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CORRESPONDENTE

L1 LITERACY AND L2 LEARNING: CONNECTING THE DOTS

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**To my daughter, Valentina,  
for being a constant  
source of joy**

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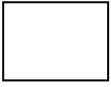
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## ABSTRACT

## L1 LITERACY AND L2 LEARNING: CONNECTING THE DOTS

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Bigelow and Tarone (2004) have proposed that second language (L2) learners with lower levels of first language (L1) literacy have difficulties in noticing the gap between their production and the input they received due to their limitations in metalinguistic awareness (a function of their low literacy level). However, none of the empirical studies these researchers conducted encompassed the assessment of the participants' level of metalinguistic awareness. Thus, so as to contribute with empirical evidence for Bigelow and Tarone's (2004) proposal, I collected data from 24 Brazilians (beginning L2 learners of English), who performed tests of L1 literacy (PISA), L1 and L2 metalinguistic awareness (phonological, morphological, and syntactic), and pre- and post-tests of L2 proficiency (KET). The objective was twofold: to verify whether there was a correlation between one's level of metalinguistic awareness and one's literacy level and also to investigate whether any of these variables was effective in predicting participants' L2 proficiency gains from the pre- to the post-test and their final grades at the end of one semester of an English course. Through the analyses of the data it was demonstrated that (1) L1 literacy is related to L1 syntactic awareness, (2) L1 syntactic and phonological awareness transfer to the L2, (3) L1 phonological awareness has a detrimental role in L2 learning, and (4) L2 syntactic awareness has a beneficial role in L2 learning and in one's L2 achievement. The thesis advanced is that engagement with the written code (at least for those readers with no limitations in phonological awareness) leads to the refinement of one's syntactic awareness. This knowledge, in turn, is transferred to the L2 and aids its

development. An implication from these results is that, differently from what Krashen (1982) claimed, there is, indeed, a role for explicit knowledge in L2 learning.

251 pages

88.101 words

## RESUMO

LETRAMENTO EM LÍNGUA MATERNA E APRENDIZAGEM DE  
LÍNGUA ESTRANGEIRA: LIGANDO OS PONTOS

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2011Professora Orientadora: Dr<sup>a</sup>. Mailce Borges Mota

Bigelow e Tarone (2004) propõem que aprendizes de língua estrangeira (LE) com níveis baixos de letramento em língua materna (LM), e, por consequência, com limitações em consciência metalingüística, terão dificuldades de perceber a diferença entre a sua produção em LE e o insumo recebido. Todavia, esses pesquisadores não mediram o nível de consciência metalingüística de seus participantes em nenhum dos estudos que conduziram. Sendo assim, dados foram coletados com 24 brasileiros (com nível básico de inglês como LE), que fizeram testes de letramento em LM (PISA), consciência metalingüística (fonológica, morfológica e sintática) em LM e LE, e pré- e pós-testes de proficiência em LE (KET). Os objetivos do estudo foram averiguar se há correlação entre o nível de consciência metalingüística desses aprendizes e seu nível de letramento e verificar se consciência metalingüística em LM e/ou LE e/ou letramento seria eficaz em prever ganhos na proficiência em LE entre os dois testes e a nota final em um semestre de um curso de inglês. A análise dos dados permite argumentar que (1) o letramento e a consciência sintática em LM estão relacionados, (2) a consciência sintática, assim como a fonológica, transferem-se da LM para a LE, (3) a consciência fonológica em LM tem um papel prejudicial no aprendizado de LE, e (4) a consciência sintática em LE tem papel benéfico no aprendizado de LE e leva os aprendizes a alcançarem um nível maior de proficiência. A tese proposta é de que o envolvimento com o código escrito (pelo menos para aqueles aprendizes que não têm limitações na consciência fonológica) leva ao refinamento da consciência sintática. Esse conhecimento, quando transferido para a LE,

impulsiona o seu desenvolvimento. De acordo com esses resultados, diferentemente do que Krashen (1982) propôs, existe, sim, um papel para o conhecimento explícito no aprendizado de LE.

251 páginas

88.101 palavras

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# CHAPTER I

## INTRODUCTION

### 1.1 Preliminaries

When reviewing the literature that informed the present study, I came across two quotes which describe fairly well the reasons why I have become a teacher of English and also why I like to carry out research that focuses on the second language (L2) learner (rather than the teacher, or the classroom, for example).

The first citation is part of an interview between an adult Turkish immigrant living in Sweden and taking part, together with other 11 Turkish immigrants, in a program called Swedish for Immigrants, and a sociologist who was conducting her PhD research on the interactions between immigrants and natives in Sweden. The theme of this interview was language learning and the participants' experiences as language learners. In her speech, Emine<sup>1</sup> basically reported that she was not having many nice experiences as an L2 learner in this new country. At one point, she complained "... one can have different kinds of knowledge, but when you can't tell this in words or retrieve this by language then I have really no use of my own knowledge. Then you believe that from their point of view they consider you [...] as being in the dark, uneducated<sup>2</sup>..." (Carlson, 2000, p. 22 in Lindberg, 2003, p. 159).

Unfortunately (or perhaps fortunately), I had the opportunity to feel exactly the same that Emina and some of her colleagues felt. I, too, was "the foreigner" some years ago, when I lived in London and I, too, experienced this exact perception. In a number of occasions, when I managed to make myself understood using the L2, I was able to notice the somewhat amazed look in the faces of my native interlocutors. It was as if, for the first time, they were paying attention to me, mesmerized by the fact that I actually had interesting and relevant things to say. This was a lesson Emina and I learned the hard way, but that I have carried with me to all the classes I taught. Despite the fact that the ultimate purpose of language is communication and meaning-making, I have no doubts that people will listen to/read more intently, and with

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<sup>1</sup> Pseudonym.

<sup>2</sup> Translated into English from the Swedish original.

more interest, the production of an L2 speaker/writer who has a good command of the language.

The second quote I identified myself with is from a book on individual differences written by Dörnyei. According to him, “although the distinctness that each of us displays may be seen by some as a nuisance, it is still there – and the world may be a better place for it” (Dörnyei, 2005, p.1). This is the way I like to look at the uniqueness of our learners. Even though in the present research I do not investigate L2 learners’ individual differences, I scrutinize a factor that may intervene in the path of the learner towards developing an L2 – the learner’s literacy level in the first language (L1). In spite of the fact that the purpose of research in Second Language Acquisition is not necessarily to derive pedagogical implications from the evidence gathered, it is my belief that by better understanding the process of L2 acquisition<sup>3</sup> and the factors that help (or hinder) it, it will be possible, perhaps, to devise tools for pedagogical intervention, so that learners can profit as much as possible from their L2 learning experiences.

## **1.2 Statement of the Purpose**

The acquisition of an L2 is becoming more and more common and, as Doughty and Long (2003) remark, monolingualism is now starting to be the exception. Within the field of Second Language Acquisition, it is widely acknowledged that social and cognitive factors may have an influence on the acquisition of an L2 (Ellis, R., 2008) and, for this reason, the ultimate success L2 learners achieve varies widely among individuals.

For some time already, one of the main objectives in the field has been to identify what factors are more significant and which of them are the best predictors of success (and failure) in L2 learning (Dörnyei, 2005; Doughty & Long, 2003; Olshtain, Shohamy, Kemp, & Chatow, 1990). Olshtain et al. divide these variables in 3 categories: the learner context (e.g., educational treatment), the social context (attitudes and motivation that derive from the social context the learner is inserted in), and learner’s characteristics (cognitive variables). As regard the characteristics related to the learner, though an array of variables has

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<sup>3</sup> In the present dissertation I will be using the words “learning” and “acquisition” interchangeably. Though I am aware of the difference between these two constructs, as posed by Krashen, I side with R. Ellis (2008), who argues that, for now, it is better not to treat these two situations as different since it is still unknown how different the learning processes in each of them are. Additionally, and for the same reason, still following R. Ellis, unless otherwise stated, I will also not make a distinction between the terms second and foreign language.

been investigated in relation to L2 development (e.g., language aptitude, learning styles, working memory capacity, among others<sup>4</sup>), one possibly important relation that has been overlooked<sup>5</sup> is that between L1 literacy and L2 development.

In spite of the fact that I will address the difficulties in having a definition for literacy in the Review of the Literature chapter (Section 2.1, p.11), I would like to inform my readers from the start that I am here using the term literacy as *letramento*, rather than *alfabetização*. This note is necessary due to the fact that in the literature written in English the term literacy is also used to refer to the acquisition of the skills necessary to decode/encode the written form of a given language (*alfabetização*) (e.g., Bertelson, 1986; Bialystok, 2007; Dellatolas et al., 2003; Perfetti, Dyke, & Hart, 2001; Torrance & Olson, 1985), different from what happens in Brazil, for example, where most scholars in literacy studies distinguish between *letramento* and *alfabetização* (though this distinction is not without problems). In a very simplistic way, *letramento* could be defined as the social uses one makes of the written code in one's daily life (Kleiman, 1995). Moreover, in a world where we talk about different *literacies* (which might involve the reading of images and the use of the computer, for example) (Bartlett, 2003), it is also necessary to state that the literacy I will be referring to is reading literacy<sup>6</sup>.

It is possible to speculate that one factor that could partially account for a connection between L1 literacy level and L2 acquisition is metalinguistic awareness – the ability one has to consciously reflect upon and manipulate different linguistic features (Sharwood Smith, 2008). According to Heath (1991), “[b]eing literate enables individuals to work on problems never before seen, demonstrate contemplation ... [it] enables teachers and students to stop thinking about learning and to think learning instead” (p. 22). Kato (1993) also predicts that the acquisition of the written code will lead people to look at language in a different way. In her opinion, literacy acquisition causes reflections which lead to both critical and cognitive growth.

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<sup>4</sup> See Dörnyei (2005) for a thorough discussion on individual differences that have been found to interact with L2 learning.

<sup>5</sup> Actually, despite Bigelow and Tarone's (2004) claim that there were no studies linking L1 literacy and L2 learning before theirs, there were some. However, they were conducted by Sparks and Ganschow's research group (see Subsection 3.3 in the Review of the Literature) and their focus resides, mainly, on learners with difficulties in L2 learning.

<sup>6</sup> For a review on literacies, see, for example, Rojo (2009).

Indeed, Bigelow and Tarone (e.g., Bigelow, Delmas, Hansen, & Tarone, 2006; Tarone, Bigelow, & Swierzbis, 2007) predict that a positive correlation exists between one's literacy level and his/her development in the L2. According to these authors, lower levels of literacy in one's L1 would decrease the chances one has to take advantage of recasts<sup>7</sup> in the speech of his/her interlocutors so as to restructure his/her own L2 system. Their suspicion is that this will happen because people who are illiterate or little literate will also have lower levels of metalinguistic awareness, which they believe to be necessary for noticing (Schmidt, 1990). Schmidt defines noticing as a kind of awareness which is above the pure perceptual level, but below understanding. He explains that noticing is a private experience and not always a person needs to be able to give a verbal report of what s/he has noticed. Without noticing something one would not be able to analyze it or to compare it to other things one has noticed before, and thus, one would not be able to understand it. Tarone and Bigelow (2005) advance that it might be that some learners cannot notice the difference between their production and the corrective feedback received because they are not aware of all linguistic segments produced by their interlocutors (and/or how they were produced)<sup>8</sup>, and this would limit their possibilities of restructuring their interlanguage<sup>9</sup>.

In Bigelow et al. (2006) they analyzed the oral performance of Somali L2 speakers of English with different levels of literacy and found that the more literate group recalled the recasts received more often. The authors' took this result to be a confirmation of their suspicion that learners with a lower level of metalinguistic awareness will have more difficulties in noticing. Still, this was just a supposition<sup>10</sup>, since the participants' metalinguistic awareness level was not assessed. Moreover, when looking at the language produced by these learners, Tarone et al. (2007) found that their more literate<sup>11</sup>

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<sup>7</sup> A recast is "an immediate correct reformulation of a learner's erroneous utterance" (Bigelow et al., 2006, p. 669).

<sup>8</sup> The authors cite the difference between /laik/ and /laikt/, for example, and also predict that these same learners might not be able to notice the inversion between verb and noun in questions such as: "Are you Brazilian?". For more, see Subsection 3.3, p. 66 in the Review of the Literature.

<sup>9</sup> The term interlanguage is being used here as a synonym for the knowledge about the L2 system.

<sup>10</sup> Tarone and Bigelow (2007) themselves argue that for us to be able to assess this relationship, it is important that studies include measures of phonological awareness.

<sup>11</sup> These participants all reported to have had literate and educated adults in their lives and they could all read and write in Somali, though the researchers themselves argued that they were not

participants were also more orally competent in the L2 than the low-literacy ones. Therefore, it could be that in their speech they incorporated the changes made in the recasts more often than the other participants because they were more proficient in the L2, and not because they noticed these differences (between their production and the recast) more often.

Another question that remains is whether Bigelow et al.'s (2006) findings would extend to a wider population of L2 learners, since the participants of their study were immigrants and even the more literate subjects had a somewhat limited level of literacy (i.e., they did not report to engage much in reading and/or writing, even if they did not present difficulties with encoding/decoding written text). What would happen if we considered a highly literate population? Could the differences in their level of L1 literacy (and perhaps in metalinguistic awareness) be related to their L2 development? Bigelow et al. imply that perhaps the differences in literacy and in metalinguistic awareness they imagine to be present in their population will not be found in a fully-literate population (p. 665). However, there is evidence that differences in metalinguistic awareness level are found even among literate adults (see Sections 2.2, p. 22 and 3.3, p. 66 in the Review of the Literature). Moreover, these authors seem to assume that all undergraduate students will be highly literate (Bigelow & Tarone, 2004, p. 689). Perhaps when compared to little-literate Somali immigrants, undergraduates can be thought of as highly-literate, but it might be better to look further into that before assuming such homogeneity. Just to cite one example, Oliveira and Oliveira (2007) had their undergraduate participants take a Cloze test and the test-takers accuracy was less than 50%. Similarly, in the pilot study I conducted, the average grade in the literacy test of the undergraduate students who contributed with data was 62.7 (and the results of the present study come to add to this body of evidence) (see Subsection 5.1, p. 126).

In sum, if we take into consideration that differences in metalinguistic awareness are also present among people who are generally considered to be highly literate, perhaps we should go beyond the concern for illiterate or low-literacy immigrants (only) when looking for an impact of the level of L1 literacy on L2 learning. With that in mind, in the present endeavor I investigate whether a link between L1

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as literate as the college students who took part in Philp's (2003) study (in which she attempted to verify whether her participants had any constraints as regards noticing the changes in recasts).

literacy level and L2 learning can be established for an adult and fully-literate population, and also whether the development of metalinguistic awareness is implicated in this relationship.

From the results obtained I put forward a proposal in which metalinguistic awareness is linked to both L1 literacy and L2 learning, serving as a bridge between these two variables. Apparently, having more experience with a larger variety of genres led some of the participants of the present study to further develop their syntactic awareness (SA) and literacy level in the L1. In addition to that, the results reveal that those learners who had a higher level of L2 SA were more successful in their L2 development throughout one semester of an English course.

Still, it is important to highlight from the start that the objective of the present study is not to verify a causal relationship between L1 literacy and L2 learning. The objective of this exploratory study is to propose the hypothesis of such a connection and to test the waters so as to verify whether this line of investigation might be prolific. In other words, the objective here is to shed enough light on this potential connection so that, from my conclusions, more specific questions can be made and other pieces of empirical research may be conducted so as to verify whether a causal connection exists and if it is something worth of notice by the field.

### **1.3 Significance of the Research**

First, whereas the literacy level has been investigated in relation to L2 acquisition in some studies (e.g. Bigelow et al., 2006; Bigelow & Tarone, 2004; Ganschow et al., 1994 in Sparks & Ganschow, 1991; Hu & Schuele, 2005; Sparks, Ganschow, Javorsky, Pohlman, & Patton, 1992), this is a line of research which is still incipient. In addition to that, in some of these studies metalinguistic awareness was not assessed, in others the informants were learners with L1 reading and/or L2 learning difficulties, and in others still, the investigation was restricted to L2 vocabulary learning. Hence, it is my belief that a more comprehensive investigation, taking adult literate learners into consideration, is an interesting way to make the proposal for such link.

In addition to that, in a country such as Brazil, where a drastic lack of literacy can be observed (Terzi & Ponte, 2006), finding that less literate subjects not only have less power (Leite, 2006; Kleiman, 2001; Ribeiro, 2001) but will also be hindered in their acquisition of an L2 (another potential instrument for access to power and information) is worrying to say the least. Though there might be criticisms as regards

the need for the development of a schooled literacy of the sort that is privileged in most circles (Faraco, 2008), Williams (2006) predicts that “for the foreseeable future, empowerment of the disempowered is likely to be achieved precisely through enabling them to master the literacy norms of the powerful, rather than expecting the powerful to embrace the norms of the powerless” (p. 594).

Concerning the relevance of investigating how metalinguistic awareness interacts with literacy and L2 acquisition, despite the fact that some might argue that if students’ attention is unduly focused on these skills it will be diverted from the ultimate goal of literacy – real-life reading and writing (Genesee & Riches, 2006, p. 121), metalinguistic awareness is expected to impact both lower-level processes such as mapping the phoneme/syllable to its written representation and higher-level processes such as reading comprehension (Mota, 2007a; Perfetti et al., 2001; Desmond & Gombert, 1996 in Ravid & Tolchinsky, 2002; Yuill, 1998 in Ravid & Tolchinsky, 2002).

Moreover, when considering the empirical research on metalinguistic awareness, as Scarborough, Ehri, Olson, and Fowler (1998) remark, there are plenty of studies of phonological awareness (PA), for example, which have as informants children in the elementary years, or older children with learning disabilities, and/or illiterate adults. However, there is a lack of studies with nondisabled adults who are beyond the elementary years of reading instruction. In addition to that, a number of authors claim for more research which do not take only PA into consideration (Ferreira & Dias, 2008; Maluf, Zanella, & Pagnez, 2006; Mota et al., 2006; Troia, 2004). They believe that the reason why the relationship between PA and literacy is so well-established is because the amount of research conducted on this relationship has generated a lot of knowledge about it. With so little research on other metalinguistic abilities, at the moment we lack a greater understanding of how they might be involved in literacy.

Still in relation to the study of the variables involved in literacy acquisition, Riches and Genesee (2006) remark that one reason why it is interesting to look at discrete aspects of literacy such as PA, for example, is the fact that components such as this are more easily definable and measurable and, therefore, have traditionally provided clearer results. Additionally, according to the authors, this kind of study may help pave the way for studies on the more complex aspects of literacy. Similarly, Mota (2007a) advocates that though the more ideological/political discussion which revolves around literacy, literacy

practices, and social uses of literacy is valid and contributes to a better understanding of the failure of our students in school, there is a need to better understand the cognitive processes which underlie literacy. She argues that “social changes are slower and more difficult to be achieved; [while] cognitive changes, on the other side, are possible through intervention programs which can be more easily implemented” (p. 122).

Finally, Segalowitz (1997 in Dörnyei, 2005) points out that although there have been a number of factors which have been found to play a role in L2 learning, still not much is known about the nature of these relationships. Consequently, only finding a connection between one’s literacy level and his/her success in L2 learning is not as interesting as being able to establish a possible way through which this relationship takes place.

If L1 literacy level has an impact on L2 proficiency growth and/or achievement, either directly, or through its relationship with metalinguistic abilities, we have an extra reason to stress the importance of a good knowledge of one’s own language. As Hu and Schuele (2005) and Kovacevic (2008) argue, knowing more about the way we develop in our L1 is likely to be beneficial for L2 development also. Moreover, R. Ellis (2008) adverts that no theory of L2 learning that ignores the learners’ prior linguistic knowledge can be seen as a complete theory.

As regards the importance of research on L2 learning in general, as pointed out by Doughty and Long (2003), nowadays more and more people are learning an L2, and for a number of different reasons. It might be that the need arises because a given community does not have access to literacy training/education in their L1 and thus have to learn a lingua franca to be able to attend school. There are also cases in which a local variety of a language is suppressed and, therefore, individuals have to learn a new dialect. A different situation is that of those people who want/need to learn an L2 to travel or for business. And there are still those who are forced to leave their countries and depend on learning an L2 to survive in a new (and many times hostile) environment. However, despite the (more serious or more trivial) reasons why people want/need to learn an L2, the study of such a complex and unique cognitive process will always be of interest for what it may reveal about the nature of the human mind (Doughty & Long, 2003).

#### **1.4 Organization of the Dissertation**



This dissertation consists of 6 chapters, besides this introductory one (Chapter 1). Chapters 2 and 3 lay the theoretical background for the study. Chapter 2 starts by discussing the definition of literacy and the possibility of literacy acquisition having a cognitive impact on the individual. It moves, then, to a link between literacy acquisition and metalinguistic awareness (Subsection 2.1.2). In Section 2.2, a number of empirical studies where this relationship was investigated is reviewed. In the next chapter (Chapter 3) I present some theoretical and empirical evidence for a possible connection between one's level of metalinguistic awareness (mainly PA) and his/her success in L2 learning. This chapter ends with a summary of the pilot study I conducted in order to assess the effectiveness of the instruments for data collection.

Chapter 4 describes the method employed to collect data for the present study. In this chapter, a thorough description is made of the informants of the present investigation as well as the selection and development of instruments used to collect data, and the procedures for data collection and analyses. This chapter also introduces the research questions and the specific hypotheses guiding the study. In Chapter 5, I report the results of the statistical analyses employed on the raw data collected.

The discussion of the results is made in Chapter 6. In this chapter, the results are discussed in relation to the research questions and hypotheses posed in the Method section and, also, in the light of existing research on literacy, metalinguistic awareness, and L2 learning. In the last chapter (Chapter 7), I summarize the main findings of the present research and also draw some conclusions. After that, I address the main limitations of the study, along with suggestions on how future studies may overcome them. The final section of the chapter (7.3) is devoted to the theoretical, methodological, and pedagogical implications that can be derived from this piece of research.



## CHAPTER II

### REVIEW OF THE LITERATURE: LITERACY AND METALINGUISTIC AWARENESS

This chapter will be organized in two main sections. In the first (Section 2.1), I will briefly review some of the challenges in defining literacy and how this construct has been related to cognitive development. In the second (Section 2.2), the focus will be metalinguistic awareness. Within this section, there will be subsections in which the empirical research on phonological awareness (PA) (Subsection 2.2.1), morphological awareness (MA) (Subsection 2.2.2), and syntactic awareness (SA) (Subsection 2.2.3) will be reviewed.

#### 2.1 Literacy

Research on literacy can be broadly divided in two types, according to their orientation. One of them – which looks at the individual dimension of literacy (Soares, 1999) – has an “autonomous” orientation and focuses mainly on the cognitive processes involved in literacy, such as encoding and decoding, and is represented by the works of, for example, Goody, Olson, and Ong. The “social practices” orientation<sup>1</sup> – which looks at the social dimension of literacy (Soares, 1999) – on the other hand, does not see literacy as a skill mastered by one individual but as embedded in society (Bartlett, 2003; Tarone & Bigelow, 2005). The main exponent of the ideological model of literacy is Brian Street, who claimed that literacy is embedded not only in social and cultural practices but also in power and authority relationships (Kelder, n.d.). Though these two traditions in literacy research seem to not see eye-to-eye, I would like to state from the start that I side with Tarone and Bigelow (2005), who propose that rather than seeing these two orientations as a dichotomy, we have much more to gain if we see them as complementary. As Cummins (2008) points out, focusing on the social and contextually specific dimensions of literacy does not mean to invalidate research that aims at unveiling what is going on in the mind of people while they perform cognitive and/or linguistic tasks. In the same way, I believe that investigating the cognition involved in literacy and literacy acquisition does not mean perceiving the individual as isolated from a context.

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<sup>1</sup> The names used to refer to these two traditions might vary (Williams [2006], for example, terms them the “narrow” and the “broad” views of literacy), but I have yet to find any studies which propose different paradigms of research.

Irrespective of the differences in the way literacy will be conceptualized and studied in each of these traditions, the one thing these two perspectives have in common is the difficulty in clearly defining their object of study (e.g., Graff & Duffy, 2008). As Tarone and Bigelow (2005) state, “literacy is a complex construct” (p. 78) and its definition is difficult even if we take the individual, rather than the social, dimension into perspective because there are a number of abilities involved in this skill (Soares, 1999), though, as Valentine (1986 as cited in Mikulecky & Drew, 1991) points out, there is not an agreement even as regards *what* these skills are. Attempting to define literacy in relation to the kinds of materials one can read and write does not end the predicament either since the kinds of materials one should be able to read to be considered literate will depend, obviously, on the context one is inserted in (as pointed out by Guthrie, 1983 in Mikulecky & Drew, 1991). An additional problem is taking reading and writing as two sides of the same coin or looking only at reading or writing (Soares, 1999).

In Brazil, the term literacy (*letramento*) was first used by Mary Kato in 1986, when she mentioned that the language we term standard<sup>2</sup> is the result of literacy (Soares, 1999). Soares (1999) argues that the current understanding of what *letramento* entails did not arise from the old use of the word<sup>3</sup> (where *letramento* was connected to erudition), but from the English term literacy, defined in the Webster’s Dictionary as “the quality or state of being literate”<sup>4</sup>.

However, when looking at the literature produced in English, it can be seen that literacy can mean both *alfabetização* and/or *letramento*. The difficulty in employing the term literacy adequately is so ubiquitous that Kalman (2008) states that one of the ongoing discussions in Latin America and the Caribbean is exactly the meaning of the term literacy and how it is represented in different languages. In Spanish, for example, *alfabetización* is both the process of learning to read and write

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<sup>2</sup> According to Faraco (2008), it does not make sense to use the word “standard” to describe the language used by literate people in Brazil since this is an abstract concept based on the language prescribed by grammar books and dictionaries and which is not spoken even by highly literate people (i.e., not even this segment of the population, when speaking, abides by all the rules set by the prescriptive grammars).

<sup>3</sup> Found on the 3<sup>rd</sup> Brazilian edition of the Caldas Aulete Dictionary (1974 in Soares, 1999).

<sup>4</sup> In Soares (1999), she cites the Webster’s definition which was current at the time of her text and which is “the condition of being literate”. I have used here the definition presently found in the online version of the Dictionary. Retrieved from <http://www.merriam-webster.com/dictionary/literacy> on February, 7th, 2011.

and the presence of the written code in a given society. The same is true for the term *letramento* in Brazilian<sup>5</sup> Portuguese (Leme Britto, 2003). As regards the difficulty in translating this term in Brazil, Leme Britto (2003) remarks that literacy has already been translated as *alfabetização* and as *cultura escrita*. Rojo (2009), in turn, mentions that literacy can mean *letramento*, *alfabetismo*, or *alfabetização* in Brazil.

