.

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