How is reading in a second language related to reading in a first language?
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1 Introduction

Theory and research on reading in a first language (L1), with respect to both cognitive and socio-cultural aspects, have shown impressive progress in recent years, as is evidenced by such monumental volumes as Barr, Kamil, Mosenthal and Pearson (1991) and Rayner and Pollatsek (1989). Research on reading in a second language (L2) has undergone a similar accumulation in recent years, a trend which has been documented in reviews by Bernhardt (1991), Carrell, Devine, and Eskey (1988), Grabe (1991), Hornberger (1989), and Murtagh (1989). Given these exciting developments, it seemed worthwhile, in this issue of the AILA Review, to pay attention to both L2 and L1 reading, especially with regard to their potential interrelationships.

Much of the literature on L1 reading as well as on L2 reading pertains to differences between "good" and "poor" readers. However, almost no research has been conducted on the question of whether good L2 readers are also good L1 readers, or whether poor L2 readers read poorly in their L1 as well. This question appears to be of great importance in two respects. First, our theoretical understanding of the notions of L2 proficiency in general and L2 reading proficiency in particular stand to gain if they could be linked with theories of L1 language proficiency and L1 reading proficiency. Second, such research may hold important consequences for L2 instruction. Many second language learners, even those advanced in their knowledge of L2 grammar and vocabulary, are reported to perform poorly on various types of L2 reading tasks (skimming, scanning, critical reading, summarizing, etc.) when functioning as students in institutions for vocational training or in colleges and universities (Alderson, 1984). How can we alleviate the L2 reading Problems of these students? Should we simply advise them, on an indiscriminate basis, to study more grammar, to learn more vocabulary, and to read many more books and papers? Or can we borrow from empirical studies on teaching reading strategies to poor L1 readers? If so, should we teach these techniques first in order to
improve their L1 reading proficiency in the hope that transfer to their L2 reading behavior will take place, or can we apply the techniques directly to their L2 reading behavior? Before we can begin to answer such questions, we need to gain insight into the relationships between L2 and L1 reading processes. Insight should come first of all from empirical studies using cross-linguistic within-subject designs. Such studies compare the performance of the same individuals on various L1 reading tasks to performance on similar L2 reading tasks. It is useful to study individual differences among bilinguals both in L1 and in L2 reading since, as various contributors to this issue observe, such study permits examination of stronger and weaker reading skills while controlling for cognitive factors such as general verbal ability or working memory capacity as well as for socio-cultural factors. As has been said, however, very few researchers have made explicit attempts to embark on studies geared primarily towards making such comparisons. I conducted a literature search for such studies in the files of LLBA and ERIC Documents, which yielded but very few true examples of such studies. Similar searches for cross-linguistic intra-individual studies on listening, writing and speaking also yielded only a handful of finds.

2 Content structure of this issue

For the composition of this issue of the AILA Review, we, the editors, approached several researchers and asked them to highlight different aspects of the potential relationships between L2 and L1 reading proficiency. They were asked to review the empirical literature on these relationships, especially with regard to studies using cross-linguistic within-subject comparisons. They were asked specifically to pay special attention to their own research in this domain. Furthermore, they were asked to discuss the pedagogical implications of the empirical literature, if at all possible (given the small body of empirical evidence). Thus, in order to define the scope of this issue of the AILA Review within the vast field of L2 reading with its many interacting variables, the solicited papers should do all of the following: (1) restrict themselves to relationships between L2 and L1 reading, (2) concentrate on theoretical issues, (3) briefly recapitulate and discuss the findings of empirical studies, and (4) speculate on pedagogical implications if possible.

In order to divide the field to be covered by the contributors, we made a rough distinction between lower and higher levels in the process of reading. Lower level processes pertain primarily to word recognition; higher level processes pertain to, for instance, the integration of information carried by words, clauses and paragraphs in order to construct a representation of the text in interaction with textual, cultural, and topical knowledge. We asked Segalowitz, Poulsen and Komoda to focus on the relationship between L2 and L1 reading skills on the lower level, and Bernhardt to focus on the relationship between L2 and L1 reading skills.
on the higher level. Bossers was invited to compare the findings of three recent investigations on the relative importance for L2 reading comprehension of (1) L1 reading comprehension skills and (2) knowledge of L2 grammar and vocabulary. These studies were comparable because they all used cross-linguistic within-subject designs.

Whereas Segalowitz et al., Bernhardt, and Bossers deal with L2 reading by adult intermediate and advanced L2 learners, the fourth contributor, Verhoeven, concentrates on the relative effectiveness of various models of literacy instruction for bilingual minority students in elementary schools. Finally, Cummins, whose work has been devoted not only to the development and testing of theoretical models of the interdependence of L2 and L1 proficiency, but also to the implementation of various types of bilingual education, was asked to critically examine the empirical status of some of his theoretical constructs. In the following paragraphs, I touch on each of the contributions, while highlighting what I believe to be the most promising trends for future research.