Within this discussion, perhaps the two most difficult tasks, when conducting research in literacy, are drawing a line between literates and illiterates<sup>6</sup> (Dellatolas et al., 2003; Ribeiro, 2001; Soares, 1999) and/or between literacy and literacy acquisition (i.e., between *letramento* and *alfabetização*) (Leite, 2006; Rojo, 2009). Perhaps the best is to follow Kelder (n.d.) who warns “not to speak too knowingly or confidently about what literacy is” (para. 2).

As regards the difference between literates and illiterates, the suggestion is to look at these two definitions as extreme points in a continuum since there are variations in both the degree of literacy and illiteracy (Dellatolas et al., 2003; Ribeiro, 2001; Tfouni, 1995). What is especially relevant for me is Dellatolas et al.’s claim that there is great variation in the degree of literacy *within* literates, thus, one can compare people with higher and lower literacy levels rather than compare literate and illiterate individuals. The same suggestion is made by Ribeiro (2001), who argues that if we look at literacy as reading and writing that is socially situated, this does not relate only to the uneducated non- or little-literate adult population, but it also concerns the schooled and literate population. An example of the fact that literacy level also varies among literate people comes from Koda (1992), who calls attention to the fact that low-quality verbal processing skills<sup>7</sup> have been found to predict individual differences in L1 reading comprehension even among college level readers, something that goes against the assumption that those skills will develop automatically as reading proficiency improves. Differences in the level of L1 literacy among undergraduate students were also found in the studies of Sparks, Ganschow, and colleagues<sup>8</sup> (e.g., Sparks, Ganschow, & Pohlman, 1989 in Sparks & Ganschow, 1991).

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<sup>5</sup> In Portugal, the term used is *literacia*.

<sup>6</sup> I am here using the term illiterate as a synonym for a person who does not know how to read and write, since this is the term used in the literature written in English.

<sup>7</sup> Processes involved in extracting visual information from print such as letter identification and word recognition (Koda, 1992).

<sup>8</sup> For more on literacy levels, see Section 3.3, in Chapter 3.

Although the term literacy was used by Kato in 1986, the differentiation between literacy (*letramento*) and literacy acquisition (*alfabetização*) was only made by Tfouni, in 1998 (Soares, 1999). For Tfouni (1995), *alfabetização* happens in the individual and it is closely connected with schooling and the acquisition of reading and writing skills (though, according to the author, it is not a simple process and it probably never ends). Literacy, in turn, is social and it is related to social practices that involve the written code, though one does not need to know how to read and write to be literate (e.g., if I ask a friend to write a letter for me, I am involved with the written code, though I might not know how to read and write). The way Mota (2007a) distinguishes literacy and literacy acquisition is by conceiving *alfabetização* as the learning of the written code and literacy as the social practices that involve reading and writing or the consequences or condition of those who engage on these practices. In a similar way, Soares (1999) states that a literate person is the one “who responds adequately to the intense social demand for a broad and diverse use of reading and writing”<sup>9</sup> (p. 20). As Soares puts it, if in the past the large number of illiterates/*analfabetos* was a problem in Brazil, now the problem are those people who, despite having mastered the written code, are not able to make use of this technology to attend the demands constantly made by society (Soares, 1999, p. 20). What one would expect is that people, besides mastering the technique, are also able to read and write texts in prose and to identify and use information extracted from tables, maps and charts, for example. Similarly, the *Parâmetros Curriculares Nacionais* define linguistic proficiency as the ability to read and produce texts of a variety of genres (Secretaria de Educação Fundamental, 1997). Finally, the Houaiss dictionary defines literacy as “the set of practices that indicate the ability of using different types of written material”<sup>10</sup> (Houaiss, 2001, p. 1747 in Cerutti-Rizzatti, 2009).

Consequently, in spite of the fact that at present many authors (e.g., Cerutti-Rizzatti, 2009; Kleiman, 1995; Rojo, 2009; Soares, 1999; Tfouni, 1995) accept that even illiterates are *letrados*<sup>11</sup> in urban

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<sup>9</sup> My translation of “[que] responde adequadamente às intensas demandas sociais pelo uso amplo e diferenciado da leitura e da escrita”.

<sup>10</sup> My translation for “conjunto de práticas que denotam a capacidade de uso de diferentes tipos de material escrito”.

<sup>11</sup> Even a person who has not learned how to read and write is somehow making use of the written code when s/he asks someone to read the newspaper for her/him, for example. In the

societies<sup>12</sup>, taking the population that informed my study into consideration, the kind of literacy being assessed does not include these more basic levels of engagement with the written code. Nevertheless, this is not to say that I do not accept a broader view of literacy. I shall explain. If we were to take a broad definition of literacy, which would probably be widely accepted, we could advocate that literacy is the social use one makes of the written code in his/her daily life, being able to attend the demands of the society. Well, if we reflect about this definition, it becomes clear that the demands the society makes from an undergraduate student are quite different from the demands it makes from a rural worker, for example. For this possibly illiterate or semi-literate person, it might be that being able to catch the right bus by identifying some letters in the bus heading and keeping up with the news by having someone read her/him the newspaper is enough. For an undergraduate student, however, the expectations are much higher. This person has to be able to deal with texts in a variety of genres, to read critically and to express him/herself effectively. I am here talking about the formal learning<sup>13</sup> of reading/writing, something Rogers (2008) calls learning-conscious learning and Rojo (2009) terms schooled literacy<sup>14</sup>. In an attempt to make the distinction between what many authors understand as literacy and the kind of literacy I am subscribing to, I bring the distinction Rojo (2009) puts forward between *alfabetismo*, which she proposes to be related to the schooled literacy practices and *letramento*, which, for her, has a much broader scope since it involves both privileged and unprivileged reading and writing practices and always has a sociologic, anthropologic, and cultural perspective. In this sense, what I am referring to as *letramento* in the present research would be Rojo's *alfabetismo*.

It might seem paradoxical to define literacy as the *social* uses of the written code and then state that the kind of literacy I will be investigating is the one developed by the school. The reason for such apparent inconsistency is that though the PISA test aims at assessing

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same way, small children engage in literate events when their parents read books for them or when they pretend to read and/or write (Rogers, 2008; Soares, 1999).

<sup>12</sup> Rogers (2008) goes up to the point of claiming that in today's world there is no one (with the exception of very young children) who has never come across written forms of communication. <sup>13</sup> I do not intend, here, however, to "ignor[e], demean, or... den[y] ... the existence of informal learning" (Rogers, 2008) just because I am focusing on formal learning.

<sup>14</sup> Street and Street (1991 in Bloome, 2008) state that this is a pedagogically contextualized kind of literacy which "involv[es] the objectification of language and an emphasis on metalinguistic practices" (p. 252).

how test-takers make use of the written code in their daily lives, it cannot be denied that the kind of texts and questions present in this instrument are mainly the kind one encounters in the academic context. However, this does not pose a problem for the PISA test-takers, since this is a test devised to be applied to adolescents in school. In the same way, it is not a hindrance for my population either, since they are all university students. In other words, the PISA could be criticized as an instrument to measure *letramento* in the terms Rojo (2009) puts it, but not to verify the kind of literacy I am interested in.

Soares (1999), one of the most prominent literacy scholars in Brazil, despite offering her own definition of literacy<sup>15</sup>, recognizes the challenges in having a definition for it and concludes that perhaps it is better if one has an operational definition, depending on the objectives of his/her study. Hence, I shall define literacy in accordance with the research paradigm I am inserted in and the objective of my study. Additionally, because one's definition of literacy will depend on the test one uses to assess it (Bonamino, Coscarelli, & Franco, 2002; Soares, 1999), my working definition of literacy will follow that from the Programme for International Student Assessment (PISA)<sup>16</sup> 2000 document, since this is the test I used to assess the participants' literacy level, and that is "the capacity to understand, use and reflect on written texts, in order to achieve one's goals, to develop one's knowledge and potential, and to participate in society" (Organization for Economic Co-operation and Development – OECD, n.d.).

On this note, I move on to the next subsection (2.1), which will attempt to unveil what some of the processes underlying literacy and literacy acquisition could be.

### **2.1.1 Literacy acquisition**

Differently from speaking, reading is not part of primary language acquisition. That is, whilst all members of a community become speakers and hearers, not all of them become readers. Due to that, literacy acquisition requires more than simply being exposed to the written code to take place (Francis, 1999; Gee, 1996 in Francis, 2006; Mann, 1986).

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<sup>15</sup> She defines literacy as "the result of the action of teaching or learning how to read and write: the state or condition that a social group or individual acquires as a consequence of having knowledge over the written code" (p.18, my translation). By having *knowledge of the written code* the author means making the written code as your own, as your property, *apropriar-se*.

<sup>16</sup>For more, see Subsection 4.3.1 in the Method chapter.



Koda (2007) explains that reading has been both treated as a whole and as an aggregate of distinct components. According to her, the componential view is more optimistic since difficulties can be related to one specific skill that comprises the reading process (although it might be a combination of deficiencies, of course). For her, learning to read means learning to (1) decode (extract linguistic information from print), (2) build text-information (integrate the information extracted from the text into sentences, for example), and (3) construct a reader-model (combine the information extracted from the text with one's own prior knowledge). For decoding to take place one will need orthographic knowledge (to link sounds to letters), phonological knowledge (to segment words into their phonological constituents), vocabulary knowledge (for comprehension to occur most text words must be known), and morphological knowledge (to make sense of morphologically complex words) (Koda, 2007).

In a similar way, Juel, Griffith, and Gough (1986) also argue that an important part of reading (and writing, in this case) will rely on basic processes. In their proposal of a model for literacy acquisition, reading would rely on the processes of decoding and listening comprehension (that is, the same processes used for listening comprehension would be used for text comprehension) and writing would involve spelling and ideation (generation and organization of ideas). For them, decoding and spelling take place through the use of an orthographic cipher – a set of spelling-sound correspondence rules – and by accessing lexical knowledge (because this would be the knowledge needed to decode and spell words that do not have a one-to-one grapheme/phoneme correspondence). The knowledge of the cipher, in turn, comes to be from one's phonemic awareness<sup>17</sup> and from experience with print. Lexical knowledge, in turn, would be the result of exposure to print, only.

However, this bottom-up kind of reading process is what is expected to happen in the early stages of literacy acquisition, when word recognition happens mainly through the phonological route (that is, by identifying which sound(s) represent (a) given letter(s) and then, by sounding it/them out, recovering the word's meaning from one's lexicon). With time, when most of the words a reader encounters are familiar, the lexical route, which relies in visual coding, will be employed. That is, from the orthographic representation of a word one

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<sup>17</sup> Awareness of phonemes - the more sophisticated level of PA (Piske, 2008).

will automatically assess its meaning, without the need for sounding it out (Chikamatsu, 1996; Dias, 2006). Adams (1994), however, has proposed that phonological processing will always be helpful once proficient readers will be able to recognize a word both by its phonology and/or its orthographic representation. That is, reading can happen through a dual code.

The importance of literacy acquisition is recognized very early in life. To exemplify that, in Reyes' (2006) study, when one of her 4 year-old participants was asked about the importance of writing, she answered that "if they do not know how to write, they'll be dummies...<sup>18</sup>". Indeed, Genesee and Riches (2006) affirm that literacy instruction is "one of the critical focal points in the education of all children" (p. 109), while Bialystok (2007) defines literacy as "the supreme achievement of schooling and its most indelible academic legacy" (p. 46). The *Parâmetros Curriculares Nacionais* state that literacy acquisition not only warrants independent reading but also has "a great social value" (Secretaria de Educação Fundamental, 1997). In the late 1960s there was a trend in official programs to link literacy to economic growth and employment (Kalman, 2008). A potential social effect of literacy would be empowering people and, therefore, leading nations to economic development. Still, while there are authors which believe that developing literacy is a way to achieve that (e.g., Giroux, 1988 in Bartlett, 2003; Mackie, 1981 in Bartlett, 2003), social studies of literacy have warned us against a possibly naïve connection between literacy and development (either social or cognitive), as pointed out by Bartlett (2003), Ribeiro (2001), Williams (2006), and Winchester (1985). Graff and Duffy (2008) remind us that literacy amongst the workforce was not needed for the early industrialization in England and North America, for example. And yet, though literacy alone may not lead to development, Williams mentions Azariadis and Drazen's (1990) and Moock and Addou's (1994) studies which bring evidence that literacy is, indeed, a necessary condition for economic development.

But, besides a social value, could literacy acquisition also have a cognitive value? Higounet (2003) believes that such impact does exist. The way he perceives writing is as "a new language [...] which disciplines thought and, by transcribing it, organizes it [...] it is a social fact that is on the basis of our civilization" (p.10).

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<sup>18</sup> Translated by the author from Spanish.

Unfortunately, arguments such as Higounet's have led to the establishment of the Literacy Myth<sup>19</sup>, that is, "the belief [...] that the acquisition of literacy is a necessary precursor to and invariably results in economic development, democratic practice, cognitive enhancement, and upward and social mobility" (Graff, 1979, 1987 in Graff & Duffy, 2008). The roots of this myth emerged in the 17<sup>th</sup> century, when there was a class of Londoners who read more widely and, thus, participated more actively in politics and agitations, creating the belief that literacy could be used, by workers, to resist oppression (Altick, 1957 in Gregory, 2008). However, with the expansion of the industrial cities in the 19<sup>th</sup> century, basic literacy was once more encouraged by the government so that the workforce could be prepared to follow instructions (Inwood, 1998 in Gregory, 2008). Finally, in the second half of the 19<sup>th</sup> century, literacy reached the status of being seen as intrinsic for the kind of thought established after the Enlightenment and that valued idealism, scientism, evolutionism, positivism, materialism, and progressivism (Graff & Duffy, 2008) and this is the kind of view of literacy that Higounet seems to subscribe to.

Scribner and Cole (1978) and Soares (1999) point out that there has been some sort of agreement, over the centuries, that the written word will have psychological effects over the individual (or a community) that the oral code will not. Unfortunately, such discussion has opposed the oral and written modes as if they represented primitive and civilized thought, respectively, a view that was moderated in the 1980s (Biber, 2009). One of the main problems with this premise, according to the authors, is the expectation that literacy will have an effect on general mental capacities (such as the ability to engage in abstract thinking<sup>20</sup>) rather than on specific skills.

However, this is not to propose that this line of research should be abandoned altogether. At least one study has already demonstrated that literacy acquisition may cause even biological change in an individual. Castro-Caldas et al. (1999), considering the fact that the corpus callosum (CC) grows until late in life (e.g., Witelson, 1991 in Castro-Caldas et al., 1999; Cowell, Allen, Zalatico, & Denenberg, 1992 in Castro-Caldas et al., 1999) and also taking the results of a previous

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<sup>19</sup> To give literacy this status of myth does not mean, however, that the authors dismiss the importance of reading and writing in the contemporary world.

<sup>20</sup> In fact, Oliveira, M. (1995), Olson (1977), Pauluk (2004), Torrance and Olson (1985), and Winchester (1985) predict that the acquisition of literacy can lead to a decontextualized kind of thought, where text and context can be separated.

study<sup>21</sup> (Reis & Castro-Caldas, 1997b in Castro-Caldas et al., 1999) into consideration, suspected that the poor performance of their illiterate participants might be due to differences between their and the controls' CCs since their problem seemed to be the result of poor interhemispheric transfer of information. Thus, they scanned the brains of 41 50 to 70 years-old right-handed women (18 illiterate and 23 literate) in order to verify that. What they found was that, indeed, there were significant differences between the size of the literates and the illiterates' CCs, with the region where the connections between the two post-central associative cortices occur being smaller in the illiterates. This took the authors to suggest that learning to read and write has functional and biological implications. Therefore, it is not unreasonable to expect that literacy acquisition will also impact, somehow, one's cognition. Even if such impact is not a general one as it was expected some decades ago. Mota (2007a) argues that, though the discussion on the potential cognitive consequences of literacy acquisition is a hot<sup>22</sup> (and, in my point of view, open) issue, one point of agreement is on the impact of literacy acquisition on metalinguistic awareness (and vice-versa).

### **2.1.2 Literacy and metalinguistic awareness**

According to Koda (2007), literacy and metalinguistic awareness are developmentally interdependent. As described above, the first process involved in reading is decoding, which, in turn, relies on PA (see Subsection 2.2.1, p. 26). Gough and Juel (1991 in Durgunoğlu, Nagy, & Hancin-Bhatt, 1993) predict that poor decoding will lead a person to read less, to increase less his/her vocabulary and knowledge, and to have only a shaky foundation for later reading comprehension (p. 55 in Durgunoğlu et al, 1993, p. 453). Moreover, since L1 reading is expected to happen mostly in a bottom-up way (with only less-skilled readers<sup>23</sup> making use of contextual clues), even in the short run inefficient decoding will lead to problems in text comprehension since it

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<sup>21</sup> In which they observed the poor performance of illiterates in a task where visuo-motor association was required.

<sup>22</sup> Unfortunately, this kind of research is often frowned upon since it presumes that the literate thought is not merely different from the oral but that it entails higher-order capacities which are only possessed by literates (Scribner & Cole, 1978).

<sup>23</sup> Byrne (1981), for example, found that his poor readers were more dependent on extralinguistic knowledge. Moreover, their difficulties in dealing with more complex syntax did not show to be the result of not being able to use a phonetic memory code. Apparently, what happens is that they relied on strategies acquired at the beginning of literacy acquisition and their knowledge of the world to solve problems in reading.

will rob resources from text-information integration, inferencing, and reasoning (Gough & Juel, 1991 in Durgunoğlu et al., 1993; Koda, 2007).

At the same time, literacy acquisition is also likely to impact one's level of metalinguistic awareness, since the acquisition of literacy is meta-attention directed towards language (Herriman, 1986 in Francis, 1999) and, "as discourse processing becomes more demanding, metacognitive operations directed at this level of language use become more indispensable" (Francis, 2006, p. 54). In other words, the level of analyticity one engages in when reading may provoke the refinement of metalinguistic awareness (Francis, 2000; Kato, 1993; Oliveira, M., 1995). It is likely that the more experience with print, schooling, and development, the more this awareness increases in explicitness and reorganizes the representations into more accessible and coherent forms (Karmiloff-Smith, 1992 in Ravid & Tolchinsky, 2002).

In spite of the fact that it is normal that children start analyzing language (and correcting themselves) as soon as they have established the connections between the symbols of the language and the reality (Karmiloff-Smith, 1979 in Kato, 1993), the process of detaching oneself from the language and reflecting upon it is not spontaneous (or at least not for everyone) (Francis, 2006) and this is where literacy acquisition is expected to help. Ravid and Tolchinsky (2002) remark that control has traditionally been associated with the written rather than the oral code because it is the written language that lends itself more easily for revision and edition (an idea shared by Olson [2002 in Bigelow & Tarone, 2004] and Ehri [1985]). According to these authors, "being able to represent and access linguistic form and meaning at will is the result of a complex, unified, coherent body of linguistic knowledge that is possessed only by linguistically literate<sup>24</sup> adults" (p. 432).

The main demonstration that literacy acquisition has an effect on speech analysis comes from studies that have looked at the participants' ability in segmenting speech after becoming literate (e.g., Skjelfjord, 1976 in Bertelson, 1986; Alegria & Morais, 1979 in Bertelson, 1986; Morais, Cary, Alegria, & Bertelson, 1979 in Bertelson, 1986) and a good explanation for why acquiring literacy would impact how much one reflects about the language comes from Ehri (1985). She advocates that when children learn to read printed language they become capable

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<sup>24</sup> Ravid and Tolchinsky (2002) state that having linguistic literacy means having multiple linguistic resources and being able to access linguistic knowledge and to see language from various perspectives (different registers and genres).

of visualizing what they are saying and hearing and the acquisition of this spatial model will allow a phenomenon such as speech, which has no permanence, to be held more easily in memory and also to be better organized in units and subunits. Though Ehri does not intend to advocate that this kind of awareness can come to be *only* through exposure to print, she agrees that it will definitely be more difficult without it. She mentions that even if most linguists do not accept the possibility that print can have an effect on speech, psychologists already entertain the possibility that rather than the child simply developing awareness of the structure of language spontaneously between the ages 5 and 7, this knowledge is probably a result of literacy acquisition.

The author theorizes that, at the beginning, the child probably has the lexicon of words that has been acquired through his/her experience with speech and these word units have phonological, syntactic, and semantic identities. When one learns how to read, one extra identity is added, the alphabetic image of the word. Ehri (1985) also proposes that spellings enter memory as sequences of letters that have a systematic relationship to acoustic and/or articulatory segments detected in the word's pronunciation. After this letter sequence enters memory, it becomes a visual symbol for the sound structure of the word, creating a register of the word which is both auditory and visual. However, for phonetic symbolization to occur, that is, for these letters to enter memory as symbols for sounds, the reader must be able to analyze words into the phonetic segments suggested by the letters seen in the spelling.

In the next section, I devote a significant number of pages to discuss theoretical aspects of metalinguistic awareness and to review empirical studies, considering that this is the skill I believe that might be underlying a possible connection between L1 literacy and L2 learning.

## **2.2 Metalinguistic awareness**

Tunmer and Hoover (1992 in Lazo, Pumfrey, & Peers, 1997) define metalinguistic ability, or awareness, as "the ability to reflect on and manipulate the structural features of spoken language" (p. 87). Barrera and Maluf (2003), in turn, state that metalinguistic awareness is related to the conscious awareness to the formal aspects of language, while Koda (2007) describes metalinguistic awareness as "the ability to identify, analyze, and manipulate language forms" (p. 2). She also argues that metalinguistic awareness is different from linguistic knowledge because "it implies an understanding of language in its most

fundamental and abstract properties, independent of surface form variations” (p. 13).

What we can perceive in these authors’ (and others’<sup>25</sup>) definitions of metalinguistic awareness is the fact that besides reflection, metalinguistic awareness also requires conscious control. However, before metalinguistic awareness becomes reflective and controlled, it already exists in a less aware form. Apparently, metalinguistic awareness has two levels. One of them being the conscious one the previous authors were mentioning, while the other is more rudimentary and implicit. Francis (1999), for example, mentions a difference between *actual* awareness (which is spontaneous and situation-dependent), where contextual, extralinguistic information plays the predominant role, and *conscious* awareness, which is deliberate and reflective.

For Maluf et al. (2006), these two levels of metalinguistic awareness are the result of two kinds of processes – the epi processes, which rely on implicit knowledge and happen naturally during a child’s maturation<sup>26</sup>, and the meta processes, which rely on explicit knowledge and demand reflection and control. Ravid and Tolchinsky (2002), on the contrary, declare that they are against a dichotomy of implicit/unconscious x explicit/conscious linguistic knowledge. Based on Carili’s (1990 in Ravid & Tolchinsky, 2002) and Karmiloff-Smith’s (1986 in Ravid & Tolchinsky, 2002) proposals, what they assume is that there are multiple levels between these two extremes. They mention a initial state of recognition (implicit identification) that through the representational reorganization in more coherent and accessible forms (Karmiloff-Smith, 1992 in Ravid & Tolchinsky, 2002) (which could happen due to experiences with print) may lead to a state of awareness (having conscious access to knowledge, though it may not be verbalizable). According to Tunmer, Pratt, and Herriman (1984, p. 12 in Jessner, 2008, p. 358), metalinguistic awareness becomes conscious when one “begin[s] to appreciate that the stream of speech, beginning with the acoustical signal and ending with the speaker’s intended meaning, can be looked at with the mind’s eye and taken apart”.

The surge of metalinguistic abilities is not easily explained. There are at least two different theories regarding such development – an

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<sup>25</sup> E.g., Cain (2007), Carlisle (2000 in Correa, 2005), Gombert (1993), Hakes (1989 in Homer, 2009), Mota and Castro (2007), Garton and Pratt (1990 in Oliveira, R., 2007).

<sup>26</sup> It is possible to see a 2 or 3 year-old detecting the non-grammaticality of a sentence, though the child might not know how to correct it (Maluf et al., 2006).

autonomist view (influenced by Piaget's proposal that a child's cognitive development changes due to cognitive maturation) and an interactionist view (which proposes that the metalinguistic development happens in a continuum, and interacts with the development of language) (Homer, 2009). For Ranta (2008), metalinguistic skills arise as a function of age. However, as children of the same age have been known to vary in their degree of metalinguistic knowledge, there must be external factors at play (e.g., early bilingualism, literacy acquisition, and explicit instruction). Barrera and Maluf (2003) proposed that depending on the method adopted for literacy instruction, different metalinguistic abilities might be more or less developed (see the differences, for example, between theirs and Rego's (1995) results<sup>27</sup> – Rego's participants were being instructed through the phonics method and in Barrera and Maluf's study the instruction was mixed. Regardless of the possible different ways in which metalinguistic awareness will arise, what has been agreed upon is that the ability to look at language as an object of analysis develops, in a rudimentary form, from an early age (Maluf et al., 2006; Clark, 1978 in Ravid & Tolchinsky, 2002; Karmiloff-smith, 1986, 1992 in Ravid & Tolchinsky, 2002), with the reflection and manipulation of language only arising later on (Kovacevic, 2008; Maluf et al., 2006) and usually requiring schooling (Kovacevic, 2008).

Correa (2005) points out that metalinguistic awareness is a construct that involves factors ranging from phonological awareness – PA – (reflection about the phonological structure of a language), word<sup>28</sup> awareness (recognition of a word as a unit), syntactic awareness – SA – (reflection about the syntax of a language), and pragmatic awareness (understanding of the social uses of language) to morphological awareness – MA – (reflection on the morphological structure of a language) and textual awareness (knowledge and control of reading and writing), with Gombert (1992 in Correa, 2005) mentioning a semantic awareness (awareness of the semantic aspects of the language).

As regards the benefits of metalinguistic awareness for language learning, two centuries ago, in the beginning of the 1800s, Wilhelm von Humboldt already predicted that conscious reflection about the language would be beneficial for the process of learning it (Jessner, 2008) and, according to Kato (1993), reading, writing, and the metalinguistic

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<sup>27</sup> See Subsection 2.2.1.1.

<sup>28</sup> Called by Ravid and Tolchinsky (2002) lexical awareness.



reflections that come with them, are helpful for a learner to grow not only cognitively but also critically (p. 8). For Bryant, Nunes, and Bindman (2000) and Mota (2007a), among all the metalinguistic abilities cited above, there are 3 that are linked to literacy development – phonological, morphological, and syntactic awareness, though how each of them is involved in reading/writing might be different<sup>29</sup> (Bryant et al., 2000; Mota & Castro, 2007). Rego (1991 in Mota & Castro, 2007), for example, found that SA was related to reading in context, while PA only contributed for single-word reading.