3 Automaticity in word recognition

Segalowitz, Poulsen and Komoda focus on adult advanced bilinguals, i.e. adults who have mastered the L2 to a very high level and perform equally well in both L1 and L2 on listening and reading comprehension tests. It has been shown, however, that, under certain conditions, many such advanced L2 users, despite being highly skilled in L2 and displaying fluency under normal conditions, do not perform as well on L2 reading tasks as on L1 reading tasks. They may read L2 texts about 30% slower than L1 texts. The authors discuss what factors may be involved in such under-performance in the L2, and what implications these factors may have for L2 reading instruction. From their research, the authors conclude that differences between L2 and L1 reading in skilled bilinguals can be understood as being analogous to differences in L1 reading between less skilled and skilled readers. Less skilled readers lag behind skilled readers in terms of the automaticity (speed and accuracy) with which word recognition is carried out. As a result, less skilled readers make greater compensatory use of contextual information to aid word recognition than do skilled readers. Segalowitz et al. argue that bilinguals who read more slowly in their L2 than in their L1 need to enhance the automaticity of word recognition processes in their L2 reading. This could free up resources which are currently being devoted to word recognition, giving them a greater capacity to comprehend the content of the text using their topical, cultural, and textual knowledge. The authors then discuss which subskills (subcomponents of the word recognition module) should be trained, and how these subskills might be trained in a consistent, transfer-appropriate and yet meaningful and motivating way. In addition, they discuss various assessment techniques to determine whether training is needed, and, if so, which types of training might be instrumental. From these discussions it
appears that promising techniques have been designed. However, the usefulness and effectiveness of these training and assessment techniques clearly need to be further investigated. It seems too soon to draw the conclusion that they are ready for application in L2 reading instruction.

4 Linguistic, textual, and topical knowledge

Bernhardt, in her contribution an higher levels of the reading process, focuses on the influence of three sets of variables: linguistic variables, literacy variables, and world knowledge variables. Bernhardt first discusses the role of each of the three sets of variables and their interrelationships. She then discusses how readers become proficient in each of these three dimensions of L2 reading proficiency during the L2 learning process. Most importantly, Bernhardt's multifactor model of the development of L2 literacy conceptualizes how the interrelationships between the various variables may change over time (Figure 2; see also Bernhardt, 1991, p. 169-171). Thus, while errors in letter feature identification and in word recognition decrease with the increase of L2 proficiency in general and with the increase of L2 vocabulary in particular, syntactic error rates seem to remain stable for a certain time and then begin to rise as a result of greater exposure to and development in the language. Little change, however, is shown in the influence of the reader's knowledge of the topic of the text or in the influence of the reader's perception of the structure of the text. I believe that this model must certainly be welcomed as a fruitful heuristic device to guide future research on the development of L2 reading proficiency.

Literacy variables, in Bernhardt's view, consist of "operational knowledge that refers to knowing how to approach text, why one approaches it, and what to do with it when a text is approached". The relationship, or interdependence, between L2 and L1 reading proficiency clearly operates in this dimension of literacy knowledge as well as in the dimension of world knowledge, more so than in the dimension of linguistic knowledge of the second language. L1 literacy is a significant component in L2 reading, according to Bernhardt. The more literate L2 learners are, the higher the probability that they will use L1 reading strategies while performing on L2 reading task.

Discussing the pedagogical implications of her model, Bernhardt argues that students should be allowed to use the literacy skills they already possess. Teachers should build their instruction on a recognition of how learners understand L2 texts on the basis of their L1 literacy skills.

5 The dynamic influence of the setting of L2 learning and use

The issue of interdependence between L2 and L1 reading skills has drawn considerable attention after the publication of Alderson's (1984) widely
quoted question whether poor L2 reading performance is due to inadequate L2 knowledge or to poor L1 reading ability. However, although much quoted, Alderson's question has rarely been investigated. That is, only few studyer adopted a within-subject approach to the empirical examination of this question, eliciting and comparing, from the same individuals, (1) performance on L2 reading tasks, (2) performance on similar L1 reading tasks, and (3) performance on L2 vocabulary and grammar knowledge tasks. We know of only three recent studies which have adopted this approach: one study conducted in the United States (Carrell, 1991) and two studies conducted in the Netherlands (Hacquebord, 1989; Bossers, forthcoming). We asked Bossers to briefly present the results of these studies and discuss the commonalities and differences of their findings.