PA, for example, is expected to play a crucial role at the beginning stages of literacy acquisition (Bialystok & Herman, 1999; Genesee, Lindholm-Leary, Saunders, & Christian, 2006) although it will always be needed for the decoding of new words (Capovilla, Dias, & Montiel, 2007; Cunha & Capellini, 2009; Dias, 2006). MA, in turn, is expected to be implicated in the role graphemes play in conveying meaning. Bryant et al. (2000) and Ravid and Tolchinsky (2002) explain that when homophonous units have different morphological values, MA will help a learner make spelling decisions<sup>30</sup>. Additionally, MA might also be important for reading comprehension and pseudoword reading (Deacon & Kirby, 2004). Finally, SA would be useful for the child when s/he has difficulties to decode a word (due to personal difficulties or the complexity of the word – orthographic irregularities) because s/he can make use of syntactic contextual clues when reading (Bryant et al., 2000; Capovilla, Capovilla, & Soares, 2004; Correa, 2005) and writing (Rego & Buarque, 1987). Moreover, syntactic clues can also be used to extract meaning from the text (Tunmer & Bowey, 1984 in Cain, 2007; Bowey, 1986 in Capovilla et al., 2004) since the order of the words and the presence of function words and grammatical morphemes, for example, aid meaning construction.

What empirical research has found is that the relationship between literacy and metalinguistic abilities is reciprocal, with metalinguistic awareness being a good predictor of literacy and literacy increasing metalinguistic awareness (see Subsections 2.2.1.1, 2.2.2.1, and 2.2.3.1). Though PA, MA, and SA are expected to be linked to literacy development, most of the research on metalinguistic awareness

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<sup>29</sup> In opposition to that, there is the hypothesis put forward by Bowey and Patel (1988 in Bryant et al. 2000) that linguistic knowledge in general is related to children's progress in reading in general.

<sup>30</sup> For example, deciding whether "*beleza*" is spelled with a "z" like "*tristeza*" or with an "s" like "*princesa*".

to date has focused on PA, and less on SA and MA (Bertelson, 1986; Nation & Snowling, 2000; Ravid & Tolchinsky, 2002; Singson, Mahony, & Mann, 2000; Mokhtari & Thompson, 2006). I will next briefly present each of these metalinguistic abilities in turn and, in each subsection, I will review a number of empirical studies that have looked for a connection between each of these metalinguistic abilities and literacy acquisition.

### 2.2.1 Phonological awareness

Piske (2008) admonishes that it is important to distinguish between phonological awareness<sup>31</sup> and phonological sensitivity. The sensitivity to the phonological aspects of one's language is already present long before literacy acquisition takes place and the awareness that speech is a sequence of sounds is established. However, as Bialystok and Herman (1999), Castles and Coltheart (2004), and Ehri (1985) stress, identifying sounds is only one part of PA. What is even more important is one's ability to attend to, conceptualize, and manipulate sounds (especially at the level of the phoneme), which is expected to be a function of literacy acquisition.

Cisero and Royer (1995) argued that PA can be divided in syllable awareness, a very basic skill, onset<sup>32</sup>-rime<sup>33</sup> awareness, and, phonemic awareness – the most sophisticated form of PA. Indeed, Capovilla et al. (2007) and Koda (2007) advocate that the more basic<sup>34</sup> level of PA, which involves supra-phonemic awareness (i.e., the awareness of segments such as syllables and onset-rime) is thought to emerge automatically for all children, and this is what makes reading possible considering that the first step in learning to read and write is conceiving speech as a sequence of discrete segments (Read, Yun-Fei, Hong-Yin, & Bao-Qing, 1986) – a challenge, since oral speech is made of phonemes that overlap and influence each other (Liberman, Liberman, Mattingly, & Shankweiler, 1980 in Read et al., 1986). Some of the activities that are thought to influence this more implicit level of PA, and which happen prior and/or concomitantly with literacy instruction, are singing and rhyming games (Morais, Bertelson, Cary, and Alegria, 1986; Pestun, 2005), language and word play (Troia, 2004), early exposure to print and print concepts (Troia, 2004), and letter-

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<sup>31</sup> According to Piske (2008), the term phonetic awareness is also used as a synonym for PA. However, I have not found many instances of that in the literature I encountered.

<sup>32</sup> The beginning consonant or consonant cluster of a word.

<sup>33</sup> The vowel and the remaining sounds of a word after onset.

<sup>34</sup> Souza and Bondini (2007) consider even this more "basic" level of PA to be complex.

sound instruction given by the parents (Morais et al., 1986). Usually after literacy instruction (see the review of empirical studies, below), and mainly, alphabetical literacy instruction, new levels of PA emerge (Bertelson, de Gelder, Tfouni, & Morais, 1989 in Cheung, Chen, Lai, Wong, & Hills, 2001; McBride-Chang, Bialystok, Chong, & Li, 2004; Gombert, 2003), with phonemic awareness being the most refined one (e.g., Capovilla et al., 2007; Guimarães, 2003; Mann, 1986; McBride-Chang et al., 2004; Pestun, 2005). Still, according to Barrera and Maluf (2003), in the Portuguese language it is vital to have phonemic awareness *before* literacy acquisition, since to be able to associate graphemes and phonemes one must have awareness of the latter. Indeed, according to Cardoso-Martins' (1995 in Guimarães, 2003) results, phonemic awareness is the most important level of PA for literacy acquisition in Portuguese (but see the review of empirical studies).

In the next subsection I review a number of studies that have sought evidence for a special relationship between PA and literacy acquisition.

#### 2.2.1.1 *Empirical studies*

The first studies on PA were conducted in the 1960s (Piske, 2008) and the first works relating PA and literacy acquisition in Brazil were conducted in the 80s (Guimarães, 2003). Perhaps due to the amount of research on the link between PA and literacy, this is one connection that has been well-established. Despite the fact that the directionality of the relationship was once a subject of debate, nowadays<sup>35</sup>, most scholars (e.g., Bialystok & Herman, 1999; Capovilla et al., 2004; Gombert, 2003; Mota & Castro, 2007; Perfetti et al., 2001; Piske, 2008; Ravid & Tolchinsky, 2002; Adams, 1990 in Riches & Genesee, 2006; Souza & Bondini, 2007) seem to agree that, although PA is important for early literacy acquisition, literacy acquisition itself will lead to the development of more sophisticated levels of PA<sup>36</sup>.

The empirical studies for each one of the three metalinguistic skills under scrutiny (PA, MA, and SA) will be reviewed in two blocks within the Subsections 2.2.1.1 (for PA), 2.2.2.1 (for MA), and 2.2.3.1 (for SA). In the first block I will include studies conducted with children

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<sup>35</sup> Bialystok and Herman (1999) observe that the mutual relationship between PA and literacy was first proposed by Liberman, Shankweiler, Liberman, Fowler, and Fisher, back in 1977 (though, apparently, no one paid much attention to them at the time).

<sup>36</sup> Castles and Coltheart (2004) suspect that it might be that reading acquisition does not change the nature of PA, what might happen is just that literacy acquisition change the way people perform PA tasks.

who were in their beginning years of literacy acquisition (i.e., up to the sixth grade). In the second block, the studies reviewed are those which had as informants older children and adults. Within each of these two groups, I first review studies which contribute with only correlational data; then, studies which include predictive data; and, next, longitudinal studies. Studies conducted with bilinguals are the last ones to be reviewed in each block.

In the case of PA, however, the first two studies reviewed investigated whether PA was relevant for reading in other languages than the alphabetical ones. McBride-Chang et al. (2005) compared the performances of second graders from Beijing<sup>37</sup>, Hong Kong<sup>38</sup>, Korea<sup>39</sup>, and the United States<sup>40</sup> in tests of PA, MA, vocabulary, and reading and found that for the Beijing and the Hong Kong participants, MA was important for reading, whereas PA was not. Though this may seem to go against earlier findings that PA was important for reading even in Chinese (e.g., Ho & Bryant, 1997 in McBride-Chang et al., 2005; Hu & Catts, 1998 in McBride-Chang et al., 2005; McBride-Chang & Ho, 2000 in McBride-Chang et al., 2005), what happens is that in this study the metalinguistic awareness measures were used as predictors simultaneously. Thus, regardless of the fact that PA was significantly correlated with reading in both Beijing and Hong Kong, it seems that the performance on the MA task was more strongly associated with word reading than PA. For the Korean participants both MA and PA were important for reading and for the American participants only PA was important for reading, indicating that PA was important for reading only in alphabetical languages.

Another study that compared readers of an alphabetical language with readers of a non-alphabetical language was Mann's (1986), which compared American and Japanese first graders performance in a deletion test (with nonwords – deleting syllable/mora and phoneme) and a word decoding test. What they found was that in both countries, but especially in Japan, children had more difficulties in the phoneme- than

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<sup>37</sup> Speakers of Mandarin who, in contrast with the Chinese participants, do not learn Pinyin (alphabetic symbols used when learning to read the logographic Chinese) but who speak a language similar to Cantonese as regards the analytical nature of their morphology.

<sup>38</sup> Speakers of Cantonese.

<sup>39</sup> Speakers of a language with an alphabetic syllabary – Korean Hangul – which uses both phoneme- and syllable-level units and with morphology more similar to that of Chinese than English.

<sup>40</sup> Speakers of an alphabetic language which, at least at the second grade, does not need much morphological knowledge for reading.

in the syllable-deletion task, confirming McBride-Chang et al.'s (2004) finding that it will be alphabetical instruction that will allow for phonemic awareness to arise. They also asked their participants' teachers to grade them as good, average, or poor in reading, and found that both the performance on the mora-counting and on the phoneme-counting task correlated with the Japanese children accuracy and speed of decoding and with the reading ability rating provided by the teacher. For the Americans, only performance on the phoneme-deletion task correlated with their performance on the reading test and with the teacher's ratings.

Guimarães (2003) collected data from learners from the first to the sixth grade and found that though all individuals had more difficulty in segmenting phonemically 2-syllable than 1-syllable words, these difficulties were greater for those participants with reading difficulties, who also presented difficulties in detecting initial and final phonemes (i.e., as regards PA, the problems of the poor readers were with phonemes). Additionally, PA (and SA, see Subsection 2.2.3.1) correlated positively and significantly with reading (.61) and writing (.63).

In Capovilla et al.'s (2004) study of children from the first to the fourth grade they found that the participants' scores in the PA, writing, and oral comprehension tests increased from the first to the third grade. Moreover, the scores in SA, PA, reading, and writing all correlated, indicating that as reading develops so does metalinguistic awareness. In Capovilla et al. (2007), once again it was noticed that the performance on the PA test, in general, increased along with the school grades (but, once again, only up to the third grade). Additionally, they also observed that in the 4 grades (first to fourth) the supra-phonemic tests were easier than the phonemic ones, a finding that corroborates the hypothesis that some levels of PA arise more spontaneously, whereas others need instruction.

Barrera and Maluf (2003) found that their first graders' PA and spelling were related both at the beginning and at the end of the first grade (though this association was stronger at the end of the year –  $r = .38$  vs.  $r = .50$ ) while PA only correlated with reading at the end of the year (.53). Another research to find a correlation between PA and reading and writing was Pestun (2005), in a study with children who, at the beginning of data collection, were attending the last year of pre-school. They found that right from the beginning the participants were already good at syllabic synthesis and segmentation, rhyme, and

alliteration; but they had many difficulties at the level of the phoneme, something that is consistent with findings from other studies. Because PA, reading, and writing improved with time, a positive correlation between the scores in the PA test and the performance on the reading and writing tests was found at all times. Yet another study in the Brazilian context was that of Mota, Anibal, and Lima (2008), with children from the first and second grades, but, in this study, the participants' performance on the PA tasks only correlated with writing, while MA (see Subsection 2.2.2.1) correlated with both reading and writing.

Besides these studies, where simple correlations were found between PA and literacy, other authors wanted to verify whether measures of PA would be good predictors of reading/writing performance.

In Plaza and Cohen's (2003) study of first graders they found that reading and spelling were correlated with all the 4 variables explored – PA, SA, auditory memory, and naming speed, and that PA contributed with 14% of variation in the performance in the reading and writing tasks once the other three variables were partialled out. Juel et al. (1986) wanted to test their model of literacy acquisition (see Subsection 2.1.1, p. 16) and, for that, collected data from children when they were in the first and the second grades. The model that emerged showed that ethnicity, IQ, and entering oral language skills contributed to phonemic awareness, which, together with listening comprehension, showed to be a good predictor of year-end performance in spelling, word recognition, writing, and reading comprehension in the first grade and, to a lesser extent, in the second grade. Cipher knowledge and lexical knowledge showed to be good predictors of word recognition and spelling and, for writing, in both grades, spelling and ideas contributed.

Wagner, Torgesen, and Rashotte (1994) collected data from kindergarteners and found that their participants' individual differences as regards PA remained until the second grade. As regards decoding, all processing abilities measured in kindergarten were found to predict decoding in the first grade, and the scores in the same measures in first grade were predictors of decoding in the second grade (even though none of the variables made an independent contribution). When testing whether the development of literacy caused an increase in the phonological processing abilities, they found that letter-name knowledge influenced the phonological processing abilities in grade 1

and, to a smaller extent, letter-name knowledge in grade 1 affected the phonological processing abilities level in grade 2.

Rego (1995) collected data from Brazilian children who were pre-schoolers at the beginning of the data collection and though she found a significant correlation between SA and reading (see Subsection 2.2.3.1), the usual strong correlations between PA and reading were not found. Unlike the participants of Wagner et al.'s study (1984), in Rego's research even those participants who had low scores in the PA task before the first grade were good readers at the end of the first grade, a possible indication of the efficiency of instruction in diminishing individual differences. In another longitudinal study, through time-reversed path analyses, Lazo et al. (1997) found that their participants' scores in some of the PA, SA, print, and pragmatic tasks that were done when the children were in nursery classes (mean age = 4.5 years-old) were significant predictors of attainment in reading and spelling, but their effect was not direct. What happened was that these skills helped pre-conventional reading and spelling, and these two skills predicted literacy levels in the middle of the first grade

Differently from Lazo et al. (1997), Nunes, Bryant, and Bindman (1997) had mixed results as regards the contribution of PA to spelling. Though they did find that PA was a predictor of spelling of pseudo-verbs, the pseudo-verbs used had stems that were similar to real verbs, and, thus, it might be that the use of the *-ed* to form the past of a verb was by analogy. In another study, with different pseudo-verbs, neither PA nor grammatical awareness showed to be good predictors of spelling. In the second experiment reported in Mahony, Singson, and Mann (2000) they found that PA made a unique and direct contribution (13%) to reading and that their participants' performance on the two PA tasks increased with grade level (from the third to the sixth grade).

Godoy (2005) also found that their participants' PA level at the end of the pre-school made an independent and direct contribution to her participants' reading – 21% (and also writing – 43.6%) performance at the end of the first grade. The author also found that PA correlated with reading and writing at all times, although this correlation decreased at the end of the first grade (from a correlation of .805 to .393 for reading and from .726 to .460 for writing<sup>41</sup>). According to Godoy, this decrease in the importance of phonemic awareness for reading and writing might

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<sup>41</sup> This result is different from that of Barrera and Maluf, who found that PA did not correlate with reading at the beginning of the first grade, only at the end.

be due to the transparency of Brazilian Portuguese for reading. For writing, PA was more important at the end of the first grade, something that makes sense if we take Scliar-Cabral's (2003 in Godoy, 2005) observations into consideration. According to Scliar-Cabral, the orthography of Brazilian Portuguese is very regular. For reading, there are actually only 3 inconsistent graphemes: *x* which can be pronounced as /ʃ/, /s/, and /ks/, and *e* and *o* when they are not marked by diacritics, since they can be pronounced /e/ or /ɛ/ and /o/ or /ɔ/. Writing, however, is much less regular, requiring, many times, knowledge of morphosyntax, semantics, and etymology.

Though only having reading (rather than reading and writing) as their dependent variable, Durand, Hulme, Larkin, and Snowling (2005) had similar findings with their third, fourth, and fifth graders. What they found with the use of a path analysis was that, after the effects of all other variables were controlled for, verbal ability and phoneme deletion were unique predictors of reading.

Finally, in Bowey's (2005) study of children from kindergarten until the end of first grade, she found that though vocabulary knowledge in kindergarten, and grammatic understanding, phoneme identity, and nonword repetition at time 2 (one year later) were good predictors of reading at the end of the first grade, it was phonological processing ability which was the stronger predictor of the participants variance in reading at the end of the first grade. These results corroborate Sparks and Ganschow's proposal of a deficit in phonological processing in poor readers (see Section 3.3).

Besides the correlational line of studies linking PA and literacy skills, there were experimental investigations that aimed at finding evidence for causality in the relationship between PA and literacy. The idea behind these experiments was to show an increase in literacy-related abilities through PA training. Some of these studies were reviewed by Castles and Coltheart (2004) and the authors concluded that most of them did not provide evidence that PA training, on its own, had a positive effect on reading/writing. Still, there were some studies in which it was possible to observe the transfer of phonemic awareness training to reading-related performance (e.g., Cunningham, 1990 in Castles & Coltheart, 2004; Lie; 1991 in Castles & Coltheart, 2004; Kozminsky & Kozminsky, 1995 in Castles & Coltheart, 2004), though only two showed that the training effects were *only* for reading-related measures – Lundberg, Frost, and Petersen (1988 in Castles & Coltheart, 2004) and Schneider, Kuespert, Roth, and Vise (1997, study 2 in Castles



& Coltheart, 2004). Still, since in both cases there were children that already had some reading and spelling skills (knowledge of some letters) before training, the authors concluded that, up until that moment, there was not a single study that could confirm the *causality* between PA and literacy acquisition (which, of course, does not mean that such relationship does not exist).

There were some studies that investigated the relationship between PA and literacy in bilinguals. Carlisle, Beeman, Davis, and Spharim (1999), who collected data from Spanish/English bilinguals from the first, second and third grades, found that formal definition in the L2 (something the authors define as a metalinguistic awareness measure) made an almost significant contribution (5% –  $p = .06$ ) and L2 PA made a significant contribution (6% –  $p = .03$ ) to L2 reading. Swanson, Rosston, Gerber, and Solari (2008) also collected data from Spanish/English bilinguals and, somewhat surprisingly, in a regression analysis it was found that PA did not predict decoding, pseudoword reading, or reading comprehension in English. English (L2) syntax was the only individual measure that contributed with unique variance for English reading comprehension (for more, see Subsection 2.2.3.1). Concerning Spanish (L1) reading, PA made a unique contribution to word identification, but only syntax made a unique contribution for reading comprehension. Finally, in Jongean, Verhoeven, and Siegel's (2007) experiment, in which L1 and L2 speakers of English were the informants, it was found that PA was the best predictor of word reading in lower<sup>42</sup> and upper grades for both the L1 and the L2 speakers and also the best predictor of spelling in lower grades (first and second) for all speakers and in upper grades for the L2 speakers.

Putting together the results for the studies conducted with children, what has been established is that phonemic awareness seems to be result of instruction in an alphabetical language. More broadly, PA was found to increase along the grades and to continue to correlate with measures of reading and writing at least until the sixth grade. Moreover, in some studies PA was found to be a good predictor of reading and/or writing, both in the L1 and in the L2. However, so far it seems that there are no studies which bring unquestionable evidence that this connection is causal. I now turn to studies that have collected data beyond the early years of literacy.

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<sup>42</sup> Differently from Barrera and Maluf (2003), who found that PA predicted reading only in the second grade (though it predicted spelling in the first and second grades).

Read et al. (1986) conducted a study with objectives similar to those of McBride-Chang et al. (2004) and Mann (1986); that is, verifying whether phonemic awareness only comes to be after one receives literacy instruction in an alphabetical language. Their participants were adults literate only in Chinese characters (18) and adults also literate in Pinyin<sup>43</sup> (12), who performed a task of phoneme synthesis and deletion, and what the authors found was that the participants who had been exposed to an alphabetic script could perform this task much better than their peers. Thirteen of the 18 non-alphabetic participants of the study repeated the task immediately after finishing the first try (with different phoneme targets this time) and, despite the fact that the great majority of them did not improve at all in the second try, one person improved greatly (from one to ten correct items), indicating that even people who have not been exposed to an alphabetic script can gain awareness of phonemes with (very little, apparently) instruction.

Morais et al. (1986) collected data from illiterates and literates (some were better readers than others) and all the literates did better in the PA tasks (apart from the rhyme detection one) than the illiterates, who, in the progressive segmentation task, very rarely reached the point of subsyllabic units. What the authors concluded from these results was that the ability to analyze speech into syllable-level units and to appreciate rhyme can develop in the absence of literacy instruction, although they seem to improve with it. However, analysis at the level of the phoneme seems to be more dependent on having experience with print. Another interesting point is that though the better readers of the literate group did better than the poorer ones on most tests, the differences were small and, according to the authors, are not enough to argue for a higher level of PA as a consequence of further instruction. For them, the impact literacy will have on PA will happen at the beginning of the literacy acquisition process and, thus, will be found in all literates.

Reis and Castro-Caldas (1997) conducted experiments with literate and illiterate women and found that the illiterates had difficulties in (1) repeating pseudowords (having the tendency to transform them in real words), (2) deciding whether a pair of words was phonologically associated or not, and (3) producing words beginning with the phonemes /p/ and /b/ (though they did well in the task requiring that they produced

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<sup>43</sup> See footnote 37 in this chapter.

names of animals and furniture). From these results, the authors argued that the difference in the performance between the literate and the illiterate participants were due to knowledge (or lack of) of the grapheme-phoneme correspondence. Dellatolas et al.'s (2003) study of more- and less-literate adults and illiterate and literate children found a literacy effect for all participants, with the readers doing better than the non-readers in all tasks, but especially in the ones that involved speech-segmentation abilities, what led them to conclude that phoneme awareness is literacy dependent (although they agree with Ehri that one could be trained in phoneme awareness without being exposed to written material). Loureiro et al. (2003) used the data from Dellatolas et al.'s (2003) adults and compared it against the performance of controls who were literate and had attended school for at least 5 years and also found greater differences between the groups (readers, non-readers, and controls) in tasks that involved the segmentation of speech. As in controls the performance in the initial phoneme deletion task (one of the best discriminators between literate and illiterate individuals in their opinion) was related to years of schooling, it appears that the conscious knowledge of phonemes is linked not only to being exposed to the alphabetic system, but also to its constant use and, possibly, to a high level of reading proficiency.

Kosmidis, Tsapkini, Folia, Vlahou, and Kiosseoglou (2004) collected data from completely illiterate, literate/low education, and literate/high education women and found that the illiterate participants generated fewer words than the literate/little-educated ones in tests of semantic and phonological word fluency, who, in turn, produced fewer words than the literate/highly-educated participants. Moreover, in the phonological test, the clusters of the illiterate group were smaller than those of the two literate groups (who did not differ between themselves). In experiment 2 they used a dichotic listening task in order to observe the differences between the illiterate and literate/low-education participants and between the two literate (low- and high-education) groups with respect to the processing of words based on their semantic and phonological commonalities. The illiterate group performed more poorly in all types of pairs and, between the 2 literate groups, the low-education one performed more poorly for the semantically-related pairs. Putting it all together, the results indicate that even illiterates can process materials based on their semantic characteristics (though education increases this ability). As regards the explicit processing of

phonological characteristics of material, however, only literates are able to do it.

Mota and Castro (2007) found that though there were significant differences among all their groups of participants (illiterate, with low literacy and little schooling, and literate), they were bigger between the illiterate and the 2 literate groups (which had similar performances). The general conclusion the authors arrive at is that literacy acquisition does impact metalinguistic awareness but, differently from what Loureiro et al.'s (2003) results hinted at, they concluded that, apparently, this effect does not continue with the increase in literacy (i.e., the more literate group did not perform much better than the group with low literacy).

As in the research involving children in elementary school, there were some longitudinal studies that sought to verify whether the kind of correlations that were found between PA and early literacy would continue beyond this initial phase when it is expected that, in fact, reading/writing will depend mostly on more basic skills (decoding/spelling), which have been shown to be the result of PA.

Calfee, Lindamood, and Lindamood (1973) collected data with participants from kindergarten to twelfth grade and found that the variance between the participants' scores (the good and the poor ones) was greater until the fourth grade. The authors noticed that for those participants who showed high ability in the phonemic awareness test, there was a point, in grade 2, where they seemed to grasp phoneme identification and this caused a great improvement in their performance. For the low-ability students, however, it seems that this click did not happen. Moreover, multiple regressions determined that in all grades, more than 40% of the variance in the reading and spelling test was accounted for by the Lindamood total test scores. MacDonald and Cornwall (1995) were interested in knowing whether data collected 11 years earlier continued to be good predictors of reading and spelling (as it was in the past). Indeed, in a multiple regression analysis, when vocabulary knowledge and socio-economic status were controlled for, the participants' performance in the PA task in the past continued to be a good predictor (approximately 25%) of their reading (word decoding) and spelling in the present. However, PA was not a good predictor of reading comprehension. For the authors, this is because the kind of reading these skilled literates engage in at the moment does not rely much on the phonological route to access word meaning.

Scarborough et al. (1998) noticed that, in the data collected by Calfee et al.<sup>44</sup> (1973 in Scarborough et al., 1998) there was a decline in the phonemic awareness scores of their above-average readers after grade 7, and continuing up to grade 12. In spite of the fact that Calfee et al. did not focus on that<sup>45</sup>, Scarborough et al. got intrigued by this counterintuitive finding (taking the previous literature into consideration) and, thus, reviewed 3 studies in which mature readers performed tests of phonemic awareness. The first one was a longitudinal study conducted by Scarborough (1989, 1990, 1991a, 1991b, 1995b all in Scarborough et al., 1998) where he found that many adolescents with perfectly normal skills made errors on phonemic awareness tasks (phoneme counting and deletion). The authors speculated that this might be due to difficulties in understanding that the tasks required analysis at the level of the phoneme, but field notes made by the experimenters showed that participants often voiced their difficulties in actually carrying out the tasks.

In the second study reviewed – the Colorado Twin Study (e.g., Olson, Forsberg, & Wise, 1994 in Scarborough et al., 1998; Olson, Wise, Conners, Rack, & Fulker, 1989 in Scarborough et al., 1998) – PA was found to increase along with school grade (up to the twelfth grade), though many adolescent non-disabled readers failed to get 100% of their answers correct. Finally, in the study Scarborough et al. (1998) conducted, English speaking college students performed a task of grapho-phonemic segmentation (they had words printed on a paper and were supposed to sound them out loud and then underline the letter(s) which corresponded to each sound they identified in the word – they were given examples). On average, the participants segmented adequately less than 50% of the words<sup>46</sup>.

The authors advance two possible explanations for this lack of complete phonemic awareness in literates. One possibility is that, in the beginning of the literacy acquisition process, readers decode grapheme by grapheme, but with time they realize that decoding in chunks is more efficient and, as a result, syllabic and suprasyllabic units become more familiar. An alternative possibility, taking into consideration the fact that many participants utilized different levels of analysis simultaneously, is that even when one learns how to operate at the level

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<sup>44</sup> Reviewed on the previous page.

<sup>45</sup> The purpose of their study was to compare the performance of poor and good readers.

<sup>46</sup> They typically marked 2 (or more) graphemes together, as if representing one single phoneme.

of the phoneme this person continues to have awareness of other levels and, thus, uses them also. Nevertheless, the fact that some good readers were very rarely able to segment words appropriately in phonemes might indicate that phonemic awareness is not necessary to become a good reader<sup>47</sup>.

Lehtonen and Treiman (2007) also found that adults not always use phonemes in their segmentations. In their study, in which undergraduate students had to divide words phonemically, many of the participants' responses were larger than single letters and/or phonemes (this was influenced by the sonority of the postvocalic consonants and letter names<sup>48</sup>). In the second experiment reported in this same article, the sonority of the phonemes once again influenced the segmentation. Another interesting finding was that in this study the participants seemed to have even more difficulties in segmenting words at the level of the phoneme than the participants of the first study, who performed the phoneme counting task before the spelling segmentation one. As a consequence of that, they decided to conduct a third experiment to verify whether the better performance of the first cohort was due to training effects from the phoneme counting task. In fact, the group who did this task (phoneme counting) first gave 71% of phonemic responses in the spelling segmentation task while the other group segmented at the level of the phoneme in 48% of the cases. Putting together this finding and that of Read et al. (1986), the good news is that though phoneme segmentation does not seem to be easily carried out when required from adults, very little training in this skill can largely improve someone's task performance. Just like Scarborough et al. (1998), the authors believe that probably after the process of reading acquisition is finished<sup>49</sup>, the more advanced reading skills people develop lead them to focus on larger chunks than phonemes.

Caravolas, Volín, and Hulme (2005) investigated Czech<sup>50</sup> and 71 English children from grades 2 to 7 so as to verify whether in a consistent orthography phoneme awareness would not be important beyond the initial years of literacy. Actually, though the Czech children

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<sup>47</sup> Though for Brazilian Portuguese this is not what Cardoso-Martins (1995 in Guimarães, 2003) has argued.

<sup>48</sup> See the scoring subsection (p. 98 for the PA tasks in the Method chapter).

<sup>49</sup> I would not say that the process of reading acquisition is ever completely finished. In my point of view, the acquisition of literacy will continue for many years after the elementary ones and even after decoding is completely automatized for many (perhaps most) words.

<sup>50</sup> Which has a consistent alphabetic orthography.

were faster readers, PA was among the best predictors of reading speed, spelling, and reading comprehension in both languages.

The conclusions we can arrive at from the studies conducted with participants who were beyond the initial years of literacy are that: phonemic awareness seems to be, indeed, augmented, after training in an alphabetical language happens. However, this conclusion cannot be simplified. First, the evidence also indicates that it is possible, although unlikely, apparently, to develop phonemic awareness even in the absence of instruction in an alphabetical language. Second, it is still unknown whether phonemic awareness will continue increasing as literacy develops, and even if it will continue to be important and/or necessary for the reading comprehension of literate adults. I turn now to a review of the studies that have attempted to unveil the relationship between literacy and MA.

### 2.2.2 Morphological awareness

When talking about MA, we must take into consideration the fact that this awareness has two facets, since there are two classes of morphemes: roots and affixes. Additionally, these affixes can be flexional (determining number and, in Portuguese, for example, gender of nouns, and number, gender and tense of verbs) or derivational (prefixes and suffixes that form new words). Though some argue that flexional morphology has a morphosyntactic aspect whereas derivational morphology does not, this is not what Correa (2005; 2009) argues, since, as she points out, from the moment I transform *belo* in *beleza*, for example, there is a change in grammatical class.

There is evidence that children react differently to the derivational and the flexional morphology, with the processing of the derivational morphology apparently occurring later on<sup>51</sup> (Carlisle, 2004; Deacon & Kirby, 2004; Mota, Gontijo, et al., 2008). Additionally, some morphemes have transparent phonological relationships as in *feliz* and *felizmente*, whilst others have more opaque relationships such as *razão* and *racional* (Koda, 2000; Mota, 2007b) and, in general, it was found that children (especially poor readers) have more difficulty in reading words with opaque relationships. What Mota (2007b) suspects, based on the results of her study, where children had more difficulties with suffixed than prefixed words<sup>52</sup>, is that morphemes are stored as

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<sup>51</sup> See, for example, Carlisle (1995) and Deacon and Bryant (2005).

<sup>52</sup> What happens is that in the words with prefixes there were no changes in the root of the word. With the suffixes, however, the root was altered, making it more difficult for this morpheme to be identified.

independent units and, for this reason, when the phonological relationship is not transparent, it is more difficult to identify a given morpheme.

Mahony et al. (2000) remark that the reason why the relationship between MA and reading has received less attention than the relationship between PA and reading might be because MA is more complex and less well-understood. Still, a number of authors have been building a case for the importance of MA for reading. Mota (2007b) explains that reading involves two principles – the phonographic (related to how letters and phonemes relate to each other) and the semiographic (related to how words are constituted from phonemes). MA would be associated to the acquisition of the second principle (and PA to the first). Not always, in an alphabetical language, words will respect the phonographic principle (that is, not always the relationship between grapheme and phoneme will be a stable one) and this is when the morphological knowledge comes in handy (Mota, 2007b; Mota, Anibal et al. 2008; Mota, Moussatchè, Castro, Moura & D'Angelis, 2000; Nagy, Berninger, Abbott, Vaughan, & Vermeulen, 2003).

Deacon and Kirby (2004), for example, predict that MA might be important for: single word reading (e.g., to know the difference in the pronunciation of *ea* in *reading* and *react*), uncovering the meaning of single words (e.g., if you know the root *read* and the affix *-ing* you may infer the meaning of *reading*), constructing the meaning of a text, and pseudoword reading (since these words potentially have morphemic structures). Nagy, Berninger, and Abbott (2006) also believe that MA will lead to better/faster word recognition since the analysis of complex words into their component morphemes leads to more fluent word recognition of long words. Actually, in a study conducted by Colé, Marec-Breton, Royer, and Gombert (2003 in Mota, Anibal, et al. 2008) they found that French children who were in elementary school were more accurate reading morphologically complex<sup>53</sup> words and pseudowords than when reading morphologically simple ones (words and pseudowords), what might indicate that being aware of the morphological structure of words<sup>54</sup> can be helpful even for words in another language.

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<sup>53</sup> Words with root and suffix (e.g., *banheiro*), rather than non-suffixed ones (e.g., *dinheiro*).

<sup>54</sup> McBride-Chang et al. (2005) explain that “morphological structure awareness is the awareness of and access to morphemes, reflected in the ability to apply morphemic knowledge to recognize and create new word forms that are morphologically complex and conform to the structure of a given language” (p.141).



Nagy et al. (2003) predict that MA, besides affecting word recognition and reading comprehension, as already mentioned, will also help in spelling. As the words being read and written start becoming more complex, reading and spelling will rely also on morphological knowledge, besides phonological and orthographic. They explain that in the same way that a given morpheme, even though having the same spelling, at times is pronounced differently (e.g., heal-health), it also happens that words with the same pronunciation have different spellings because they refer to different morphemes (e.g., where-wear). In view of that, they predict that being able to perceive the morphemes in words, such as *thanks* in *thanksgiving* will lead to a better net of connections among lexical items, which will result in better accuracy and speed in word reading, spelling, and reading comprehension.

Mota, Anibal, et al. (2008) and Mota et al. (2000) agree with Nagy et al.'s (2003) argument for an impact of MA in writing. They point out that since some words do not follow the rules for the letter-sound correspondence, grasping the grapheme-phoneme correspondence is not enough to become an efficient writer. In Portuguese, for example, though this relationship is much more transparent than in English (where there is a large number of irregular words), many words have an ambiguous writing. The sound /z/, for example, can be represented by the grapheme *z* in *beleza*, and by the grapheme *s* in *princesa*. If I know that *-eza* is a morpheme, I will know that *nobreza*, *beleza*, *esperteza*, and so forth, are all spelled with a *z*.

Despite the fact that the processes of recognizing morphemes and learning about word formation start in pre-school years<sup>55</sup> (Carlisle, 2004; Mota, 2008), the suspicion is that due to an increase in the complexity of the texts readers are exposed to and the increase (up until high school) of some aspects of morphology knowledge, probably the contribution the latter makes to reading comprehension will be even greater in later grades (Nagy, Diakidoy, & Anderson, 1993 in Nagy et al., 2006). Moreover, a number of authors (Bryant et al., 2000; Koda, 2000; Nagy et al., 2003) also believe that the relationship between MA and literacy is reciprocal (as it is in the case of PA). For Koda (2000),

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<sup>55</sup> At this point, the kind of knowledge these learners have is of common principles of word formation and affixes that are productive. Carlisle (2006) cites the example of the suffix *-er* which can be attached to many words to convey *one who* or *that which*. On the other hand, these children are much less likely to be familiar with other suffixes which have the same meaning (e.g., *-ist* as in *typist* or *-ent* in *correspondent*). Moreover, derivations are not likely to be learned before a child starts school due to the complexity of their morpho-phonological relations (Carlisle, 2006; Deacon & Kirby, 2004).

the reciprocity in this relationship is no longer an issue. According to her, there is empirical evidence showing that (1) MA makes an independent contribution to alphabetic literacy, (2) errors in omitting inflectional and derivational morphemes occur more frequently in the speaking and writing of less skilled readers, and (3) in studies conducted in high school the best readers were better at using morphological information for sentence comprehension.

Indeed, the issue of whether MA makes an independent contribution to reading has been a matter of concern over the last years, since learning morphemes depends on learning their phonological representation and thus, it could be that MA was derivative of phonological abilities (Carlisle, 2004). However, evidence reviewed below indicates that morphology does make an independent contribution to literacy which, at times, is even greater than that of PA (Deacon & Kirby, 2004). In the next subsection I review some studies where this contribution, and the relationship between MA and literacy, in general, were investigated.

#### 2.2.2.1 *Empirical studies*

Mota (2008) assessed MA in first and second graders and in 3 out of the 6 MA tests, the second graders did better than the first ones, something the author took to indicate an increase in the ability to engage in morphological processing from the part of the children. In the first experiment of Mahony et al. (2000)<sup>56</sup> they also observed an increase in MA along with the grade (from the third to the sixth) and, in addition to that, MA scores were found not only to be significantly correlated to vocabulary knowledge and decoding, but also, when partial correlations were run, controlling for the effect of vocabulary knowledge on the correlation between MA and decoding, MA was found to make an independent contribution to reading (correlations between .30 and .33 –  $p < .001$ ). In Experiment 2, again they found an increase in MA along with grade and, when vocabulary knowledge *and* PA were partialled out, MA continued to make an independent contribution to reading, even if it was smaller than that of PA (PA= 13%, MA=5%). Singson et al. (2000) also collected data from third to sixth graders and once again there was an increase in MA along with the grades. Moreover, MA was found to correlate with performance in reading and to make a contribution to it which was beyond that of PA. Indeed, as mentioned above, McBride-Chang et al. (2005) have even found that, in some

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<sup>56</sup> This study was already partially reviewed in Subsection 2.2.1.1 (p. 27).

cultures, depending on the script MA might be more important than PA for reading.

Nagy et al. (2003) went beyond Mahony et al. (2000) and Singson et al. (2000) and or a correlation between MA and reading, also included writing in this equation. Data was collected from at-risk readers from second grade and at-risk writers from fourth grade. For the second graders, MA was more strongly correlated with vocabulary knowledge ( $r = .28$ ) and reading comprehension ( $r = .20$ ) than to word reading (accuracy –  $r = .19$ , speed –  $r = .04$ ) or spelling ( $r = .04$ ) (and this was a unique variance, after the other language predictors – PA, orthographic awareness, and vocabulary knowledge – had already been partialled out). For the fourth graders, MA was correlated with oral vocabulary ( $r = .32$ ) and reading comprehension measures ( $r = .39$ ) also. However, the structural equation modeling did not show any paths from MA to any of the outcomes. Another interesting finding was that their performance on the MA tasks was better than that of the second graders, indicating development. Differently from Nagy et al. (2003), Nagy et al. (2006) not only found an increase in MA along the grades (fourth to ninth) but also that MA made a significant unique contribution at all grades for reading comprehension, reading vocabulary and spelling, even though the modeling analysis made showed that much of the contribution MA made to reading comprehension was through the impact it had on vocabulary growth.

In the Brazilian context, Mota, Anibal, et al. (2008), already partially reviewed in the PA subsection (p. 27), found that whereas PA was correlated only with reading, performance on the MA tasks correlated with the participants' performance in reading (from .30 to .31 –  $p < .01$ ) and writing (from .37 to .58 –  $p < .01$ ). One possible explanation for that, advanced by the authors, is that, at this point, it might be that the sound-grapheme correspondence is not so important, while morphology is helpful to solve the more complex aspects of orthography. In addition to this correlation, they also found that, even when PA was partialled out, MA<sup>57</sup> continued to contribute to reading and writing.

Besides the studies in which MA was tested as a concurrent predictor of literacy, there were longitudinal studies that also attempted to contribute with data for the establishment of the relationship between MA and literacy. One of these was Nunes et al.'s (1997) 3-year-long

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<sup>57</sup> But only the performance in the grammatical analogy task.

study of children of 6, 7, and 8 years-old (already partially reviewed in Subsection 2.2.1.1, p. 27). They found that the children who did well on a test of grammatical awareness were the best spellers of the *ed* morpheme at the end of regular pseudo-verbs. Grammatical awareness (and PA, as mentioned in Subsection 2.2.1.1), was also found to be a good predictor of the children's correct spelling of *ed* after age, IQ, and phonological skills were controlled for<sup>58</sup>. However, in a second study, in which the pseudoverbs used were not analogous to real verbs, though the participants with more grammatical awareness were the ones to employ the *ed* spelling more frequently, grammatical awareness and PA were not good predictors of spelling.

Finally, Deacon and Kirby (2004) collected data from children from the second to the fifth grade and found that MA did, indeed, contribute to literacy beyond verbal and non-verbal intelligence and PA, despite the fact that this contribution was modest (between 1 and 5%). However, since prior learning was controlled for (the reading grades at the second grade) this probably means that the contribution of MA is greater since it probably had already contributed to the reading grade obtained at the beginning of the study. They also observed an increase in the contribution of MA to reading along the grades, though they suspect that this increase was due to a decrease in the importance of the other variables<sup>59</sup> which left more variance to be predicted by other factors. That is, probably the contribution of MA (and of PA) is about the same along the grades. Nevertheless, this in itself is important once it signals that such abilities will be important even for proficient readers.

What can be concluded as regards the relationship between MA and literacy, taking the studies reviewed in this subsection into consideration, is that: there is an increase in MA as schooling progresses (at least until the ninth grade), MA has been shown to be correlated to both reading (reading comprehension and decoding) and writing (spelling), MA is also a good predictor of reading (reading comprehension and decoding) and writing (spelling) and this contribution holds even when the variables vocabulary knowledge, IQ, verbal and non-verbal intelligence, and PA are partialled out. The contribution MA makes to reading and writing, however, appears to be smaller than that of PA.

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<sup>58</sup> In another report of this same longitudinal study, Bryant et al. (2000) point out to the fact that MA scores were good predictors of spelling even 28 months after the MA data was collected.

<sup>59</sup> Reading scores in the second grade and verbal and non-verbal ability.

I now turn to the last ability to be scrutinized – syntactic awareness.

### **2.2.3 Syntactic awareness**

Cain (2007) defines SA as the ability to reflect on and manipulate the grammatical structure of language; that is, the ability to consider the structure rather than the meaning of a sentence. Apparently, in the same way as PA and MA, SA also exists in a more implicit form before literacy acquisition takes place. Bowey (1986), for example, perceived that his kindergarten participants already had very good scores in an error imitation task.

Cain (2007) also stated that, although research linking SA and literacy has been conducted for over 20 years, this relation is still not well-understood. In the Brazilian context, Guimarães (2003) declares the number of studies conducted investigating this relationship is still small and, as a consequence, there is not an agreement on whether SA contributes or not to literacy, and whether this is a reciprocal relationship. Cain observed that some have found a correlation between SA and word reading and/or reading comprehension, but others found that other linguistic skills (such as memory, vocabulary knowledge, and grammatical knowledge) actually mediated this relationship. After reviewing the work of Rego and Bryant (1993 in Bryant et al. 2000), Bryant et al. (2000) concluded that there is reason to propose that SA is linked to one specific aspect of reading only: making use of context when reading. The following studies will allow us to decide whether we agree or not with these authors.

#### *2.2.3.1 Empirical studies*

In the same way as PA and MA, SA also has been shown to increase along with the grades. Capovilla et al. (2004) – already partially reviewed in Subsection 2.2.1.1, p. 27 – for example, found that their participants' scores in the SA and in the reading tests improved systematically from the first to the fourth grade and, in addition to that, these scores were correlated. Barrera and Maluf (2003) – also already partially reviewed in Subsection 2.2.1.1 – also investigated the relationship between PA, SA, and reading (and also spelling). SA and reading (reading words and short sentences) correlated at the beginning (.25) and at the end of the year (.45) and SA and spelling correlated at the end of the year (.38). Their findings go against those of Rego (1995) since she did not find a correlation between SA and decoding. One possible explanation for that, advanced by Barrera and Maluf (2003), is that this is due to the different methods used in the literacy instruction

the participants of these 2 studies received. In Mokhtari and Thompson's (2006) study (with fifth grade students), they found that SA was correlated to all measures of reading fluency – reading rate,  $r = .50$ , decoding,  $r = .51$ , and prosodic performance  $r = .62$ , and also to both reading tests – norm-referenced,  $r = .816$ , criterion-referenced,  $r = .700$ .

There were some studies that went beyond simple correlations between SA and reading/writing and used regressions in an attempt to define whether SA contributes to reading/writing, and also whether this relationship is not the residue of other variables underlying SA and reading/writing. One of these studies was Bowey's (1986). He collected from preparatory school through fifth grade and found that performance on the error repetition task increased up to the first grade and in the error correction task continued to increase until the second. Even with vocabulary and age effects controlled for, SA was significantly correlated with reading and memory and, in a multiple regression analysis, was found to contribute with 5% to reading. Plaza and Cohen (2003) – partially reviewed in Subsection 2.2.1.1, p. 27 – found that both SA and naming speed (as well as the control variables PA and auditory memory) were related to both reading and writing. In addition to that, once the other three variables were partialled out in a hierarchical regression, PA (14%), SA (2%) and naming speed (8%) were all unique contributors to variance in literacy-related performance. Though the contribution of SA was small (especially if compared to that of PA), this is evidence for an effect of SA on literacy development which is independent of possible deficits in PA.

Even though, according to the studies reviewed above, it seems that SA does make an independent contribution for literacy development, Cain (2007) raised the issue that, perhaps, there could be other variables intervening in this relationship. In his study of children aged 7-10 he found that though participants' performance on the SA tasks correlated with their performance on tests of reading ability, these correlations varied depending on the SA task and on the grade. Moreover, the performance on neither of the tasks showed to be a predictor of reading comprehension. In other words, at least in this study, there was little support for a special relationship between SA and reading comprehension<sup>60</sup>, although the positive correlation between the

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<sup>60</sup> Indeed, in a series of fixed-order hierarchical multiple regressions it was possible to define that vocabulary knowledge, grammatical knowledge, and memory were also tapped in the SA

performance on a word-order task and word reading accuracy warn us not to simplify things or to dismiss the link between SA and literacy.

There were also some studies that looked for a longitudinal correlation between SA and reading/writing.

Lazo et al. (1997) found that not only PA (as already reviewed in Subsection 2.2.1.1, p. 27) but also SA (and print and pragmatic awareness) measures taken when their participants were in nursery school were predictors of their pre-conventional reading and spelling, which, in turn, predicted attainment in reading (word and non-word reading, listening comprehension, reading comprehension) and spelling at the end of first grade. The authors argued for an indirect effect of the metalinguistic awareness tasks on literacy. Rego (1995) also conducted a longitudinal study, accompanying pre-schoolers until the end of the first grade. As previously mentioned (in Subsection 2.2.1.1), PA was not found to be a good predictor of later literacy attainment. SA, however, was significantly correlated with word reading in context (.37) and reading comprehension (.39) – two tasks in which the context was, indeed, relevant and could help decoding<sup>61</sup>. In addition to that, after age and verbal working memory were controlled, SA was efficient in explaining a significant percentage of variance ( $r^2 = .0967$ ;  $p < .05$ ) in the word reading in context task. A less encouraging result was encountered in Bowey (2005) (already partially reviewed in Subsection 2.2.1.1). The author found that the best predictor of reading variance at the end of third grade was phonological processing (though grammatic understanding at time 2 also was a predictor of variance in reading scores). However, the correlation between syntactic control and time 3 reading was mediated by time 2 reading. When the latter variable was taken out of the equation, the relationship ceased to exist. As regards the origins of SA, time 2 syntactic control was predicted (37%) by an aggregate of participants' scores in grammatic understanding, grammatical error correction, and grammatical error imitation.

Another line of research in SA, besides relating SA and literacy performance in the first years of literacy acquisition, is comparing the performance of poor and good readers (Scott, 2004). Guthrie (1973 in Guimarães, 2003) was one of the first studies showing that SA (besides PA) is also important for reading and writing. He compared learners

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tasks. Thus, it could be that the correlation between SA and literacy arises, at least in part, due to these other language and memory skills (Cain, 2007).

<sup>61</sup> There were no significant correlations between performance in the SA task and performance in tasks where words were read in isolation.

with and without reading difficulties (10 and 7 year-olds, respectively) and found out that, in a cloze test, the good readers were better at choosing, from 3 alternatives, the adequate one to fill in the gap. This was interpreted by the author as evidence that good readers, when compared to the poor ones, are better able to use grammatical clues to choose the correct word.

Tunmer, Nesdale, and Wright (1987 in Guimarães, 2003) also compared good (younger) and poor (older) readers who were matched for reading ability and also found that the younger ones did better than the older ones in two SA tasks. They predicted that this knowledge would be helpful to children when they had to identify and spell words. The example Guimarães (2003) brings to illustrate that is that many people say *falô* rather than *falou*, for example, and a child who is able to reflect on and manipulate the grammatical structure of sentences will probably use the contextual clues to read more easily and/or correctly spell the word. Nation and Snowling's (2000) participants were poor comprehenders and regular readers who were matched for decoding skill<sup>62</sup>, age, and nonverbal ability and found that the regular readers did better in the SA task than the poor ones, regardless of the difficulty of the sentences in the task. The conclusion reached by the authors was that it is clear that children with comprehension difficulties have weak SA skills which, moreover, cannot be a byproduct of their impaired phonological skills.

Bryant, Nunes, and Bindman (1997)<sup>63</sup> had different findings and, based on them, argued that literacy acquisition will impact SA. Their participants were also poor and good readers who were matched for reading ability and what Bryant et al. found, when comparing these two cohorts, was that the poor readers did *better* in the SA tasks than the better ones. From that, they concluded that literacy acquisition impacted the development of SA since their poor readers had been in school for longer than the good ones.

Finally, Guimarães (2003), already partially reviewed in Subsection 2.2.1.1, p. 27, found that poor readers also had less SA (besides PA) than the good ones. Despite the fact that the two groups who had less reading ability (either because they were poor readers from the sixth grade or because they were normal readers from the fourth

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<sup>62</sup> Which is, at least in part, the result of phonological processing, and, thus, from that, they argued that their participants' PA was controlled for.

<sup>63</sup> This article is based on the same data which was described above, in Nunes et al. (1997), in Subsection 2.2.2.1 (p. 42).



grade) performed similarly in the SA tasks, the normal readers from the sixth grade did better than both groups 1 and 2. Moreover, SA correlated positively and significantly with reading (.68) and writing (.66). The conclusion the author reached was at the same time similar and different from that of Nation and Snowling (2000). She also believes that, apparently, SA improves with exposure to text (experiences with reading and writing). However, Guimarães, differently from Nation and Snowling, suspects that because of their difficulties in PA the participants of group 1 (who were more schooled) could not profit from these experiences and, as a result, did not develop SA that much. This would be the reason why the participants from group 1, who were more schooled, had levels of SA comparable to those of group 2 who had less experience with print.

As regards studies with bilinguals, Swanson et al. (2008) had an interesting finding concerning the interaction between SA and PA and reading development. As previously described (in Subsection 2.2.1.1, p. 27), data was collected with third graders who were Spanish/English bilinguals. Of special interest, taking the previous studies reviewed into consideration, was the fact that the correlations between the English reading measures were more strongly correlated with the SA than the PA English measures. Actually, English syntax was the only individual measure that contributed with unique variance for the scores in English reading comprehension test. As for Spanish reading, SA (and PA<sup>64</sup>, as already mentioned) made unique contributions to word identification and SA made a unique contribution for reading comprehension. In Jongean et al.'s (2007) experiment, also already reviewed in Subsection 2.2.1.1, where they also collected data with Spanish/English bilinguals (from the first to the fourth grades) SA was found to be the best predictor of spelling and word reading in upper grades for the L1 speakers of English. Moreover, though in this study SA and PA were seen as underlying word reading and spelling, in view of the fact that these abilities increased with schooling, the results also signal to a reciprocal relationship between these skills and literacy development.

In the only study I encountered in which the informants were adults – Mota and Castro (2007) – the results found for SA were similar to those found for PA (see Subsection 2.2.1.1, p. 27). In spite of the fact that there were significant differences in the performances of all groups

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<sup>64</sup> Probably this was due to the fact that Spanish has grapheme-phoneme relationships which are more transparent than the ones in the English language.

(illiterates, low-literacy, and high-literacy) in the SA tasks, these differences were greater between the illiterate and the 2 literate groups (which had similar performances).

The conclusions we can draw from the studies reviewed above is, at times, somewhat less clear than those for PA and MA. First, it seems that SA increases along with the school grade; however, Bowey (1986) only found this increase up to the second grade (and only for one of his SA tasks). Moreover, though illiterates were found to perform worse than literates in SA tasks, no significant differences were found between more- and less-literate subjects. Second, SA seems to be linked to both reading (word reading and reading comprehension) and writing and its contribution seems to be independent from that of vocabulary knowledge, PA, or working memory capacity; however, its contribution is modest and it was not found in all studies. Third, good readers have been shown to have a better performance than poor ones in tasks of SA; however, in Bryant et al. (1997) they actually found that the poor readers (but more schooled) had more SA than the good ones. Finally, the issue of reciprocity between the development of SA and literacy is argued and speculated by some authors.