The picture that emerges from these three studies is a complicated one. All three studies provide evidence that performance on a L2 reading comprehension task is substantially related to performance on a similar L1 reading comprehension task. However, it appears that this relationship is mediated not only by knowledge of L2 grammar and vocabulary, as one would expect, but also by factors pertaining to the L2 setting involved. In Carrell's study, with respect to the setting of L2 learning and use, L1 reading was a stronger predictor of L2 reading for Spanish second language learners of English than for American foreign language of Spanish. Hacquebord's results indicated that for the subjects in her study, Turkish second generation minority students living in the Netherlands, L2 reading was significantly related to L1 reading at the beginning of the investigation, when these students were about 14 years old, but that, two years later, L2 reading was no longer related to L1 reading. According to Hacquebord, this decrease in L2/L1 relationship is due to L1 loss, at least in the domain of academic use of L1. These students had immigrated to the Netherlands before they were seven years old. This means either that they had not attended elementary school in Turkey at all, or had done so for a brief period only. All Turkish subjects in Bossers' study, in contrast, had completed secondary school in Turkey before emigrating.

6 Thresholds of L2 knowledge?

With respect to the relative weights of L1 reading on the one hand, and knowledge of L2 grammar and vocabulary on the other, Bossers concludes that the results of all three studies support Alderson's (1984) surmise, allowing for an explanation in terms of a threshold: L1 reading performance can only begin to correlate substantially with L2 reading after knowledge of L2 has attained a threshold. But here again, the setting of L2 learning and use appears to interact, since the second language students in Carrell's study seemed to have a lower threshold level of L2 knowledge than the foreign language students.

A note should be added on the notion of "threshold". In order to avoid confusion, it should be pointed out that this label, as used in
Alderson (1984) and in Bossers’ review, pertains to a threshold in second language knowledge below which L1 reading comprehension skills cannot be transferred to reading comprehension in L2. The notion of threshold as used by Cummins, in contrast, pertains to the acquisition of verbal proficiency (mainly conceptual knowledge manifested by vocabulary knowledge) in the language in which students learn to read and write first (normally their first language) before they learn to read and write in a subsequent language (normally their second language). This latter notion of threshold will be discussed below. In addition, it should be pointed out that these two distinct threshold notions do not rule out each other; they are evidently compatible with each other.

7 Biliteracy: transitional and submersion programs

In the fourth paper of this issue of the AILA Review, Verhoeven deals with biliteracy instruction from both a socio-cultural and a cognitive perspective. Concerning the effectiveness of transitional literacy education as opposed to L2 submersion education, Verhoeven refers to a meta-analysis conducted by Willig (1985), according to whom research shows empirical support for the effectiveness of transitional treatments. Verhoeven’s own research, conducted among Turkish minority students in the Netherlands, shows positive results of transitional programs as well. That is, the data reported in Verhoeven’s paper show, after a period of two years of education in elementary school, a modest, significant advantage of students in a transitional program over students in a submersion program in terms of L1 literacy skills, and no significant disadvantage (nor advantage) in L2 literacy skills.

8 Transfer of L2 reading skills to L1 reading skills

Verhoeven’s study appears to be highly relevant for the question of interdependence of reading skills. He examined the transfer of reading abilities from one to the other language among students in both the transitional and the submersion programs, by means of LISREL analyses. Verhoeven claims to have found not only evidence of a positive transfer of L1 skills to L2 skills among the children in the transitional program, but also evidence of a positive transfer of L2 skills to L1 skills among the children in the submersion program. The children in the submersion program followed L1 literacy instruction for a few hours per week, from the second year of elementary school on. Thus, Verhoeven’s analyses seem to provide support for both readings of Cummins’ interdependence hypothesis (to be discussed more fully below), allowing for transfer from L1 (minority language) to L2 (majority language) as well as from L2 (majority language) to L1 (minority language). This is all the more surprising because Cummins himself acknowledges that research generally shows
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9 Issues of fuzziness and falsifiability

One of the first names that come to mind when thinking about the notion of interdependence is that of Jim Cummins. His conceptualization of the relationships between L2 and L1 proficiency and his proposals concerning bilingual education based on this conceptualization have had an enormous impact since the late seventies. They have exerted great influence on both researchers studying the componential nature of language proficiency, and on educationalists responsible for the design and implementation of transitional or submersion models of primary education in bilingual speech communities. However, some of Cummins' notions, such as the distinction between conversational and academic language proficiency, appeared to have been interpreted in different ways. For instance, some people seemed to identify these two types of language proficiency simply with oral and written language use, and others with the use of what Bernstein (1964) called restricted and elaborated language codes. Thus we, the editors of this issue, believed that a clarification of the notions of conversational and academic language proficiency was clearly called for.

Our second concern about Cummins' theoretical conceptions laid in the potential ambiguity of his Interdependence Hypothesis, as stated, for instance, in Swain & Cummins (1986, p.87):

"To the extent that instruction in Lx is effective in promoting proficiency in Lx, transfer of this proficiency to Ly will occur provided there is adequate exposure to Ly (either in school or environment) and adequate motivation to learn Ly."

We felt that this hypothesis could be used by proponents of two opposing models of bilingual education: by those who argue that L2 instruction is to be introduced only after L1 has been taught to a certain threshold level of L1 proficiency, as well as by those who argue that, since the theory allows for transfer in both directions, one could just as well start with instruction in the majority language (L2, in most settings) and only later permit some instruction in the minority language (L1). How could the latter interpretation of the Interdependence Hypothesis, if it is not intended, be ruled out?

Turning from educational policy to theory and research, we wondered to what extent the Interdependence Hypothesis and the Threshold Hypothesis are true scientific hypotheses, in the Sense that they are explicit enough to be empirically tested. Note that the Interdependence Hypothesis posits two conditions for the transfer of proficiency from one language to the other, namely adequate exposure and adequate motivation. Researchers need to know exactly what is meant by "adequate" before they can begin to test the hypothesis. For the testing of the Threshold Hypothesis, a similar problem arises: exactly how much proficiency in

only unidirectional transfer from the minority to the majority language (Cummins, this issue).
which language skills is needed before this proficiency can be transferred to the other language? Furthermore, we believed that although the empirical evidence reviewed by Cummins (1991) seems to support the construct of a common underlying proficiency (CUP), it does not seem to solve the vexing problem of whether it is better to begin with L1 instruction and introduce L2 later, or to begin with L2 instruction and introduce L1 instruction later.

We therefore asked Cummins to address these three challenging issues concerning (1) the precise meanings of conversational and academic language proficiency, (2) the falsifiability of the Interdependence Hypothesis, and (3) the falsifiability of the Threshold Hypothesis.

9.1 Conversational and academic language proficiency

In his contribution, Cummins takes up the gauntlet, clarifying the issues in a straightforward manner. Concerning the first issue, he argues that the empirical basis for the distinction between conversational and academic language proficiency rests on the different time periods required to attain peer- and grade-appropriate levels in these two aspects of proficiency (approximately 2 and 5-7 years respectively). The distinction does not depend on linguistic specification, but it is possible to specify the major linguistic characteristics of conversational and academic language proficiency.

9.2 Interdependence revisited: transfer from the minority to the majority language

With respect to the second issue, Cummins remarks that the Interdependence Hypothesis was intended to account both for the results of French immersion education for English speaking majority students in Canada and for the results of bilingual education programs for minority students in the United States and Canada. The elements Lx and Ly in the hypothesis stand for either L1 and L2 or for L2 and L1. To this extent, there is no restriction in the interpretation of these elements. However, Cummins interprets Lx as representing only the minority language with lower prestige in the speech community and Ly as representing the majority language with higher prestige: "While, in principle, transfer can occur both ways between L1 and L2 or minority and majority languages, in practice we generally see only unidirectional transfer from the minority to the majority language" (Cummins, this issue). This interpretation clearly intends to rule out the above-mentioned possibility that educationalists could use the interdependence hypothesis in support of submersion models of education for minority students.
9.3 Thresholds as heuristics for future research

With regard to the Threshold Hypothesis, Cummins admits that it has not been specified what the "threshold" might be in linguistic terms, and that, thus, there is little direct support for the positing of a specific "threshold" of language proficiency. Cummins argues that it is probably unrealistic to expect significant progress in elucidating the precise nature of the hypothesized thresholds. The positing of a threshold should primarily be seen as heuristics to guide future research. However, Cummins emphasizes that the issue may be of academic interest only; in his opinion, the practical implication of the data remains that minority students should be encouraged to develop their L1 abilities both to stimulate transfer to L2 and to profit from the benefits of additive bilingualism.

10 Further research

The papers in this issue of the AILA Review agree an the point that empirical evidence, as far as it is available, supports the view that the interdependence between second and first language reading skills is influenced by cognitive as well as socio-cultural factors, whose influence, moreover, may fluctuate over time. However, the papers also show that too little is known about the precise nature of these dynamic interactions. This is clearly an issue which deserves to be investigated more thoroughly. Investigations using an intra-individual, cross-linguistic, and longitudinal design are called for if we want to deepen our understanding of constructs such as biliteracy, L2 reading proficiency, and transfer. Such investigations will help us understand what factors bring about individual differences in L2 reading skills. On the basis of their findings, L2 reading instruction may be improved. We will then be in a better position to remedy poor automaticity in word recognition skills, dyslexia in L2, poor utilization of textual and topical knowledge, poor self monitoring, and other L2 reading deficiencies.

References