All in all, from the literature reviewed so far, it seems that a connection between literacy development and metalinguistic awareness does exist. Still, most of the empirical evidence in favor of this interaction is limited to PA. Moreover, the vast majority of studies were conducted with subjects who were, at the time of data collection, in their first years of literacy development. In the next chapter I take a step further in laying the rationale for the present study by presenting some proposals on how L1 skills can be related to L2 development.

## CHAPTER III

### REVIEW OF THE LITERATURE: METALINGUISTIC AWARENESS AND L2 LEARNING

This chapter will start by addressing the theoretical discussion and empirical evidence in relation to the crosslinguistic transfer of metalinguistic awareness. After that, studies which propose a link between L1 and L2 performance are reviewed. Next, there is a review of studies which propose that L1 metalinguistic awareness can predict L2 learning. The last section of the chapter presents a summary of the pilot study conducted to test the instruments that later were used in the data collection for the dissertation.

#### **3.1 Crosslinguistic transfer of metalinguistic awareness**

According to R. Ellis (2008) and Odlin (2003), it is not easy to define transfer, and even the term *transfer* has already been abandoned by some in favor of phrases such as *linguistic interference*, or *crosslinguistic influence* (R. Ellis, 2008; Odlin, 2003). Nevertheless, both Odlin and R. Ellis point out that transfer is a term that it is still widely used in the literature to define "... the influence resulting from the similarities and differences between the target language and any other language that has been previously (and perhaps imperfectly) acquired" (Odlin, 1989, p. 27 in Odlin, 2003, p. 436). Though R. Ellis (2008) distinguishes two types of transfer – borrowing transfer (when the L2 influences the L1) and substratum transfer (when the L1 influences the L2) – in the present study I use the umbrella term *transfer* to refer to the influence of one language on the other in either way since, as it will become clear below, in relation to the transfer of metalinguistic awareness, both kinds of transfer as expected to occur.

R. Ellis (2008) remarks that it was due to the interest in the study of transfer (contrasting the evidence for behaviorist and mentalist views of low L2 learning took place) that L2 learning started to be seen as a (basically) cognitive process. For him, the study of transfer is at the core of the study of L2 learning. Indeed, Odlin (2003) traces the beginning of interest in transfer back to 1953, when Uriel Weinreich released *Languages in contact*, a book in which he investigated the phenomenon of transfer in some detail. Though Weinreich did not have a behaviorist view of language learning (see below), the book's main focus was, indeed, on the negative transfer of L1 knowledge to the L2, a characteristic of the early study of transfer (R. Ellis, 2008; Odlin, 2003).

The first theory of L2 learning to take transfer into consideration was behaviorism<sup>1</sup>. In a very simplified way, in the behaviorist account of language acquisition, learning was seen as the formation of a set of habits. As regards L2 learning, what would have to happen for this process to take place would be a substitution of the L1 habits for new, L2, habits. At the time, lack of success in L2 learning was thought to be the result of negative transfer from the L1, that is, the use of L1 habits. At this time, the Contrastive Analysis Hypothesis proposed that by contrasting a pair of languages (L1 and L2) it would be possible to determine the distance between the languages and then positive or negative transfer could be expected depending on how distant the L2 was from the L1. For those structures/sounds which were similar in the two languages, positive transfer was expected. When the structures/sounds were different, difficulties and error were expected to be encountered (Van Patten & Williams, 2007).

The contrastive analysis was challenged, however, since empirical research found that many errors that were evident in the productions of L2 learners could not be due to transfer from their L1s. In addition to that, errors that were expected, according to the contrastive analysis made between the languages, did not occur (R. Ellis, 2008).

Transfer was also a phenomenon taken into consideration in relation to Universal Grammar – the innate knowledge that would allow one to achieve competence in the L1 (since only input from the environment would not be enough for that). Even though the proposal of UG was to explain L1 acquisition, it was expected that UG could be implicated in L2 learning too since UG was also thought to govern one's interlanguage. The fact that some L2 learners can, intuitively, and without input from the environment, follow some grammar rules from the L2 which are different from those of the L1 would be evidence that UG is available to the L2 learner. That is, the use of the L2 rule is not the transfer of L1 knowledge. However, this is not to say that the L1 will play no role if one has access to the UG. In 4 of the 5 hypotheses in relation to the access to UG that L2 learners would have, it is expected that some transfer will occur and In the Full Transfer/Full Access one it is proposed that the L2 learner starts the acquisition of the L2 grammar

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<sup>1</sup> Though the behaviorism is not a theory which was created to account for L2 learning, but to explain human and animal behavior, applied linguistics borrowed this model of learning from psychology and attempted to use it to explain language acquisition, including L2 language acquisition (VanPatten & Willis, 2007).

by relying on his/her full knowledge of the L1 grammar. Changes, then, will be made in the L2 grammar as input is received, and parameters will be reset, if necessary, to conform to the constraints of the L2 (White, 2007).

Though there is not a theory of transfer, R. Ellis (2008) points out some key elements that must be kept in mind when thinking about the phenomenon of transfer in L2 learning. First, transfer happens both when one is communicating in the L2 and when one is learning an L2. Second, transfer is the result of both differences and similarities between the languages and, more than that, difficulties in L2 learning and errors might actually, at times, be the result of similarities rather than differences between the languages. Third, transfer works in conjunction with other factors in accounting for the differences in attainment in L2 learners. Fourth, transfer is both a conscious and a subconscious process. In the case of the transfer that happens when one is communicating, probably it will be conscious, a strategy used by the L2 learner. When transfer happens in L2 learning, however, its use might be more or less conscious since hypothesis testing can happen both consciously and subconsciously. Fifth, transfer is both conceptual and linguistic. That is, if the language one uses helps in shaping the way one sees the world, learning a new language could change the way one perceives the world. And sixth, transfer is a subjective phenomenon. That is, there are individual differences among L2 learners as regards how much they will transfer, and how that will take place (R. Ellis, 2008).

The great majority of studies that have investigated the possibility of transfer of metalinguistic skills looked at transfer of PA. For this reason, this subsection is almost totally devoted to the rationale behind this possibility and to empirical studies that have found evidence for or against PA transfer.

Chikamatsu (1996) explains that the orthography of the languages of the world are classified in 3 groups: alphabet (sound-based, and usually with each letter representing a phoneme), syllabary (sound-based, and usually with each letter representing a syllable), and logograph (meaning-based, with each character representing a meaning or a morpheme)<sup>2</sup>. Though Koda (2007) argues that once one perceives

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<sup>2</sup> According to Adams (1994), no language in the world can be perfectly categorized as belonging to only one of these groups. Despite employing mostly one of these symbols, they tend to include also aspects of others. In alphabetical languages, for examples, we use symbols such as #, \$, % 3, etc (p. 15).

that there is a need to segment the stream of sound in words to understand them this kind of knowledge will be available to all languages, other authors (Bialystok, 2007; Bertelson et al., 1989 in Cheung et al., 2001; Durgunoğlu, 2002; Troia, 2004) argue that the level of PA one has will depend on one's L1, since certain levels of PA might be more important in one language than in other. Durgunoğlu (2002), for example, claims that if, in a given language, a word has many other words that differ from it only due to one phoneme, such as the group *hot, not, pot*, a child will have to refine his/her abilities up to the level of the phoneme. Schwartz, Share, Leikin, and Kozminski (2007), in turn, point out that if a language has a more complex syllable structure than another, it is likely that the children who speak the more complex language will have higher levels of PA and, consequently, will be better able to perform phonological segmental tasks than their peers who are speakers of less complex languages.

In fact, it has been found that Italian speakers, for example, have more PA than English ones, and this is thought to happen due to the phonological transparency of Italian (Cossu, Shankweiler, Liberman, Katz, & Tola, 1988 in Bialystok, 2007). French speakers, however, were found to have more awareness at the syllable level, whereas English speakers had more phoneme awareness (Bruck & Genesee, 1995 in Bialystok, 2007). McBride-Chang et al. (2005) reviewed the studies conducted by Öney and Durgunoğlu, in 1997, Wimmer, in 1993, and McBride-Chang and Kail, in 2002, who examined reading in Turkish, German, and Chinese, respectively, and observed that whilst Turkish and German children usually learn to combine phonemes fairly easily in early elementary school, probably due to the transparency of their orthographies, the Chinese ones only mastered syllabic awareness by early elementary school.

Cisero and Royer (1995) were interested in investigating whether different levels of PA depended on the exposure to activities which emphasized each of these different levels, or if PA developed from syllables to onset-rime to phonemes, irrespective of the language one is exposed to and the experiences one has with phonological material. They collected data with Spanish/English bilinguals and monolinguals (English) who were in the first grade and found that for all of them performance was better in the rhyme task than in the onset one, even though the latter was as difficult as identifying the final phoneme. In another experiment collected data with first grade and kindergarten bilinguals and monolinguals with different socio-economic statuses. For

all monolinguals, the task dealing with rhymes was easier than the ones dealing with initial or final phonemes, and the improvement in this task along 5 months was not significant, though for initial and final phoneme it was. For them, this is an indication that rhyme awareness was already well-developed at time 1 and this is why the participants were able to have gains in the other PA tasks. For bilinguals, when being tested in their L1, kindergarteners were not better at rhyme than onset and final phoneme deletion and, since there were not improvements in rhyme detection over time, the authors suspect they had not acquired enough competence in this skill to be able to have any gains in the other, phoneme-level, skills either. For the authors, these results give support to the developmental progression hypothesis (i.e., PA develops through levels, irrespective of external influences).

Mann (1986) compared American<sup>3</sup> and Japanese<sup>4</sup> children expecting that the former would be aware of phonemes and syllables and the latter only of syllables/moras. In Experiment 1, her 40 Japanese first graders performed an angle-counting task and half of the group also performed a mora-counting task, while the other half also performed a phoneme-counting task. Their performance was compared to that of Liberman, Shankweiler, Fischer, and Carter's (1974 in Mann, 1986) American first graders and, even though there were no differences between the two Japanese groups in angle counting, the mora-counting group did much better than the phoneme-counting one, which did much worse than the Americans (only 10% of the Japanese got 6 consecutive correct responses, while 70% of the Americans did that).

In Experiment 2, the counting task was done by third to sixth Japanese graders<sup>5</sup> – part of them (from the third and fourth grades) did the mora-counting task and all the others did the phoneme-counting one. To the author's surprise, no differences were found in the phoneme-counting task between the people who had been instructed in the alphabetical principle and those who had not. The only growth in accuracy as regards phoneme counting was seen from the third to the fourth grade, before children were exposed to the alphabetical language. Mann (1986) was at loss as regards how to explain these results since it

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<sup>3</sup> Who learn to read an orthographic language and engage in phoneme-based word games.

<sup>4</sup> Who learn a morphology-based system (Kanji) and a phonology-based one (based on a syllabary) (Kana) and have phonology games at the level of the mora (a rough equivalent to a syllable).

<sup>5</sup> In Japan, at the end of the fourth grade, children normally receive instruction in alphabetic transcription – Romaji.

could not be that the knowledge gained by learning Kana (at the beginning of first grade) would have an effect on the awareness of the internal structure of words only by the third grade. She wondered whether the results could be an artifact of the task used to assess PA, since phoneme counting is not as demanding as the tasks employed in studies with adults, such as phoneme deletion.

Following that, she conducted Experiment 3 (already mentioned in Subsection 2.2.1.1, p. 27) with a deletion task, and, indeed, this time the performance of the Americans was slightly better than that of the Japanese. Finally, in Experiment 4 they compared the performance of fourth graders (who had not received Romaji instruction) to that of 2 sixth graders (who had received this instruction 1 and a half years prior to data collection) in the same tests as those used in Experiment 3. This time, the performance of the sixth graders on the phoneme deletion task was, as expected, superior to that of the fourth graders. All in all, though this study lends support to the idea that phonemic awareness is reached through instruction in an alphabetic language, the fact that some of the Japanese children who had not received alphabetical instruction could also delete phonemes from words indicates that alphabetic literacy instruction is not the only way to teach phonemic awareness (something which already appeared in the results of Read et al. [1986] and Lehtonen & Treiman [2007]).

Holm and Dodd (1996) collected data from 4 groups of participants – Chinese<sup>6</sup>, Hong Kong participants<sup>7</sup>, Vietnamese<sup>8</sup>, and Australians – who performed tasks of phonological processing, reading, and spelling in English. As one could expect, in general, the Hong Kong participants had less PA than the participants who had been exposed to an alphabetic script (all the other 3 groups). McBride-Chang et al. (2004) compared Chinese participants from Xian, where they learn Pinyin<sup>9</sup>, Hong Kong, where character recognition is taught directly, without the aid of phonemic coding, and English speakers from Toronto in order to investigate whether the Chinese individuals who were instructed in an alphabetical language would have levels of PA comparable to that of the English speakers. After an analysis of the participants' performances in tasks of English word recognition,

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<sup>6</sup> Speakers of a logographic language, but who also knew Pinyin.

<sup>7</sup> Speakers of a logographic language only – Chinese.

<sup>8</sup> Speakers of an alphabetic language.

<sup>9</sup> As previously mentioned, Pinyin are alphabetical symbols used in literacy instruction in Chinese.



Chinese character recognition, syllable deletion, and phoneme deletion, they confirmed their suspicion since the group from Hong Kong, who had not received phonological training, did worse than the other two groups in the phoneme deletion task, indicating that, for phonemic awareness to develop, training in an alphabetical language is indeed, helpful.

The evidence from the four studies reviewed above is mixed and, thus, it is not clear whether PA will develop through levels, irrespective of one's L1, or whether depending on the script the level of one's awareness will vary. Nevertheless, irrespective of how one reaches his/her L1 PA level, can we expect that this kind of knowledge will transfer to the L2?

Koda (2007) remarks that there is little agreement as to what constitutes transfer. In the first theoretical proposals related to transfer, transfer was seen as relying on L1 linguistic knowledge and the idea was that (1) a set of rules was transferred from one language to the other, (2) if one relied on L1 rules it was because one did not know enough about the L2, and, therefore, (3) when L2 linguistic knowledge was developed enough, transfer would stop. Nowadays, this view has been abandoned by most researchers, and transfer is seen more as "the ability to learn new skills by drawing on previously acquired resources" (Genesee, Geva, Dressler, & Kamil, 2006 in Koda, 2007, p. 17). That is, prior learning is seen as a reservoir of skills and abilities that are available when learning a new language. Cummins (2008) also agrees with this view, claiming that once one has a given cognitive skill developed, and a given attribute exists within an individual's system, there is the possibility of both languages capitalizing on them. Talking more specifically about PA, Bialystok (2007) declares that there is evidence that PA relies mostly on general cognitive abilities, and as a result, transfers easily across languages. According to Francis (2006), apparently the mechanism responsible for linking phonological structures to their orthographic representations is readily available to be used, always, irrespective of the language of the text (at least when the two languages have the same type of orthography, e.g., alphabetic). However, other systems – syntax, morphology – do not seem to 'transfer' so easily (Siegel, 2002 in Francis, 2006).

If, in fact, PA develops in different ways depending on the language (Cheung et al., 2001; Holm & Dodd, 1996; McBride-Chang et al., 2004; Schwartz et al., 2007), one advantage of the L2 learner is the possibility of transferring his/her PA from one language to the other.

Indeed, evidence for the transfer of PA from the L1 to the L2 has been found in a number of empirical studies.

Verhoeven (1994) collected data with Turkish children who had Dutch as their L2 and found transfer of pragmatic abilities, but no transfer related to lexicon. As regards phonology, L1 and L2 skills were clearly interdependent, despite the fact that the prediction of L2 skills from L1 skills became less accurate with time. Cisero and Royer (1995), for example, already partially reviewed above, found that both L1 and L2 performance in the initial phoneme task (a test of PA) at time 1 were significant contributors to performance in the L2 in the same task at time 2 (five months after performing the first tests).

Bialystok, Luk, and Kwan (2005) and Hamada and Koda (2008) advocated that what is expected is that the transfer of PA will happen more readily when the languages are congruent (i.e., share similar properties) as regards orthography. Nevertheless, there were studies which found evidence of PA transfer even across languages with different alphabets.

Chikamatsu's (1996) informants were Americans and Chinese undergraduates who had Japanese as their L2. All participants performed a Japanese kana lexical judgment task and what the author noticed was that their Chinese participants slowed down more than the Americans when words were presented with the wrong script in relation to when they were presented with the correct one. That is, because the Chinese participants were more used to using the visual route, they could judge a real Japanese word written in the conventional script more quickly than the Americans. The Americans, however, slowed down more than the Chinese as word length increased (indicating that they were relying on phonology), but only for the hiragana condition, the script that is usually presented first to learners. That is, the Chinese were faster to judge hiragana words because they were used to seeing that kind of writing and, thus, had visual recollection of the words. These results led the author to conclude that L1 word recognition strategies are transferred to L2 word recognition (even from an alphabetical language to a logographic one).

McBride-Chang et al. (2004), already partially reviewed above, also found this kind of transfer. Though their Hong Kong participants had less phonemic awareness than the other 2 groups<sup>10</sup>, they used their syllable knowledge in Chinese to perform as well as the natives in the

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<sup>10</sup> Children from Xian and from Toronto.

syllable deletion task in English. Additionally, the Xian children were better than the Hong Kong and the Toronto ones both in the Chinese and in the English syllable deletion task indicating that, depending on the characteristics of one's L1, it is possible for an L2 learner to have more L2 PA (at least in some levels of analysis) than native speakers of the L2. In addition to that, Huang and Hanley (1994 in Bialystok et al., 2005) and Luk (2003 in Bialystok et al., 2005) found a correlation between PA in English and Chinese (though they did not find that PA in one language influenced reading in the other).

Taking these findings into consideration, Bialystok et al. (2005) conducted a study with first grade children (English monolingual, Cantonese/English bilingual, Hebrew/English bilingual, and Spanish/English bilingual) and found evidence of transfer of PA even for those pairs of languages with different orthographies. Moreover, the bilingual speakers were shown to have an advantage in PA in English over the monolingual ones.

There were also studies that, despite not having assessed PA directly, assessed skills that are dependent on PA, considering that both word decoding<sup>11</sup> and word recognition reflect proficiency in dealing with the grapheme-phoneme correspondence. Hamada and Koda (2008), for example, conducted an experiment with Chinese and Korean L2 speakers of English and, since the Koreans (who have a language of similar orthography to English) were faster and more accurate than the Chinese in naming, the authors concluded that the phonological decoding in the L1 accelerated phonological decoding in the L2.

In a longitudinal study, Sparks, Patton, Ganschow, Humbach, and Javorsky (2008) followed high school students (good, average, and below average readers) from the first to the tenth grade and, among other results, found that the best predictor of L2 word decoding in the ninth and tenth grades (students in their first and second years of L2 learning, respectively) was their L1 word decoding ability in elementary school. Meschyan and Hernandez (2002) found that good L2 decoding skill was a good predictor of L2 competence in the first quarter of a Spanish course, and, according to the model tested by the authors, this was the result of the transfer of good L1 decoding skills. Interestingly, word decoding skill (both in the L1 and in the L2) was not a good predictor of achievement throughout the whole year of the course, only

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<sup>11</sup> Word decoding requires the knowledge of the sounds of a language, letter knowledge, and the ability to map, appropriately, sounds and letters (Meschyan & Hernandez, 2002).

in the first quarter. However, the authors had already predicted that the phonological-orthographic ability would be more important in the beginning of the learning process when individuals have little knowledge of the L2 (see Section 3.2). Finally, Swanson et al. (2008), already partially reviewed in Subsections 2.2.1.1, p. 27 and 2.2.3.1, p. 45, wanted to test whether vocabulary knowledge and grammatical skills would transfer across languages, and found that only for PA the results in the two languages correlated significantly (.47). Still, Spanish syntax correlated with English pseudoword identification and reading comprehension.

In addition to the studies where L1 and L2 PA were found to be positively correlated, there were studies that actually found that L1 PA aided L2 reading.

Durgunoğlu et al. (1993) were interested in whether the phonemic awareness developed through the experience with the L1 could be helpful in L2 word decoding and, for that, they collected data with 27 native speakers of Spanish who had English as an L2. What they found was that the total PA score (in Spanish) was significantly correlated with English word reading and with performance in the two transfer tests. From that, the authors concluded that once a child reflects on the components of a language, this awareness can also be applied to another language. In their study, Cheung et al. (2001) compared the performance of Cantonese speaking children from Hong Kong<sup>12</sup> and Guangzhou<sup>13</sup> to the performance of English speaking children. Their results showed that the English speakers (New Zealanders) had more awareness of onset, rime, and coda than the Cantonese speaking children in general. However, since the Guangzhou participants outperformed the Hong Kong ones in onset and coda matching, the authors speculate that they (the Guangzhou participants) used their experience with alphabetic Pinyin symbols when performing the PA tasks.

Gottardo, Ian, Siegel, and Wade-Woolley (2001) collected data with Cantonese children (from the first to the eighth grade) who had English as their L2 and found that Chinese (L1) PA not only correlated with English (L2) PA but also Chinese rhyme detection was a better predictor of English reading than English phoneme deletion. The conclusion from the authors was that L1 PA can influence L2 alphabetic reading even if the L1 does not have an alphabetic orthography. Another

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<sup>12</sup> Without any experience with the alphabetic code.

<sup>13</sup> Who had learned alphabetic Pinyin.

encouraging result was that of Schwartz et al. (2007), who found that the L2 literacy acquisition of their bi-literate bilinguals (Russian and Hebrew) was aided by the transfer of PA from the more phonologically complex L1 (Russian) to the L2 (Hebrew). What Gottardo et al. advanced, based on these results, was that the benefits were due not only to a generalized insight of the alphabetic principle but also because the L1 had an orthography representing a complex syllabic structure.

Finally, there have been studies that found that transfer can also happen on the other way around – from the L2 to the L1. Roberts and Corbett (1997 in Riches & Genesee, 2006), for example, showed that instruction in L2 (English) PA improved L1 (Hmong) PA. In the same way, Ganschow and Sparks (1995) found that explicitly teaching<sup>14</sup> the phonology and syntax of the L2 (Spanish) to high-risk L2 learners for one year led them to improve their word identification, phoneme segmentation (a measure of PA), and pseudoword recognition in the L1, achieving, after the treatment, scores similar to that of the non-at-risk learners in some of the tests (related to phonology and/or orthography) of the Modern Language Aptitude Test (Carroll & Sapon, 1959 in Sparks and Ganschow, 1995).

Melby-Lervåg and Lervåg (2011) conducted a meta-analysis of the correlational evidence related to the crosslinguistic transfer of PA<sup>15</sup>. Their analysis is restricted to studies that had as informants children or youths who either used or studied two languages and who were somehow exposed to each language at least 4h/day. They searched the databases for publications in English from 1975 to 2009 and the final sample was made up of 47 studies. In relation to the crosslinguistic transfer of PA, there were 16 independent correlations with data from informants who were between 4 and 14 years of age and the overall mean correlation was .630 ( $p < .05$ ).

Taking these studies into consideration, it is possible to conclude that PA is not isolated in each of the languages. Accordingly, it could be argued that those learners that have more PA in the L1 will also be the ones to have more L2 PA.

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<sup>14</sup> They used a multisensory (simultaneously seeing, hearing, and writing) approach in this training, with direct teaching of the relationship between phonology and orthography in a very structured way, in which only a small amount of material was presented at the time. For syntax, blackboard drills were used.

<sup>15</sup> The authors also looked at the transfer of oral language (vocabulary and listening comprehension), decoding, and reading comprehension. However, due to limitations in space, I will focus solely on the transfer of PA.

As for the possibility of transfer of MA, Koda (2000) affirms that given the fact that MA is, somehow, the result of print processing, it is likely that people with different languages will have different kinds of awareness due to the structural and functional properties of their morphemes and the way they are graphically presented. Therefore, one could expect that since English and Korean morphological systems are structurally and functionally comparable<sup>16</sup> (although Korean employs a non-roman alphabetic script), a person would be able to use the same skills of intraword analysis used with Korean when performing in English. On the other hand, since English and Chinese are very different in the need for intraword analysis<sup>17</sup>, probably Chinese learners of English as an L2 would have more difficulties with English morphology. To test that, she collected data with speakers of Chinese and speakers of Korean with similar levels of L2 proficiency.

As regards reaction times, results showed that, when pseudowords were used as stimuli, both groups of learners performed similarly, though the Koreans were faster at analyzing the structure of English words (especially low-saliency<sup>18</sup> ones). As regards accuracy in the responses, both groups performed similarly for all kinds of words (high- and low-saliency and words and pseudowords), suggesting that intraword sensitivity is not much affected by the differences between their L1s, an indication that intraword structural sensitivity evolved mostly from exposure to L2 print. It was interesting to note, also, that both groups considered words separable more often in the L2, indicating that, in their analysis of unfamiliar English words, they were decomposing them. Concerning their performance in the semantic inconsistency task, results are different. The groups performed at similar

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<sup>16</sup> English tends to present morphological information in the graphic representations of words. In Korean, the syllable blocks are the basic unit of visual processing. Both languages are expected to demand sophisticated intraword structural analysis. Inflectional morphology in both languages is concatenative (i.e., affixes are added to roots in a very systematic and linear fashion). When it comes to derivational morphology, in both languages, the formation process is much less systematic and/or restricted.

<sup>17</sup> In Chinese, often single morphemes are used as words. However, constructing meaning from isolated characters is virtually impossible. Thus, for unknown characters, readers will resort to the semantic radical attached to the character (if there is one) and/or to lexical and sentential context information.

<sup>18</sup> In the stimuli, besides monomorphemic words – which could not be separated in meaningful parts – there were high- and low-saliency morphologically complex words. The high saliency were the ones that consisted of a prefix and a lexical base (e.g., *re+solve*) and the low-saliency were the ones that were comprised of a prefix and a sublexical base (a Latinate) (e.g., *in+clude*).

speeds when the target word was morphologically simple; however, when it came to integrating morphological (prefix) and word-external information (context), they varied significantly, with the Chinese being faster than the Koreans. The same kind of result was found for accuracy in the responses. The authors took these results to indicate that L1 processing experience has some lasting effects on the formation of L2 MA.

When Koda ran correlations between L2 vocabulary knowledge and L2 MA, she found that the efficiency in intraword analysis (a measure of MA) of the Chinese was significantly correlated to their level of L2 vocabulary. In the case of the Koreans, it was information integration proficiency that correlated with L2 vocabulary knowledge. According to the author, since the groups were matched for L2 proficiency level, these correlational patterns show that some abilities (e.g., sensitivity to L2 structural properties) improve through L2 processing experience. However, the acquisition of components that are more compatible with the L1 do not seem to be much affected by L2 experience. The conclusion Koda arrives at is that depending on the similarity between the L1 and the L2 processes, L2 experience will be more or less important for the development of L2 intraword awareness.

As regards SA, evidence for its transfer from the L1 to the L2 comes, for example, from Durgunoğlu, Mir, and Ariño-Martí (2002 in Durgunoğlu, 2002). They had their fourth grade participants perform tasks of Error Correction in their L1 (Spanish) and L2 (English) and found that these measures were significantly correlated (.44). For the authors, this is an indication of a common metalinguistic awareness underlying both tasks. Verhoeven (1994), already partially reviewed above, also found transfer for grammatical abilities (besides pragmatic and phonological) from the L1 (Turkish) to the L2 (Dutch), since the measures of L1 grammar<sup>19</sup> were strong predictors of the participants' performance on an L2 grammar task. However, this was true only for Time 1 (beginning of first grade, before instruction took place).

What can be concluded from the studies reviewed in this subsection is that there is strong evidence pointing to the transfer of PA. As for MA and SA, I have not found enough studies to be able to reach any conclusions. So far, there is evidence for some transfer, but this is extremely limited. The prediction Verhoeven (1994) makes is that the

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<sup>19</sup> The instrument they used to assess what they are calling grammatical skills is an instrument often used in tests of SA – sentence imitation.

development of lexical and syntactic skills in the L1 and the L2 will be more or less autonomous. For phonological skills, however, a moderate interdependency is expected.

In the second part of this chapter, I turn to other studies which have attempted to verify how L1 knowledge can be implicated in L2 learning. In many of the studies the idea of transfer of metalinguistic awareness from the L1 to the L2 also permeates the discussions, but, usually, they go beyond just looking at the transfer of these skills

### **3.2 L1 and L2 performance**

Despite some earlier studies that saw the L1 interfering with L2 learning (e.g., Lado, 1957 in R. Ellis, 2008; Lee, 1968 in R. Ellis, 2008), nowadays many researchers argue that the L1 should be seen as a resource rather than as a hindrance for L2 acquisition (Aarts & Verhoeven, 1999; Cummins, 1983; Francis, 2000; Genesee & Riches, 2006; Reyes, 2006; Coracini, 1995 in Terra, 2008).

Saville-Troike (1984) had the aim of understanding why L2 learners of English who had the same socioeconomic status and the same proficiency level at the beginning of a school year differed in their school achievement at the end of the year. Among the variables entered in this equation, what the author found that did make a difference, both for L2 learning and academic achievement, was the child's L1. In almost all cases, the bilingual instructor's judgment of the competence of a student in his/her L1 coincided with this person's achievement in English. Similar results were found by Olshtain et al. (1990), who investigated the impact of L1 academic proficiency and learners' attitudes and motivation towards English as a foreign language in two groups (one of them identified as culturally disadvantaged) of 11-12 year-old L2 students. In general, learners' scores in the HALP test<sup>20</sup> correlated with their results in the test of English language ( $r = .65$ ) and this was both for the disadvantaged group ( $r = .37$ ) and for the regular students ( $r = .49$ ). That is, learners' motivation and attitudes towards L2 learning did not make up for shortcomings in L1 skills.

In addition to studies that looked for a general impact of L1 knowledge on L2 learning, there were investigations that focused on more specific aspects of the L2. Among these, there are a number of studies in which a link between the L1 and the L2 literacy skills has been found.

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<sup>20</sup> The Hebrew acronym for CALP (Cummins' Cognitive academic language proficiency) – Hebrew Academic Language Proficiency..



According to Cummins (n.d.), research on bilingual development has consistently shown that academic skills and knowledge transfer across languages. Thus, reading and writing acquired in the L1 can provide a foundation upon which L2 literacy can develop (Cummins, 1996 in Cummins, n.d.; Verhoeven, 1991 in Cummins, n.d.). Genesee and Riches (2006), in a review of the literature on the different approaches to the instruction of English Language Learners<sup>21</sup> aiming at developing L2 literacy, reach the same conclusion: the more a learner has had previous experiences with literacy (either in the L2 or the L1) prior to entering school, the higher his/her level of L2 literacy will be.

Cummins (1983) argues that there is no denying that some of the aspects of L1 and L2 proficiency are interdependent (i.e., there is a common underlying proficiency). Most evidence for that comes from academic proficiency, but it is likely that in any language task that is cognitively demanding a moderate degree of interdependence across languages is likely to be found. This seems, indeed, to be the case, since Aarts and Verhoeven (1999), for example, found that not only L1 and L2 (Turkish and Dutch, respectively) but also schooled literacy and functional<sup>22</sup> literacy were connected. In a previous study, Verhoeven (1994)<sup>23</sup> had found that word reading efficiency in Dutch was a good predictor of reading comprehension in Turkish. Finally, Sparks et al. (2008) also found that L1 reading comprehension was the best predictor of L2 reading comprehension; though L2 word decoding was also a good predictor, especially in the second year of L2 study. Furthermore, the results showed that L1 and L2 spelling were also correlated. Actually, what they found was that L1 spelling and L1 PA in elementary school predicted the participants' L2 spelling in the L2 in the ninth and tenth grades.

Francis (2000), reviewing Cummins' model of language interdependency, and based on Francis' (1997 in Francis, 2000) findings, advocates that one's L1 and L2 will overlap to some extent in a "shared linguistic space" which plays a central role in L2 learning. He also proposes a shared non-verbal conceptual store where discourse competencies, text comprehension proficiencies, formal schemata, and organizational skills are kept. In fact, the results from his study of 69

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<sup>21</sup> Students with limited or no proficiency in English who attend U.S. schools (Genesee, Lindholm-Leary, et al., 2006).

<sup>22</sup> The kind of literacy that "attends to the demands of literacy in a complex world" (Aarts & Verhoeven, 1999).

<sup>23</sup> Already partially reviewed in Section 3.1 (p. 51).

third and fifth grade speakers of Náhuatl (L1) and Spanish (L2), who were literate only in Spanish, offer support to the language interdependency view. In this study, even though the participants had not been formally instructed in Náhuatl (L1), their performance in this language was very similar to their performance in Spanish (L2) in a cloze test and in a prompted story writing.

Taking the empirical evidence and the theoretical proposals of Cummins and Francis into consideration, it is expected that the higher one's L1 literacy level, the more this learner will profit when becoming literate in an L2. But how else can L1 knowledge impact L2 learning? This is the subject of the next subsection.

### **3.3 L1 metalinguistic awareness and L2 learning**

Sparks and Ganschow (1991) present a proposal – the Linguistic Coding Deficit Hypothesis – according to which phonological abilities (or *disabilities*, in their perspective) are thought to be the main cause of difficulties in L2 learning. The hypothesis speculates that the difficulty might come from deficits in phonology, semantics, or syntax, even though the evidence (Ganschow et al., 1994 in Sparks & Ganschow, 1991; Sparks et al., 1989 in Sparks & Ganschow, 1991; Ganschow, Sparks, Javorsky, Pohlman, & Bishop-Marbury, 1991 in Sparks & Ganschow, 1993; Sparks et al., 1998; Sparks et al., 1992) suggests that most of the problem is, indeed, with phonological<sup>24</sup> coding; that is, the ability to access the phonological code<sup>25</sup> rapidly to read individual words. This suspicion arose when Sparks and Ganschow (Ganschow, Myer, & Roeger, 1989 in Sparks & Ganschow, 1991; Sparks et al., 1989 in Sparks & Ganschow, 1991) were investigating struggling L2 learners and found that not all of them were the ones who had been previously diagnosed with learning disabilities. When the learners without any learning disabilities were tested, however, it was found that, in fact, they did have subtle or overt differences in oral or written aspects of their L1 (with phonology being usually affected, while semantics remained intact). Apparently, this difficulty is not easily perceived in the L1 due to the strategies used by the learners to compensate for this shortcoming. When these people aim at acquiring an L2, however, such strategies are not that helpful since it is a new linguistic coding system altogether (Sparks & Ganschow, 1991).

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<sup>24</sup> They found that, at times, the difficulties were also present in the syntactic code but they lied primarily in the phonological component.

<sup>25</sup> That is, the phonological representation of a word.

A number of studies conducted by their research group provided evidence in support for their hypothesis. One of these was Sparks et al. (1989 in Sparks & Ganschow, 1991), in which they found that the students with L2 learning difficulties indeed had phonological deficits (but Sparks & Ganschow [1991] do not mention how they assessed phonological deficit). In the same way, Sparks et al. (1992) collected data from 80 high school students who were beginning L2 learners (of different L2s<sup>26</sup>) and who had been categorized as at-risk and non-at-risk learners and found that they differed in their ability in phonological processing (phoneme segmentation and pseudoword recognition). Ganschow et al. (1991 in Sparks & Ganschow, 1993) are mentioned as having found differences in measures of L1 phonology, word identification, spelling, and syntax between successful and unsuccessful undergraduate L2 learners.

Ganschow et al. (1994 in Sparks & Ganschow, 1991) conducted a study to verify whether L2 learners with high anxiety had problems in L1 skills and, for that, collected data with 34 college students (L2 speakers of Spanish), who performed tasks related to L1 written and oral skills (including phonological skills). Although they did find the connection they expected (low L1 skills connected to high anxiety) they also discovered that those learners with higher grades in the L2 did better than the ones with poorer grades in a measure of L1 phonological skills.

Sparks et al. (1998) collected data with 154 ninth graders (divided in groups of high-, average-, and low- L2 proficiency) who were learning different L2s<sup>27</sup>. They performed tests of L1 phonology and orthography, L1 semantics, L1 cognitive and academic skills, L2 aptitude, and L2 proficiency (the 4 skills) and, as the authors predicted, the 3 groups were different not only in their level of L2 proficiency, but also in their L1 skills. Particularly interesting was the fact that the phonological/orthographic processing measure was effective in distinguishing between the high- and low-proficiency groups (though not as good in separating the average- from the high-proficiency group).

Another study which found a link between metalinguistic awareness and L2 learning was Dufva and Voeten (1999). In their study of 170 first graders from Finland who were learning English as an L2, the authors measured L1 word recognition (in the first and second

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<sup>26</sup> Spanish, German, French, Latin, Russian, and Japanese.

<sup>27</sup> Spanish, French, German, and Latin

grades), L1 comprehension skills (done at the end of the first and second grades), L1 phonological memory, and English skills (vocabulary knowledge, reading, writing, and listening – at the end of the third grade). The best predictor of English proficiency was second grade word recognition skill (which, indirectly, is measuring PA), with reading comprehension and phonological memory having a smaller impact<sup>28</sup>. For Dufva and Voeten, these results are in accordance with the phonological coding deficit hypothesis. In addition to that, in the meta-analysis conducted by Melby-Lervåg and Lervåg (2011) (already partially reviewed in Section 3.1, p. 51), in which they analyzed 14 independent correlations of data collected from children between 4 and 14 years-old, they found a positive and significant correlation between L1 PA and L2 decoding ( $r = .500$ ;  $p < .05$ ).

One possible reason why limitations in L1 PA would affect L2 learning may be its importance for L2 vocabulary learning. When discussing the role of the phonological loop (a component of working memory responsible for temporarily storing (unfamiliar) sound structures) in the acquisition of vocabulary (and relying, for that, on the work of Baddeley and colleagues<sup>29</sup>), Meschyan and Hernandez (2002) remark that, despite the fact that the phonological loop is not that important once one has learned a lot of vocabulary in a given language (since unknown words will most probably be similar to known ones in their structure), phonological skills will still be very important when one comes across words that are unfamiliar and little word-like, as when we learn a new language. According to Hu and Schuele (2005), PA helps in the learning of new vocabulary because this ability of representing a word segmentally in one's language might facilitate the process often used to learn new vocabulary, which is to repeat the new word.

Evidence for this proposal comes from Cheung (1996 in Meschyan & Hernandez, 2002), for example, who found that phonological ability was a better predictor of L2 word reading speed (a measure of word learning) when the learners had a restricted L2 vocabulary. Hamada and Koda (2008) also expect that the phonology of a word will help information integration in working memory. Since the phonological loop mediates the formation and retention of phonological information, having durable phonological representations (i.e., good phonological representations of visually presented words) will facilitate

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<sup>28</sup> These 3 skills together explained 58% of the later English proficiency.

<sup>29</sup> E.g., Gathercole, Willis, and Baddeley (1991), Gathercole and Baddeley (1990), Gathercole, Hitch, Service, and Martin (1997), all in Meschyan and Hernandez (2002).

the cognitive operations that rely on working memory, such as word learning. Meschyan and Hernandez (2002) mention studies (e.g., Cheung, 1999 in Meschyan & Hernandez, 2002; Gathercole & Baddeley, 1993 in Meschyan & Hernandez, 2002) that have shown that people with good phonological skills are also good decoders. In their own study, Meschyan and Hernandez had English-speaking college students who were learning Spanish as an L2 perform a number of tasks in the L1 and the L2 and found that the participants with more L1 decoding ability were also the best L2 decoders. According to the authors, this is the reason why they had more L2 vocabulary knowledge.

Hu and Schuele (2005) collected data with Chinese third graders who were classified as low- and high-L1 PA who were, at the time, beginning learners of English as an L2. The high-PA participants did significantly better than the low-PA ones in the L1 and L2 name learning tasks; however, they were no better in familiar name learning or in unfamiliar visual learning. The authors took these results to indicate that the participants with low PA had difficulties that were specific to learning novel and verbal information. The findings also did not show a diminishing effect of low-PA on the learning of new nonnative names (when their participants were compared to those of Hu (2003 in Hu & Schuele, 2005). That is, the relationship between PA and nonnative name learning does not happen only when PA is starting to emerge<sup>30</sup>, but continues for at least some years.

Hu (2007) conducted a study to assess the relationship between phonological processing and L2 vocabulary learning. He collected data with children throughout 4 years (in the first phase of data collection the children were in the third grade) and, through correlational analyzes, found that phonological processing both in the L1 and in the L2 were correlated to L2 word learning scores (though the correlations between the two L2 measures were higher – L2 word learning and L1 phonological processing  $r = .54, p < .05$ ; L2 word learning and L2 phonological processing  $r = .59, p < .05$ ). Furthermore, when knowledge of English vocabulary, visual association, and picture identification were controlled for, L2 phonological processing (as a set of skills) still accounted for 13% of variance in L2 word learning. However, taking only the scores in the L2 PA task (phoneme deletion) into consideration, they did not appear as unique predictors of L2 word learning. When the multiple regression was run with the L1

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<sup>30</sup> Hu's (2003) participants were 5 years-old.

phonological processing variables, this set of skills also predicted 13% of the variance in L2 word learning (beyond the contribution of English vocabulary). This time, the scores in the L1 PA task (phoneme deletion) were significant predictors of L2 word learning (6%;  $p < .001$ ) even when English vocabulary, rapid naming, and word repetition were controlled for. From that, the author suggested that it is possible to use L1 PA (measured through phoneme deletion) as a single predictor of word learning differences.

Still, though there is evidence pointing out for a beneficial impact of metalinguistic awareness<sup>31</sup> on the learning of L2 vocabulary, in Tarone and Bigelow's (2007) qualitative analysis of one of their participants' interaction with an experimenter, whereas they perceived the participant's difficulties in processing recasts with changes in syntax (see below), that did not happen in the processing of recasts when there were changes in lexis. That is, the fact that this participant had a low level of L1 literacy did not prevent her from noticing changes as regards lexis in the recasts of her interlocutor or from incorporating the new terms in her subsequent interactions with the interlocutor (during the same encounter).

Ranta (2002) also found a connection between metalinguistic awareness and L2 learning, and, this time, PA was not included in the equation. She collected data with 150 Canadian children who had French as their L1 and who were being instructed intensively in English. The first finding was that participants' variance in scores in the L1 metalinguistic task<sup>32</sup> accounted for 16% or less of the variance in L2 measures, something Ranta took to be disappointing<sup>33</sup>. However, in a cluster analysis, it was possible to observe one cluster with learners who did well in the L1 metalinguistic task and had a good L2 performance and another cluster that contained learners who did poorly in both of these tasks. Thus, for the strongest and weakest learners in this population, metalinguistic awareness did predict their degree of success in L2 learning to a good extent.

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<sup>31</sup> It is important to keep in mind the fact that Tarone and Bigelow did not assess their participants' level of metalinguistic awareness. In the case of this specific participant, she was assumed to have a low level of metalinguistic awareness due to the fact that she had a low level of literacy.

<sup>32</sup> Actually, the test Ranta developed to assess L1 metalinguistic awareness – an error detection and correction task – was a test of SA and MA only.

<sup>33</sup> In my point of view, with the number of variables which are known to impact L2 learning, finding that one of them alone predicts 16% of variance is already a very encouraging result.

Finally, as already mentioned in Chapter 1 (Section 1.2, p. 2), recently Tarone and Bigelow (2005) have put forward a case for a link between metalinguistic awareness and noticing. They raise the interesting issue that most of the theories of L2 acquisition assume that the learner is aware of all linguistic segments in the input received, and, thus, can notice (Schmidt, 1990) them. The problem, according to them, is that it might be that some L2 learners are not *that* aware of linguistic segments and, thus, perhaps cannot notice them in oral input. In other words, due to limitations in metalinguistic awareness (which would be a reflection of a low literacy level), these learners might lack the ability to notice the difference between their own utterance and corrective feedback (see below).

In Bigelow et al. (2006) they set out to test empirically their prediction of the impact low L1 literacy may have on L2 learning. They built their case by observing that, in the Interaction Hypothesis (Long, 1996 in Bigelow et al., 2006), one of the ways for a learner to restructure his/her interlanguage is through the comparison of his/her own utterances with the recasts received in interaction. However, not always does the learner notice or understand the focus of the recast (Lyster, 1998 in Bigelow et al., 2006; Mackey, Gass, & McDonough, 2000 in Bigelow et al., 2006) and the authors suspect that this misunderstanding might be due to some learners having lower levels of metalinguistic skills. To test that, Bigelow et al. studied the performance of 8 Somali immigrants (with different levels of literacy) in the United States in 4 spot-the-difference and 6 story-completion tasks. What they found was that, indeed, the more literate group recalled (correctly or at least in a modified form) more often the recasts received (regardless of their complexity and length). Bigelow et al. suspected that the reason for these results might be the fact that the more literate participants had more metalinguistic awareness. However, because they did not assess these participants' level of metalinguistic awareness, they could not make a strong case claiming that the participants who more often incorporated the recasts in their speech did so because they were better able to notice the differences between their utterance and that produced by their interlocutors.

When looking at the language produced by these learners in the story-completion tasks, Tarone et al. (2007) found a difference between their more and less literate participants as regards their speech production too. The more literate L2 learners supplied more verbal

morphology<sup>34</sup> and also used the plural marking more often. Additionally, in the use of articles, the moderate-literacy group was more likely to mark a referent with some article as opposed to none at all (as the low-literacy group often did). Finally, this group (the moderate-literacy one) also used many more (twice as much) dependent clauses and *so* clauses indicating causality. These findings taken together confirm their hypothesis that L2 oral language competence is somewhat connected to L1 literacy.

In Tarone and Bigelow (2007), they analyzed qualitatively the interactions between one of their low-literacy Somali participants and an experimenter to verify whether there were indications that the lack of changes in the participant's language was because she did not notice how her utterance differed from that of the experimenter. In fact, this seems to have been the case at least in some instances. There was one moment of the interaction, for example, in which the participant produced: *what he sit on?*, and the examiner replied: *what is he sitting on?*. The participant became quiet and the experimenter repeated the question again, encouraging the participant, who, this time, produced: *what he sitting on?*. The experimenter then, emphasized *what IS he sitting on?* and the participant replied, once again: *what he sitting on?*, even though she had heard the correct sentence 3 times by then. The researcher once more replied: *what IS he sitting on?* and, this time, the participant repeated the sentence correctly, apparently only then having noticed the auxiliary. This pattern of omission of the auxiliary *is*, and the need for the researcher to repeat the sentence more than once, continued to occur throughout the whole interaction. At times, the participant even altered the stress in her sentence, perceiving that there was something wrong with her utterance, but, apparently, having difficulties to notice where the problem was.

According to these results, if, indeed, recasts facilitate L2 learning, it is likely that less literate individuals will be less successful when learning an L2. It is not possible to affirm that this pattern is due to participants' differences in their level of metalinguistic awareness, since as the authors themselves remark, to be able to state that, one would need to measure metalinguistic awareness. Taking this into consideration, I conducted a pilot study (with literate adults who were L2 learners of English), which is reviewed in the next subsection.

### 3.4 The pilot study

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<sup>34</sup> Auxiliary *BE*, progressive-*ING*, third-person singular present tense *-S*, past tense *-ED*.



Although there have been studies that found that literacy acquisition will increase one's metalinguistic abilities<sup>35</sup> (PA, SA, and MA), it is yet unknown whether further experience with print will continue to refine these abilities (even if to a smaller extent than this first impact). It is my contention that as one continues dealing with print and with more complex texts (involving more complex syntax and a richer and wider vocabulary), the more his/her metalinguistic abilities will increase and the higher the literacy level of this individual will be. Since metalinguistic abilities have been found to impact L2 learning, one might expect that the learners who have a higher L1 literacy level and/or more metalinguistic awareness also will be the most successful learners of an L2 (if all the other variables involved in the process of L2 development could be held constant, of course).

In view of that, in the pilot study I conducted in 2009, I made a first attempt at investigating the link between L1 literacy, metalinguistic awareness, and L2 learning. However, as there was not enough time to take measures of L2 proficiency at different moments, I could only enter L2 proficiency level (rather than L2 development) in this equation. Moreover, this study has mainly served the purpose of piloting the tasks to be used to assess L1 literacy, L2 proficiency, and L1 and L2 metalinguistic awareness, since most of the studies involving literacy and metalinguistic awareness have dealt either with children or with adults with a low level of literacy, and most only collected data in the participants' L1. The questions that guided the pilot study were:

1. Do the instruments used to assess each of the variables show to be adequate for an adult literate population of beginner learners of English as an L2?
2. Is the L1 literacy level of these learners associated to their L1 metalinguistic awareness level?
3. Is their L1 metalinguistic awareness level associated to their L2 metalinguistic awareness level?
4. Can their level of L1 literacy, L1 metalinguistic awareness, and/or L2 metalinguistic awareness predict their L2 proficiency level?

### **3.4.1 Participants and setting**

The group of participants who performed all tasks was formed by 8 females and 3 males with ages ranging from 17 to 41 years (mean= 23.09) and who were undergraduate students at the *Letras/Inglês* program at Universidade Federal de Santa Catarina. In spite of the fact

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<sup>35</sup> See Section 2.2, p. 22, in Chapter 2.

that all of them had previously studied English in the regular school, and most of them (10) had also taken private English classes or classes in private or public language courses, they were all taking the courses *Compreensão e Produção Oral em Língua Inglesa I* and *Compreensão e Produção Escrita em Língua Inglesa I*, an indication that their proficiency in the L2 was quite limited.

### 3.4.2 Tasks and procedures

In order to assess L1 literacy, I used a modified version of the reading section of the PISA 2000<sup>36</sup> test comprising 48 questions (24 open, 24 closed), in 5 continuous and 3 non-continuous texts. Seventy-one percent (34) of the questions assessed reading (retrieving information, broad understanding, and interpreting) and 29% (14) assessed reflection (reflecting on content and reflecting on form). This task was the first one to be applied, in a group setting, in the second week of classes, in March, 2009. In the following week, the participants' L2 proficiency level was assessed using a standard test developed by the University of Cambridge Local Examinations Syndicate (UCLES) – the Key English Test (KET), also in a group setting<sup>37</sup>. This is a test of the four language skills – reading, writing, listening, and speaking – and has as its main aim to assess the ability one has to communicate effectively in English.

For the assessment of PA<sup>38</sup> I used a Phonological Segmentation task (participants listened once to a given word (e.g., bag) and then had to reproduce each of its phonemes in isolation (/b/ /æ/ /g/), and a phoneme transposition task (participants listened once to a pair of words (e.g., black cat) and then had to switch the initial phoneme of each of the words between them (/klæk/ /bæt/). So as to evaluate participants' MA level, I used a morpho-semantic decision task (participants listened to a set of three words once [e.g., *instrutor/feitor/major*] and then had to decide whether the second or the third word of the set belonged to the same morphological family as the first), and a Morphological Association task (participants listened to a pair of words [e.g., *banda/bandeira*]) and had to decide whether these two words belonged

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<sup>36</sup> The 2000 version of the test was chosen because, in that year, the focus of the test was reading literacy.

<sup>37</sup> With the exception of the Speaking paper, which was done in an individual session, together with the English metalinguistic awareness tasks.

<sup>38</sup> Since most of the metalinguistic awareness tasks used in the pilot study were also used in the present investigation, thorough descriptions of each of these tasks (with the exception of the Morphological Association one) are found in the Method chapter.

to the same morphological family or not). Finally, SA was assessed through an Error Correction task (participants had to decide whether the 10 sentences presented in writing, one at a time [e.g., *She doesn't loves Peter*], in the screen of a computer, were grammatical or not), and an Error Replication task (first the participant was shown a sentence with some grammatical deviation that s/he had to identify and, after the response, another sentence was shown, with a similar structure but without any deviations. The instruction for the participant, then, was to replicate the error of the first sentence in the second).

The metalinguistic awareness tasks were applied in participants' L1 (Portuguese) and L2 (English), in individual sessions. In the first of two meetings the participants engaged in the metalinguistic awareness tasks in English and then performed an oral interview with the researcher (the Speaking paper of the KET). Both the responses for the metalinguistic awareness tasks and the interaction with the researcher were recorded. In the second meeting the participants performed the metalinguistic awareness tasks in Portuguese.

Because this was a pilot study, after each of the tasks was completed, participants answered questions, giving their opinions about the tasks. In the case of the PISA and the KET, the answers were given in writing, for the metalinguistic awareness tasks, the participants' oral answers were audio recorded.

### 3.4.3 Results

As regards the instruments used for data collection – Research Question 1 – the test chosen to assess L2 proficiency – the Cambridge's KET – indeed seemed to be adequate to be used with learners with a basic level of English as L2. The range of scores in the different papers of this test went from 37.4 to 88.4 (mean = 73), with enough variation among the participants for statistical tests to be applied. Moreover, according to the opinion of most test-takers (10 out of 16<sup>39</sup>) the level of English demanded by the test was adequate to their current level of knowledge.

Concerning the version of the PISA test built by me, apparently, the test contained too much text and, thus, participants had difficulties in completing the test in the time allotted (only 7 out of the 16 test-takers managed to do so<sup>40</sup>). The fact that the PISA test was developed to be

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<sup>39</sup> Three test-takers stated the test was too easy for their level of English and another 3 declared it was difficult. One participant did not answer the question.

<sup>40</sup> Four participants left up to 5 blank questions, another 3 left between 6 and 10 blank questions and 2 left 11 or more blank questions.

used with 15 year-olds and that this test was in the L1 of the test-takers led me to infer that, probably, it was the length of the test, rather than its level of difficulty, which became a hindrance for the participants. This suspicion was confirmed by the responses the participants gave to the questionnaire about the test. In the opinion of 5 of them, the test was difficult because there were too many texts and they were long. Additionally, 10<sup>41</sup> test-takers reported to have found the time allotted for test completion to be too short.

As regards the metalinguistic awareness tests, I shall discuss each of the metalinguistic abilities in turn. In the assessment of PA participants showed to have difficulties with both tasks and in both languages. For the Phonological Segmentation task the means of the group were quite low (especially in the L2), with some participants having scores as low as 0 and 2 and no higher than 7 (though I did not take a strict approach as regards the realization of the phonemes by the participants). The picture for the phoneme transposition task was not much different, since one participant did not manage to make the phoneme transposition properly for any pair of words, and the participant who did best had only 7 correct answers. Difficulties, once again, were more evident in the L2. In addition to that, participants also verbalized their difficulties while performing the tests and in the interviews afterwards

Differently from what happened in the PA tasks, in the MA ones participants generally did very well. The Morphological Decision task seemed to be adequate both in English and in Portuguese since, in both languages, most participants (9 out of 11) had at least 50% of their answers correct. At the same time, the test did not seem to be too easy, since there were few high scores in both versions, guaranteeing that the means for the group were not too high. As regards the Morphological Association task, though the English version seems to have been a little more demanding, with somewhat similar results to that of the Morphological Decision task, the Portuguese version was clearly too easy. Not only was the lowest score 8, but there were 4 participants who had perfect marks.

Finally, I now discuss the results for the SA tests. In relation to the Error Correction task, when looking at its English version, it can be noticed that all participants did fairly well in the task. None of them had less than 50% of correct answers and more than a half (6) had 8 or more

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<sup>41</sup> Only 4 participants agreed that the time was adequate.

of their answers correct, indicating this test was not so demanding. In the Portuguese version of the test only one participant had less than 50% of the answers correct, although this time 7 participants had less than 80% of their answers correct. A better performance on the L2 than on the L1 test can probably be explained by the fact that the English stimuli were built having in mind the kind of grammatical structures one would expect beginning learners to be exposed to, whilst the Portuguese stimuli was much more demanding. Concerning the Error Replication task, participants' performance was somewhat similar on both versions of the test. In the English version, with the exception of two participants, all the others managed to get at least 50% of the items correct and most (7) had at least 7 correct answers. In the Portuguese version, more than half (7) of the participants had a performance of 70% or more in terms of correctness and none of them had more than 5 errors.

Putting it all together, although the KET seemed to be adequate for learners with a beginning level of English, the version of the PISA test used was too long and, as a consequence, was reformulated. Some of the metalinguistic awareness tasks also presented problems and suffered modifications for the present study.

Turning now to the answer to Research Question 2, linear regressions were run to verify whether the scores that the participants got in the L1 literacy test (PISA) were good predictors of their level of L1 metalinguistic awareness. The results obtained lend little support for such relationship, taking into account the fact that participants' L1 literacy level was a predictor (58.1%) for the performance on only one L1 metalinguistic awareness task – Phonological Transposition ( $F=11.08$ ;  $p < .05$ ). Nevertheless, this finding was taken as a possible indication that the link between PA and literacy (which has been widely documented) continues beyond the beginning years of literacy acquisition. However, due to the limitations in the task used to assess L1 literacy, no firm conclusions could be arrived at.

In relation to Research Question 3, once again linear regressions were run. This time the objective was verifying whether the participants' level of L1 metalinguistic awareness was a good predictor of their L2 level of metalinguistic awareness. As regards PA, for both subtests, participants' scores in the L1 version was a predictor of their scores in the L2 version. In relation to MA, for the Morphological Decision task, significance was approached ( $p = .055$ ) for participants' L1 scores predicting 38.7% of their performance in the L2 version of the task ( $F=5.04$ ). The same was not true for the scores in the Morphological

Association task. Finally, concerning the transfer of SA, results were not clear cut. Whereas participants scores in the Error Correction task accounted for 46.1% of the variation in their scores in the L2 version of the task ( $F= 6.83$   $p < .05$ ), their scores in the L1 version of the Error Replication task were not predictors of their performance on the L2 task.

Besides testing data collection instruments, the ultimate purpose of the pilot study was to establish a connection between L1 literacy and L2 proficiency. For that, a linear regression was run and it was found that participants' scores on the PISA test were, in fact, predictors of their L2 proficiency test scores, accounting for 38.2% of the variation in the latter scores<sup>42</sup> ( $F = 5.55$ ;  $p < .05$ ). However, the evidence found in the pilot study does not allow for a case of growth in literacy continuing with the refinement and increase of metalinguistic awareness, since the participants' scores in the literacy test was not such a good predictor of performance on tests of metalinguistic awareness. As regards the possibility of transfer of metalinguistic awareness across languages, the results are more encouraging since it was found that in at least one of the tasks of each of the abilities<sup>43</sup> (and in the case of PA in both), participants' scores in the L1 task were good predictors of their performance in the L2 metalinguistic awareness task.

Finally, there was an attempt to clarify the link between L1 literacy and L2 proficiency level. Concerning L1 metalinguistic awareness, participants' scores in the Morphological Decision task and in the Phonological Transposition task showed to be good predictors of the participants' L2 performance. The scores in the Morphological Decision task accounted for 38.7% of variation ( $F = 5.68$ ;  $p < .05$ ) and the scores in the Phonological Transposition task accounted for 40% of variation ( $F = 5.33$   $p < .05$ ) in the participants' scores in the KET. L1 SA did not appear as a significant predictor of participants' L2 proficiency level.

However, when L2 metalinguistic awareness was entered in the model, participants' scores on both measures of L2 SA proved to be good predictors of their L2 proficiency level (Error Correction task= 76.9% ( $F= 30.02$   $p < .05$ ); Error Replication task (71.2% ( $F= 22.19$   $p < .05$ )). The reason why it is possible to have one variable predicting 76.9% of variance and a different one predicting another 71.2% is

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<sup>42</sup> Though the evidence is encouraging, it is wise to keep in mind the fact that the measure used to assess L1 literacy had limitations and, thus, the numbers derived from it might be misleading.

<sup>43</sup> Although for MA significance was only approached ( $p = .055$ ).

because of the statistical treatment given to the data. Since only linear regressions were used, each variable could be shown to account for up to 100% of variance in the outcome. With a hierarchical regression it would have been possible to predict how much variable x, for example, would predict a given outcome after the impact of variable y had already been taken into consideration. In the case of variables that are too similar, as it is the case in hand, probably the first entered in the model would account for a great amount of variance and perhaps the other would not contribute with anything else.

Concerning the role L2 PA has in predicting L2 proficiency, once again the scores in the Phonological Segmentation task did not show to contribute to the variance in the outcome. For the Phonological Transposition task, however, its scores were found to contribute with 19.4% ( $F = 2.17$ ;  $p < .05$ ) of the participants' variance in scores in the KET. This time, it was MA that did not show any contribution for the L2 proficiency scores.

Taking all the evidence discussed together, the answer to Research Question 4, which asked whether the participants' level of L1 literacy, L1 metalinguistic awareness, and/or L2 metalinguistic awareness could predict their L2 proficiency level is: in part. The participants' L1 literacy level indeed was a good predictor of their L2 performance, but, in relation to L1 and L2 metalinguistic awareness the evidence does not offer a clear cut conclusion. Apparently, having more or less L1 and L2 metalinguistic knowledge does play a part in one's L2 competence, but exactly what abilities are the best predictors, and in which of the languages, cannot be established with the present evidence.

Despite the fact that the instruments used to collect data in the pilot study had their limitations, in all the connections sought – between L1 literacy and L1 metalinguistic awareness, between L1 and L2 metalinguistic awareness, and between L1 literacy, L1 and L2 metalinguistic awareness and L2 proficiency – some relationship was found for at least one of the variables. Taking that into consideration, and the fact that at least some of the tests seemed to have been adequate, it can be claimed that this is, indeed, a fruitful avenue for investigation. It is based on the literature here reviewed and the results of the pilot study that I embarked in the present investigation, whose design is depicted in the next chapter.





## CHAPTER IV

### METHOD

Taking the studies reviewed and the results from the pilot study into consideration, it is my contention that the more one increases his/her literacy level, the more L1 metalinguistic (phonological, morphological, and syntactic) awareness one has. And, if, indeed, metalinguistic awareness transfers across languages, it can be expected that those who have more L1 metalinguistic awareness will also have more L2 metalinguistic awareness. Finally, it might be the case that this difference in metalinguistic skill plays a role in the process of learning an L2.

So as to describe the design of the present investigation, the first section (4.1) of this chapter will present the objectives, research questions, and the hypotheses that guided the study. After that, there will be a section (4.2) devoted to the description of the informants of the study, another (4.3) in which the instruments employed for data collection and the scoring procedures will be thoroughly described, and one (4.4) in which the procedures adopted for data collection are presented. A final section (4.5) will briefly indicate the statistical procedures employed in the analyses of the quantitative data.

#### **4.1 Objectives, research questions, and hypotheses**

Two main objectives lay at the core of this study. The first was to verify whether the positive correlation found between one's literacy level and his/her level of metalinguistic awareness, which is often encountered when one is at the beginning of the process of becoming literate (that is, during the process of literacy acquisition – *alfabetização* – or soon after it), holds for literate adults. The second objective was to investigate whether one's literacy level can predict his/her success when learning an L2. With that in mind, the following research questions were advanced:

1. Is there an association between the L1 literacy level of college students who are beginning learners of English as an L2 and their L1 metalinguistic awareness level?
2. Is there an association between their L1 and L2 metalinguistic awareness levels?
3. Does their level of L1 literacy, L1 metalinguistic awareness, and/or L2 metalinguistic awareness predict their L2 proficiency growth over one semester?

4. Does their level of L1 literacy, L1 metalinguistic awareness, and/or L2 metalinguistic awareness predict their L2 achievement<sup>1</sup> in one semester of an English course?

Drawing on the preceding research questions, the following hypotheses were formulated.

Research question number one generated hypotheses 1, 2, and 3.

Hypothesis 1: the L1 literacy level of the participants is associated to their L1 phonological awareness (PA) level.

Hypothesis 2: the L1 literacy level of the participants is associated to their L1 morphological awareness (MA) level.

Hypothesis 3: the L1 literacy level of the participants is associated to their L1 syntactic awareness (SA) level.

Research question number two generated hypotheses 4, 5, and 6.

Hypothesis 4: the L1 PA level of the participants is associated to their L2 PA level.

Hypothesis 5: the L1 MA level of the participants is associated to their L2 MA level.

Hypothesis 6: the L1 SA level of the participants is associated to their L2 SA level.

Research question number three generated hypotheses 7, 8, and 9.

Hypothesis 7: the L1 literacy level of the participants is a predictor of their L2 proficiency growth over the period of one semester.

Hypothesis 8: the L1 PA, MA, and SA levels of the participants are predictors of their L2 proficiency growth over the period of one semester.

Hypothesis 9: the L2 PA, MA, and SA levels of the participants are predictors of their L2 proficiency growth over the period of one semester.

Research question number four generated hypotheses 10, 11, and 12.

Hypothesis 10: the L1 literacy level of the participants is a predictor of their L2 achievement in one semester of an English course.

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<sup>1</sup> Though Davies (n.d.) problematizes the distinction between proficiency and achievement, explaining that often an instrument designed to assess proficiency is also assessing achievement (since there will always be a context), he offers a definition of achievement tests as “concerned with assessing what has been learned of a known syllabus within a school or total educational system” (p. 6). The best, according to him, is to assess both, since achievement is too local and proficiency too vague (p. 14).

Hypothesis 11: the L1 PA, MA, and SA levels of the participants are predictors of their L2 achievement in one semester of an English course.

Hypothesis 12: the L2 PA, MA, and SA levels of the participants are predictors of their L2 achievement in one semester of an English course.

In what follows, I provide a detailed description of the method employed to address these hypotheses.

## **4.2 Participants**

Two groups participated in this study: a group of Letras/Inglês students from Universidade Federal de Santa Catarina (UFSC) and a group of “average” learners of English enrolled in the First Level of the English course at the Extracurricular Program at UFSC. I here make a distinction between Letras students and average learners of English because Letras students could be a special kind of L2 learner. In the original design of the study, data was going to be collected only from Letras students. However, it was brought to my attention, by a Letras student, that this kind of L2 learners, due to their supposed interest in language(s), might be learners who will have more refined levels of metalinguistic awareness than the average L2 learner. At the time, she pointed out that a person who decides to work with language possibly is someone who already has a predisposition to look at language and its characteristics in a different way from the rest of the learners. Thus, a decision was made to collect data from other learners of English as an L2 so that any results found for the Letras group could be proposed to extend to the average learner of English. All of them were undergraduate students at UFSC. The programs in which they were enrolled were: Computer Sciences (Ciências da Computação), Physics (Física), Mechanical Engineering (Engenharia Mecânica), Computer Information Systems (Sistemas de Informação), Maths (Matemática), Biology (Biologia), and Social Services (Serviço Social).

The main reason for choosing these two groups, besides convenience, was that, according to the results of Harley and Hart’s (2002) and Ranta’s (2002) studies, being able to analyze language is more important for older (than younger) learners and in instructional settings.

### **4.2.1 The Letras students**

The 17 Letras students (7 men and 10 women) were all freshmen who were, at the time of data collection, enrolled in the *Compreensão e Produção Oral em Língua Inglesa I* and *Compreensão e Produção*

*Escrita em Lingua Inglesa I* courses and were, therefore, expected to have a low-level of proficiency in the language. These participants' ages varied from 17 to 33 years (with a mean of 20.88) and they were all native speakers of Brazilian Portuguese. Taking into consideration the data provided by them in the Profile Questionnaire (see Subsection 4.3.4 and Appendix A for the questionnaire and Appendix B for the raw data on this group's profile), none of them spoke any other languages besides Brazilian Portuguese and English. Besides having had English classes during their school years, all but three participants had also studied English outside the school – 5 took extra classes (from 1 to 8 years) and 9 studied on their own<sup>2</sup> (chatting on the internet, listening to music, watching films, playing videogames). With the exception of one participant who spent 1 month in Trinidad & Tobago and one who went on a cruise where English was spoken<sup>3</sup>, none of the other participants had ever been to an English speaking country or in an English immersion situation.

As regards their contact with the L2 at the time of data collection, besides having the 6 weekly hours of classes at the University, most individuals in this group (12) also regularly used English on other occasions<sup>4</sup> from a lesser (1h) to a greater (8 hours, every day, a lot) extent (per week). When asked whether they had taken the Programme for International Student Assessment (PISA) test or the Cambridge's Key English Test (KET) previously, all participants in the group informed not having taken these tests before.

Regarding their literacy materials and practices (see Subsection 4.3.4 and Appendix C for the questionnaire), the kind of materials they reported to have and the ones which were missing in their homes were similar among the participants. Almost all (at least 14 out of the 17 – 82.3% of the participants) had: family albums/pictures, phone and address books, calendars, textbooks, literature books, medicine labels, dictionaries, and phone books. Many (at least 9 of them – 52.9%) reported not to have: technical books, magazines<sup>5</sup> (Tititi, Caras, etc.),

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<sup>2</sup> Only one of these 9 participants mentioned the length of time he had been studying English on his own – 7 years.

<sup>3</sup> None of the participants informed when this closer contact with the English language happened.

<sup>4</sup> Listening to music, watching films and serials, reading, and/or speaking to other people.

<sup>5</sup> As can be seen in the Literacy Practices questionnaire the participants filled in (Appendix C), the category “magazines” was divided in two. In one of them, more “serious” magazines were included, such as *Veja*, *Exame*, and *Época*. In the other category the examples given were *Tititi*, *Caras*, and *Contigo*.

and guides (streets, services) (see Appendix D for the raw information on the group's profile). Most Letras students (at least 9 of them – 52.9%) declared that they always read literature books and song lyrics and sometimes also read family albums, phone and address notebooks, newspapers, dictionaries, magazines (Veja, Exame, etc.), and phone books. In their answers to the questionnaire, this same amount of participants (9) reported to never read children's books, religious books, or magazines (Tititi, Caras, etc.).

In relation to their attitude towards literacy-related events, the participants of this group were quite positive. Most of them (12 – 70.5%) reported to enjoy reading and also to find it crucial for one's development (14 – 82.3%). Though there were fewer Letras students who reported to enjoy writing (8 of them – 47%), 12 (70.5%) declared to find writing crucial for one's development. This slight imbalance between reading and writing is also evident regarding their perceptions of their ability in each of these skills. Most participants (12 – 70.5%) reported not to have any difficulties in reading, although 6 (35.2%) declared to have difficulties in writing.

There were no participants in the Letras group with illiterate parents and only few (3 – 17.3%) reported to have/had parents who do/did not read and/or write well.

#### **4.2.2 The Extracurricular students**

According to the answers given in the Profile questionnaire (see Subsection 4.3.4 and Appendix E for the questionnaire and Appendix F for the answers given by the Extracurricular group), all Extracurricular students (4 men and 3 women) who contributed to this research, ages ranging from 17 to 24 years (with a mean of 21.42), had Brazilian Portuguese as their L1. With the exception of one student who reported being able to speak “a little Spanish” and one who reported to know “some French”, none of the other participants reported to speak any other languages besides Portuguese and English. In this group, about half of the participants (4) had studied English somewhere else besides the regular school, but for a very short period of time (up to 1 year), and with the exception of one learner who spent one week in the United States, none of the other group members had ever been to an English speaking country.

At the time of data collection, 5 Extracurricular students reported using English in their daily lives (in addition to the English classes)

from 2 to 4 hours a week<sup>6</sup>. None of these participants reported to have ever done either the PISA or the KET test.

As regards their literacy materials and practices, the profile is quite similar to that of the Letras group (see Appendix G for the raw information on the group's profile). The kind of materials this group reported to have includes most of the items that appear in the list for the Letras students, though there is some difference in the kinds of materials they declared not to have at home. All Extracurricular students declared to have: textbooks, dictionaries, and phone books and almost all (at least 6 of them – 85.7%) also had: phone and address notebooks, calendars, children's books, literature books, technical books, and magazines (Veja, Exame, etc.). The items that many (at least 4 of them – 57.1%) did not have were encyclopedias, magazines (Tititi, Caras, etc.), and song lyrics.

Most of these participants (at least 4 – 57.1%) said to always read technical books and sometimes read phone and address notebooks, calendars, textbooks, children's books, newspapers, medicine labels, dictionaries, comic books, guides, and phone books. Taking their answers into consideration, the kinds of materials they never read are family albums, religious books, encyclopedias, magazines (Tititi, Caras, etc.), and song lyrics. According to the group's answers, the amount of different genres the Extracurricular participants get involved with is slightly larger than the amount that the Letras students get involved with. Regarding the kinds of materials the different groups reported not to read, again there are not many differences. Perhaps the greatest difference as regards the literacy practices of the two groups is the fact that song lyrics are always read by most of the Letras participants and never by most of the Extracurricular participants, whilst children's books are always read by the Extracurricular participants and never by the Letras participants.

The attitudes of these learners towards reading and writing also were very similar to those of the Letras students. Once again, there were more learners who enjoyed reading (4 – 57.1%) than writing (2 – 25.8%), despite the fact that the majority of participants (5 – 71.4%) declared to find both of them crucial for personal development. Another trend noticed with the Letras students that also appeared here was the participants' perception of difficulties in writing since there were 4 (57.1%) Extracurricular students who reported not to have any

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<sup>6</sup> Reading, watching films, listening to music, speaking, and/or writing.

difficulties in reading, though they believed they have difficulties in writing. Once again, in this group no one reported to have illiterate parents and most (4 – 57.1%) declared to have/ have had highly literate ones.

### 4.3 Instruments

Following the results from the pilot study, the instruments described below were used to collect the data that informed the present investigation. Thinking of readability, once there were a number of tests used for data collection, rather than bring a subsection for Scoring where the scoring procedures for all instruments are described, I decided to explain the scoring procedures immediately after the description of each of the tests.

#### 4.3.1 Assessment of L1 literacy (the PISA Test)

So as to assess L1 literacy, a modified version of the reading section of the PISA 2000<sup>7</sup> test was used. This is a pen-and-paper test of reading (which also demands some writing) that has both multiple-choice and open questions and, besides texts, includes pictures, graphs and/or tables. In the test description provided by Organization for Economic Co-operation and Development (OECD), they claim that “[r]ather than exam[ining] mastery of specific school curricula, PISA looks at students’ ability to apply knowledge and skills in key subject areas and to analyze, reason and communicate effectively as they examine, interpret and solve problems” (OECD, n.d., para. 3).

Even though the PISA test has been developed to be used with 15 year-olds, after looking through the kinds of texts and questions that comprised the instrument, I speculated that, perhaps, the test would not be unfit for college students, and this proved to be true after the instrument was piloted with a group of Letras students in 2009.1. If the kind of literacy I want to assess requires that a person “respond adequately to the intense social demand for a broad and diverse use of reading and writing”<sup>8</sup> (Soares, 1999, p. 20), PISA indeed seemed to be an adequate instrument since it requires that test-takers identify and recover information, interpret texts (i.e., construct meaning, make inferences) and reflect upon form and content of a given text (including a critical evaluation of the information contained in the text and hypothesis building).

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<sup>7</sup> As mentioned in the Review of the Literature, the 2000 version of the test was chosen because, in that year, the focus of the test was on reading (rather than on mathematical or scientific) literacy.

<sup>8</sup> My translation.

According to Bonamino et al. (2002), it is precisely on the reflecting dimension (which demands that the test-taker bring to the text his/her personal knowledge, ideas, and attitudes) that the PISA proves to be superior to the *Sistema Nacional de Avaliação da Educação Básica* test (SAEB) in assessing literacy, since the *Língua Portuguesa* section of the SAEB does not explore reflection on the part of the student as much as the PISA test does. Bonamino et al. also point out that the PISA, more than the SAEB, uses texts that are typical of our daily lives, demanding from the test-taker a stand as regards the style and the efficiency of a given text. Additionally, the PISA instrument, differently from the SAEB one, includes a written component (Ribeiro, 2001).

The possibility of using the *Linguagens, códigos e suas tecnologias e redação* section of the *Exame Nacional do Ensino Médio* (ENEM) was also considered but it was abandoned since there could be participants who had previously taken the test. In the case of PISA 2000, this was much less likely since, in Brazil, less than 5.000<sup>9</sup> students took the 2000 version of the test. Moreover, according to the thorough analysis that McQueen and Mendelovits (2003) make of the PISA 2000 test, psychometric procedures were adopted so that the test would be appropriate for countries with different cultural contexts.

Because it was not possible to gain access to an actual booklet from the PISA 2000 test, a modified version was assembled using some of the sample questions that OECD made public. Some of the questions used in the PISA evaluations are used over and over in different editions and, thus, cannot be made public. Nevertheless, OECD publishes all the other questions that will not be used again. On the *Instituto Nacional de Estudos e Pesquisas Educacionais Anísio Teixeira* (INEP) website I found 16 texts and a total of 98 questions available for the reading part of the PISA in Portuguese. However, I could not find any information that could guarantee that all these texts and questions were, indeed, used in the 2000 edition of the test. In a different document, for the English version of the PISA test, I could confirm that 11 of these texts and 69 questions were effectively part of the PISA 2000 test. Thus, this was my initial pool of texts and questions to build the modified version of the test my participants took.

PISA uses different text formats, 2/3 of them being continuous<sup>10</sup>. Since there were 5 continuous texts available from the 2000 version of

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<sup>9</sup> See <http://www.oecd.org/dataoecd/30/19/33683964.pdf> for the PISA 2000 report for Brazil.

<sup>10</sup> That is, they are presented in a block of text and are not or do not contain graphs, charts, tables, diagrams.



the PISA, I used all of them and selected, from a pool of 6 non-continuous texts, another 3 to form the test version used in the pilot study (this way, 63% of the texts were continuous and 37% non-continuous). The criterion used for the selection of the non-continuous texts was the formats more commonly used in the assessment. Accordingly, the 3 texts chosen were a graph, a table, and a diagram (in PISA tests, graphs, charts<sup>11</sup> and tables represent 66% of the non-continuous texts and diagrams represent 9%). This procedure left me with 8 texts and 55 questions.

The next step taken was to verify whether the questions selected reflected, as accurately as possible, the PISA structure. In the PISA test there are 5 different processes that are assessed: retrieving information, broad understanding, developing an interpretation, reflecting on content, and reflecting on form (OECD, n.d.). The first 3 processes, which are related to reading using information from the text, are assessed in 70% of the questions<sup>12</sup> and the last 2, which are related to reflecting drawing upon outside knowledge, are assessed in the other 30%<sup>13</sup>. However, there were only 5 reflecting-on-form questions left after the selection of the texts, and they represented only 9% (rather than 15%) of the 55 questions. Moreover, there was an imbalance on the number of open and closed (multiple choice) questions. Due to that, another 7 questions were eliminated (the criterion used was to eliminate those that were hindering the balance as regards question format and processes assessed) and the result was the following: 48 questions (24 open, 24 closed), in 5 continuous and 3 non-continuous texts with 71% (34) of the questions assessing reading using information from the text (21% – i.e., 10 questions – for retrieving info, 21% – i.e., 10 questions – for broad understanding, 29% – i.e., 14 questions – for interpreting) and 29% (14 questions) assessing reflection (19% – i.e., 9 questions – for reflecting on content and 10% – i.e., 5 questions – for reflecting on form<sup>14</sup>).

The actual PISA 2000 booklets contained between 55 and 67 questions (to be completed in 2 hours). Since the adaptation used in the present study contained only 48 questions, the time set for test administration was also reduced, to 1h40 min, allowing the participants

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<sup>11</sup> No chart was available to be included.

<sup>12</sup> 20% devoted to retrieving information, 20% to broad understanding, and 30% to interpreting.

<sup>13</sup> 15% each.

<sup>14</sup> It was not possible to reach the 15%/15% balance since there were too few reflecting-on-form questions.

to complete the test in two consecutive periods of classes (each period at the undergraduation lasts 50 min.). However, when this version of the PISA 2000 test was used in the pilot study, many participants<sup>15</sup> did not manage to finish the test in time. Nevertheless, in spite of the fact that the PISA was developed to be used with 15-year olds, it did not seem to be an inadequate test to be administered to undergraduate students, for even the 7 participants who did manage to finish it in time did not get more than 86% of the answers right. Thus, I proceeded to adapt the test.

Considering that the main problem seemed to have been with the length of the texts, rather than with the number or type of questions (see Subsection 3.4.3, p. 75, in the Review of the Literature chapter), I substituted one of the continuous texts for a shorter one. This caused an imbalance as regards the question types (discussed above) and, as a result, more modifications were done. The final structure of the test was: 42 questions (23 open, 19 closed), in 5 continuous and 3 non-continuous texts. Thirty questions (71.42%) assessed reading (19.04% – i.e., 8 questions – for retrieving info, 21.42% – i.e., 9 questions – for broad understanding, and 30.95% – i.e., 13 questions – for interpreting) and 12 questions (28.57%) assessed reflection (19.04% – i.e., 8 questions – for reflecting on content and 9.52% – i.e., 4 questions – for reflecting on form<sup>16</sup>) (see Appendix H for the actual texts and questions used in the test).

Qualitative information about the L1 literacy level of the participants was gathered through the Literacy Practices questionnaire (see Subsection 4.3.4 below and Appendix E) and already briefly discussed in Section 4.2 (p. 83).

#### 4.3.1.1 Scoring

The scoring followed the answers provided in the PISA manual. About half of the questions in the test were closed questions and the answers were very clearly either correct or they were wrong. For the open questions, many times the answers were also very straightforward. See, for example, the first question of the test, about Lago Chade – *Em que época a profundidade do Lago Chade foi maior?* Though this is an open question, the answer is straightforward. In the booklet the correct answer given is *4.000 a.C. ou aproximadamente* and, after this

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<sup>15</sup> Four (out of the 16) participants left up to 5 blank questions, another 3 left between 6 and 10 blank questions and 2 left 11 or more blank questions.

<sup>16</sup> Once again, it was not possible to reach the 15%/15% balance due to the limited number of reflecting-on-form questions.

information, some examples of correct answers were also given (4.000; *um pouco antes de 4.000 a.C.*; 4.100 a.C.; *entre 5.000 e 3.000 a.C.*).

There were other kind of open-ended questions to which the answers were not so constrained. Nevertheless, the key provided by OECD was very thorough (see Appendix I for one example) and, owing to that, the questions did not present difficulties for correction. As can be seen in the example in Appendix I, where the answer to question 5 for the text *Pichação* is given, the key starts with the information that should appear in a correct answer (the underlined part indicates the most important aspect that should be observed when correcting the test-takers' answers). Below that, there are examples of correct answers and, a little below, examples of answers that should be considered wrong. Despite the fact that not always the answers given by the participants were exactly like the ones provided in the examples, most of the times they were, indeed, extremely similar to the examples given. Moreover, there were no instances in which I was in doubt whether a given answer was right or wrong. For this reason, I did not feel the need to have the answers for this test corrected by any other raters. The maximum score in the test was 100.

#### 4.3.2 Assessment of L2 proficiency (Cambridge's KET) and L2 Achievement

The Key English Test (KET) is a test developed by the University of Cambridge Local Examinations Syndicate (UCLES) to offer a basic qualification in English to learners of all nationalities and ages. This examination covers the four language skills – reading, writing, listening, and speaking – and its main aim is to assess the ability one has to communicate effectively in English. The test has three papers<sup>17</sup>: Reading and writing, Listening, and Speaking<sup>18</sup> and the final mark of a test-taker is an aggregate of these three marks. The Reading and writing mark contributes with 50% of the score, and the Listening and the Speaking marks contribute with 25% each. The main reason for the choice of KET was its level (A2) in the Council of Europe Common European Framework of Reference (CEFR) for Languages, which is the same proficiency level of the book the students use in *Compreensão e*

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<sup>17</sup> A thorough description of the testing procedures can be found at [http://www.cambridgeesol.org/assets/pdf/resources/teacher/ket\\_handbook.pdf](http://www.cambridgeesol.org/assets/pdf/resources/teacher/ket_handbook.pdf)

<sup>18</sup> The Speaking paper is administered in two parts. In one, one of the examiners makes personal information questions to the participant and, in the other, the participants (2 at a time) interact, talking about a picture provided by the examiner. Since each of my participants took the speaking test individually, only the first part was made. The questions created by me were based on the indications in the KET handbook and are in Appendixes L and M.

*Produção Oral em Língua Inglesa 1* in the Letras/Inglês undergraduate program and in the *Inglês 1* course at the Extracurricular program. The book is *Interchange Third Edition – Book 1* (Richards, Hull, & Proctor, 2005).

The versions of the KET used for data collection (see Appendixes J and K) were the 2 samples that were available at the Cambridge website at the time (March, 2010). The procedures for the test followed the standard ones recommended in the KET handbook, with 2 exceptions. First, usually the answers for the KET are not marked directly into the booklet but in a separate answer sheet. Since most participants were tested at the same time and the booklets would not be used again, participants recorded their answers directly into it<sup>19</sup>. The second change made was in relation to the procedures of the Speaking paper. In the assessment made by the UCLES, during the assessment of oral language, a candidate will interact both with an examiner and with another candidate. For practical reasons, however, in the data collection for the present study the participant only interacted with me. Moreover, in the actual test, besides the examiner who interacts with the test-takers, another examiner is present in the room and awards marks to the test-taker. In the case of the present study, participants' performances were recorded and, afterwards, marked, by me and another 2 raters, according to the criteria present in the KET handbook.

The results obtained by the participants of the pilot study in the KET indicated that this test was, indeed, adequate to assess the L2 proficiency level of my participants. In the pilot study, participants' scores ranged from 33.3 to 88.3 (out of 100) in the Reading and writing section, from 28 to 92 (out of 100) in the Listening section, and from 55 to 96.2 (out of 100) in the oral part. This amplitude in range was seen as positive and, though the means for the whole group of test-takers was somewhat high (73.5), since this test was done in the second week of May (2009), I presumed that the scores of these participants would have been lower had the test been completed at the beginning of the semester (early March), as it was subsequently done with the participants of the data collection for the dissertation.

Thus, the two versions made available at the Cambridge website were used to collect data as regards L2 proficiency. L2 proficiency growth, therefore, reflects the gains of the participants

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<sup>19</sup> The 8 minutes usually allowed for the transfer of the answers of the Listening paper were discounted so that the time taken to actually complete the test was the same as it usually is (1h32min).

from the 1<sup>st</sup> to the 2<sup>nd</sup> performance of the test. Participants' L2 achievement in the semester was defined as their final grade(s) in the English course(s)<sup>20</sup>.

As regards L2 Achievement, the participants' final grades in the English courses they were taking at the time of data collection were used to express this variable. In the case of the Letras students, who were taking 2 courses (one focused in the oral abilities and one in the written ones), a simple average of the 2 grades obtained was used. In the End of Term questionnaire participants were asked whether they allowed me to have access to these records as well as to their courses' roll calls and all of them responded positively.

#### 4.3.2.1 Scoring

For the listening and reading sections of the KET, the scoring procedure is objective, since all questions are closed. For the writing and the speaking portions of the test, grading was done in keeping with the instructions provided in the KET manual. However, because some subjectivity is always present, for each of these sections 2 independent raters also coded the data. For the writing part, Rater A has a PhD in Letras (English) in the area of Second Language Acquisition and has been an assessor for Cambridge for the past 11 years. Rater B has a specialization in English and another in Education and has more than 20 years of experience as a teacher of English. For the speaking paper, Rater C has an MA in Letras (English) in the area of Second Language Acquisition (having worked specifically with L2 speech production) and has been teaching English for the past 13 years. Rater D has been an English teacher for the past 9 years and holds a BA in Physical Education.

The raters for the writing part received the writings of the first and the second KET tests all together and without any identification as regards the authors of the writings. This way, I intended to prevent biasing since the raters did not know which of the tasks had been done at the beginning of the semester and which were done at the end. Additionally, they were not able to compare the two writings of the same learner since all writings had been typed into a computer file (Word) by me (reflecting as closely as possible all characteristics of the handwritten text) (see a comparison of a participant's composition and the file the raters received in Appendix N). Together with the data to be

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<sup>20</sup> In the case of the Letras students, their grades from both *Compreensão e Produção Oral em Língua Inglesa I* and *Compreensão e Produção Escrita em Língua Inglesa I* were taken into consideration.

analyzed the raters received an instruction sheet (see Appendix O) and a scoring sheet. After both raters had given their scores, I compared the grades awarded by them to my grades and, in the majority of cases, they did not vary much among the 3 of us. For those cases in which one rater gave a grade that was different from those given by the other two raters, or when the 3 grades were different, there was a discussion among the raters so as to clarify such discrepancies. After discussing these cases, an agreement was reached as to which grade each of the writings should get.

For the oral interview, the raters received the audio files without any identification as regards the identity of the test-takers. Although they were not informed which of the two interviews happened in the beginning of the semester and which of them happened at the end, the content of the interviews itself allowed them to know which of the two happened first (see Appendixes L and M for the questions used in the interviews). Hence, some biasing could not be prevented. Together with the audio files, raters also received a scoring instruction sheet (see Appendix P) and a scoring sheet. After the two raters handed in their assessments, I proceeded in a similar way to what I did with the writing. In the case of the speaking paper, very rarely all three raters had exactly the same grade<sup>21</sup> for a student<sup>22</sup>. There were some instances in which one rater had a very different grade from the other two (and by *very different* I mean a difference of at least 2 points) (see Appendix Q for the 3 ratings given). This time, however, due to the subjectivity of the criteria provided in the Cambridge booklet, I decided simply to run a test of inter rater reliability. Since, apparently, the rating was reliable (alpha reliability coefficient = .974), the final grade for the speaking paper was an average of the 3 grades given by the raters.

#### 4.3.3 Assessment of Metalinguistic awareness

For the assessment of the participants' L1 and L2 metalinguistic abilities, there were 6 metalinguistic tests (3 in each language), each with 2 tasks and a total of 20 testing trials.

##### 4.3.3.1 Phonological awareness

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<sup>21</sup> For the speaking part of the KET, each participant is awarded 4 grades: Grammar and Vocabulary, Pronunciation, Interactive Communication, and Global Achievement. The grade I compared among the raters was the average of all these grades.

<sup>22</sup> In the writing paper, the grades could be 0, 1, 2, 3, and 4 (no half marks), and the KET handbook contained samples with "model" grades. For the speaking paper, not only the criteria were very subjective, but the grade could be anything from 0 to 10. Thus, there was much greater variation in scores.

The tests of PA used in studies that relate such ability and literacy acquisition have ranged from syllable segmentation (e.g., Capovilla & Capovilla, 1998b in Capovilla & Capovilla, 2007; Durgunoğlu et al., 1993; Swanson et al., 2008), a relatively simple task, to Phonological Transposition (e.g., Capovilla & Capovilla, 1998b in Capovilla & Capovilla, 2007; Capovilla et al., 2007; Holm & Dodd, 1996), one of the most difficult ones (Capovilla et al., 2007; Caravolas et al., 2005).

One challenge in developing the tests to assess metalinguistic abilities in the present study was the fact that most studies of metalinguistic awareness have been conducted either with children (e.g., Capovilla et al., 2004; Capovilla et al., 2007; Deacon & Kirby, 2004; Mota, Anibal, et al., 2008; Nunes et al., 1997) or with illiterate or little-literate adults (e.g., Dellatolas et al., 2003; Read et al., 1986). In the case of my study, as I was dealing with literate adults, a decision was made to use the most difficult kinds of PA tests, which are the ones that deal with awareness at the level of the phoneme (Capovilla et al., 2007; Troia, 2004) and that require word analysis rather than synthesis of phonemes<sup>23</sup> (Troia, 2004).

With this in mind, I searched among the empirical studies that I had for those that included literate adults performing PA tasks in Portuguese as L1 and/or in English as L2. The one study I found in which the participants were literate adults performing in Portuguese as L1 was Mota and Castro's (2007). However, one of the tests used involved identifying rhyme (which has been found to develop spontaneously<sup>24</sup>) and the other only required that participants decided whether words had any phonemes in common (i.e., it did not require manipulation, an operation that, according to Adams (1990), is more demanding). I also found one study where the participants were literate adults performing in English as an L2 – Holm and Dodd (1996). The tasks used in this study were a phonological segmentation task (of words and non-words), a spoonerism task (Phonological Transposition), and a rhyme judgment task. Because I did not want to use a task involving rhyme<sup>25</sup>, the two tasks chosen were the Phonological Segmentation and the Phonological Transposition ones.

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<sup>23</sup> Though PA is usually treated as a unitary construct, the tasks usually involve two different subprocesses – breaking whole words down (word analysis) and/or combining sounds to form new words (phoneme synthesis) (Castles & Coltheart, 2004).

<sup>24</sup> Capovilla et al. (2007); Dellatolas et al. (2003); Loureiro et al. (2003).

<sup>25</sup> In a very thorough review of the literature seeking evidence for a causal link between PA and literacy acquisition, Castles and Coltheart (2004) conclude that there is little evidence that syllable and rhyme awareness are important for literacy acquisition (at least in English).

In the Phonological Segmentation task (see Appendixes R and S for task instructions and stimuli in English and Portuguese, respectively), participants listened once to a given word (e.g., bag) and then had to reproduce each of its phonemes in isolation (b - æ - g). In the Phonological Transposition task (see Appendixes T and U for task instructions and stimuli in English and Portuguese, respectively) participants listened once to a pair of words (e.g., book-mouth) and then had to switch the initial phoneme of each of the words between them (muk-bauθ).

The stimuli used in the first English version (the version used in the pilot study) of both PA tasks were taken from Holm and Dodd's (1996) study. In the first Portuguese version, for the Phonological Segmentation task the stimuli was taken from a test of PA developed by Cielo (2001) and used by Marchetti (2008) and Lasch (2008). As regards the Phonological Transposition task, I used some of the stimuli employed by Pereira (2008), but added extra words, with more complex phonological structures. All the words in Pereira's (2008) study were CV words. In the English version the pairs were CV - CV; CVV - CVV; CCV - CCV; DigraphV - DigraphV; CV - CVV; CV - CCV; CV - DigraphV; CVV - CV; CCV - CV; and DigraphV - CV. Thus, I had to build the Portuguese version mirroring this more complex combination of word pairs.

Unfortunately, these first versions (English and Portuguese) of the tests, with the exception of the Phonological Transposition task in Portuguese, did not show to be adequate for the population I wanted to investigate. Judging by the mean scores<sup>26</sup> of the participants, the tasks were too difficult (especially, understandably, the English version). In addition to the quantitative evidence pointing out to task difficulty, participants also externalized their difficulties, complaining about the foreignness of the task, listening comprehension problems, lack of vocabulary, and difficulty in remembering the words and in manipulating the phonemes.

Taking all that into consideration, some changes were made in the stimuli used in the tasks. In the Phonological Segmentation task, no words with diphthongs, for example, were used, since these were very rarely reproduced accurately. There was an attempt to choose words that were more transparent as regards their grapheme-phoneme

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<sup>26</sup> Phonological Segmentation task (Portuguese mean= 4.5; English mean= 2.64 - out of 10), Phonological Transposition task (Portuguese mean= 7.0, English mean= 4.55 - out of 10).



correspondence. Only monosyllabic and disyllabic content words were used and an attempt was also made to have words with a variety of phonemes (21 in English; 26 in Portuguese). In English, /g/, /ε/, /t/, /k/, /Λ/, /m/, /l/, /ʊ/, /h/, /p/, /n/, /i/, /d/, /æ/, /b/, /ɪ/, /f/, /dʒ/, /ɔ/, /ɑ/, and /r/ were used. In Portuguese, the phonemes used were /d/, /i/, /s/, /ʊ/, /ε/, /r/, /a/, /t/, /ɲ/, /ø/, /v/, /f/, /e/, /z/, /k/, /h/, /u/, /ɔ/, /b/, /m/, /ʎ/, /p/, /l/, /ʒ/, /o/, and /g/. For both the English and the Portuguese tasks, only high-frequency words (among the 500 more frequently used) were used in an attempt to avoid comprehension problems<sup>27</sup>. The frequency list used in the selection of the English words was taken from the Corpus of Contemporary American English<sup>28</sup> and the one for the Portuguese words was taken from a corpus of Brazilian Portuguese available at the Linguateca website<sup>29</sup>.

In the Phonological Transposition task, the original pairs of words used in the pilot version were modified taking into account word frequency. If a word of the pair was not among the 2.000 most frequent ones for the English version or among the 10.000 to the 12.000 most frequent ones for the Portuguese version, this word was replaced by one that had the same phonological structure at the onset position (that is, CV, dipraphV, etc.) and, preferably, that actually started with the same phonemes (an attempt was made, again, to have a variety of phonemes (22 in English; 28 in Portuguese) and structures at the onset positions). The phonemes in English were /m/, /æ/, /h/, /b/, /ɑ/, /f/, /ʊ/, /au/, /k/, /eɪ/, /ɪ/, /d/, /ʃ/, /tʃ/, /i/, /p/, /ɔɪ/, /n/, /ou/, /s/, /Λ/, and /aɪ/ and in Portuguese, /b/, /ɔ/, /k/, /ẽ/, /dʒ/, /i/, /f/, /u/, /ʒ/, /e/, /g/, /wa/, /l/, /eɪ/, /m/, /a/, /n/, /ʃ/, /p/, /ʎ/, /h/, /ow/, /s/, /o/, /t/, /aɪ/, /v/, and /d/. In both languages, the pairs had the following onset structures: CV-CV, CV-CV, CV-CDiphtong, CDiphtong-CV, CV-DigraphV, DigraphDiphtong-CV, DigraphV-DigraphV, CDiphtong-CV, CV-CDiphtong, CV-CDiphtong.

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<sup>27</sup> In the interviews in the pilot study, often participants mentioned that one difficulty they felt in all metalinguistic awareness tasks was lack of vocabulary. Still, in the data collection for the dissertation, participants showed to have comprehension problems even for very frequent English words such as “job” and “big”. Misunderstandings also happened when participants were completing the Portuguese version of the test.

<sup>28</sup> Retrieved from <http://www.wordfrequency.info/> on February, 10, 2010.

<sup>29</sup> Retrieved from <http://www.linguateca.pt/> on February, 12, 2010.

Additionally, all words that started with consonant clusters were eliminated.

For both tasks, the stimuli in English were read (and digitally recorded) by a 34-year-old male native speaker of American English (from New Jersey). In Portuguese, the stimuli were read by a 36-year-old female native speaker of the language (from Rio Grande do Sul). Both speakers attempted to pronounce the words with as neutral an accent as possible and to deliver them in a well-articulated manner, but without being unduly slow. Each of these tasks was comprised of 2 training trials and 10 test trials.

Before each task started, I explained it and modeled one item to the test-taker. After the participant demonstrated to have understood the task, s/he was given the opportunity to make two training trials (receiving feedback) in each task before the actual test started. The tasks were researcher-controlled. After each word was played, I would pause the recording and the participant could take as long as necessary to produce a response. All participants were encouraged to attempt to respond to all items, but they could choose to skip one (or more) if they felt uncomfortable with making an attempt. Participants' responses were recorded in a digital file for posterior analyses.

#### 4.3.3.1.1 Scoring

The first step taken in the PA tasks was to transcribe participants' answers. These transcriptions were done by me and another two raters, both phoneticians. Rater E holds an MA in Letras (English) in the area of Second Language Acquisition (English phonology, more specifically) and has been a teacher of English for the past 7 years. Rater F has a PhD in Letras (English) in the area of Second Language Acquisition (English phonology, more specifically) and has been a teacher of English for the past 16 years. There were, at times, discrepancies as regards the perception of some phonemes (e.g. rater E thought the participant produced an /æ/ when segmenting *bag* and rater F and myself thought this person produced an /ε/). However, as can be seen from the example, usually that was in relation to phonemes that are, indeed, very similar. In those cases, I arbitrarily decided to keep the phoneme chosen by the majority of raters. In the case of the example, I would settle for /ε/. It is interesting to note that there were no instances in which the three raters perceived three different phonemes.

Since these learners had never done tasks of this kind, and, in the case of English, were dealing with a language they were not proficient in, I chose to follow Durgunoğlu et al. (1993) and count as valid their

*attempt* to produce a given phoneme. Thus, the second step of the data analysis for the PA tasks was to decide, together with the raters, what we would consider to be an attempt to produce a given phoneme. For example, if the expected phoneme was a /t/ but the participant produced a [tɪ], would that count as valid? What about if the person produced [tʃi]? For that, I classified the different realizations of phonemes in categories and consulted the raters so as to decide what could be considered as valid (see Appendix V for this categorization and the decisions made). At this point, another issue arose. There were, indeed, many participants who could not produce many of the phonemes<sup>30</sup>, only approximations, but there were some people who actually managed to produce the right phonemes. From this moment, a third step became necessary – establishing more detailed criteria for scoring. These criteria are summarized in Table 1, below.

Table 1

*Scoring criteria for the Phonological Segmentation task*

Stimuli	Response		Score	Criteria used for scoring
	Expected	Participant's		
job	dʒ - a - b	dʒ - a - b	3	Correct word + correct segmentation + correct phonemes
		dʒ - a - g	2	Wrong (but similar) word + correct segmentation + correct phonemes

<sup>30</sup> This difficulty does not seem to be a particularity of my group of informants and not even to happen only with Brazilians. Tolchinsky and Teberosky (1998 in Ravid & Tolchinsky, 2002), for example, observed that their Spanish participants, when doing a Phonological Segmentation task, tended to pronounce syllables or to name letters rather than producing the expected phonemes. A high proportion of the participants in Lehtonen and Treiman's (2007) study also gave answers in a Phonological Segmentation task that involved units larger than single letters or single phonemes. Morais et al. (1986) also observed that in their segmentation task some participants answered giving the name of a given consonant.

help	h - ε - l - p	h - ε - εl - p	2	Correct word + correct segmentation + expected letter name ([εl] instead of /l/)
job	dʒ - a - b	j - a - g	1	Wrong (but similar) word + correct segmentation + approximation of phoneme ([j] instead of /dʒ/)
job	dʒ - a - b	dʒeɪ - a - b	0	Correct word + correct segmentation + letter name ([dʒeɪ]) rather than phoneme
		dʒa - b	0	Correct word + incorrect segmentation + correct phonemes

For the Phonological Segmentation task, it was established, then, that if a person segmented the word correctly, with all the proper phonemes, that item would get 3 marks. If the person segmented the word correctly, but used some approximation of phonemes (see Appendix V), 1 mark would be taken away and that item would get 2 marks. Usually, in tests of phonological segmentation, if a letter-name rather than the phoneme is produced (e.g., if a participant says [εli] or [εl] rather than /l/), this immediately counts as an inappropriate segmentation and the word gets zero marks. However, in a study conducted by Lehtonen and Treiman (2007), they found that when a word contains the name of one of its letters (e.g., the word *help* contains the letter-name /εl/), it is common for people to produce the letter-name rather than the phoneme. In view of that, it was decided that, if a participant said [εn] rather than /n/ in *man*, [ɑr], rather than /r/ in *art*, [εl] rather than /l/ in *help*, [bi] rather than /b/ in *big*, [ve] rather than /v/

in *deve* and [pe] rather than /p/ in *pelo*, this word would also only lose 1 mark (as long as the rest of the word had been segmented appropriately). That is, this item would get 2 marks.

An additional decision had to be made as regards misunderstandings. In a fairly large number of times (and especially for some words – *job* and *big*, mainly), participants misunderstood the words in the stimulus. When this happened in the pilot study I imagined that it was due to the fact that I had not controlled for word frequency, and thus, there were a number of words that were unlikely to have been known to beginners. This time, because word frequency had been controlled for, I was fairly sure that participants had encountered those words previously and, as a consequence, would not have any comprehension problems. None of the studies I had read up to the moment of data collection mentioned problems in perception. Still, on hindsight, the misunderstandings are, actually, understandable, since they were listening to the words in isolation, without any contextualization at all. To make matters worse, since the speech they heard was a recording, they could not even rely on visual clues (reading the lips of their interlocutor) to help them figuring out the words heard.

Thus, after the misunderstandings happened again, I looked for more studies that employed tasks of PA and found that, in some cases, examiners asked participants to repeat the word before manipulating it (Cain, 2007; Caravolas et al., 2005; Gottardo et al., 2001; Scarborough et al., 1998). If the word repeated was not the stimulus, the examiner would repeat the word once.

Since this was no longer an option for me, I wrote to a number of researchers who had assessed PA in their studies in an attempt to obtain some informed opinion about what I should do with the data from misunderstood words. The suggestion given by Dodd (personal communication, July, 2010) and Durgunoğlu (personal communication, July, 2010) was to consider this data somehow, as long as the word understood was similar<sup>31</sup> to the stimulus, but perhaps to give it a different score<sup>32</sup>. This way, if a similar word (e.g., *pig* rather than *big*) was properly segmented and with the appropriate phonemes, only 1

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<sup>31</sup> The raters and I opted to consider a “similar word” that which shared at least half of the phonemes with the stimulus word.

<sup>32</sup> After all, “[p]honological awareness refers to the ability to *perceive* and manipulate the sounds of spoken words” (Goswamy & Bryant, 1990 in Castles & Coltheart, 2004, p. 78; Mattingly, 1972 in Castles & Coltheart, 2004, p. 78).

mark would be taken away from this item (i.e., this item would get 2 marks). If, in addition to the misunderstanding, there were any instances of approximation phonemes, only 1 mark was awarded to the item. The maximum possible score for this task was 30 – 3 marks for each item (see Appendixes W and X for the transcriptions of participants' answers and the scoring, in English and Portuguese, respectively).

Similar procedures were adopted in the Phonological Transposition (spoonerism) task. This time, there were not many problems of phoneme realization, since they were not produced in isolation. What was noticed, in many instances, were some small pronunciation problems, which actually did not interfere with the task (e.g., in making the transposition between *man-hand*, rather than producing the 100% accurate /hæn - mænd/, the participant would produce [hɛn - mɛnd]). One phenomenon that again appeared in this task was misunderstanding of words. Thus, some modifications in the scoring were made. At first, for this task, each word of a pair that was accurately produced (i.e., with the adequate phoneme transposition) would get one mark and, if the word produced was incorrect, no marks would be awarded. However, with the misunderstandings and the insights used for scoring the Phonological Segmentation task, it was decided that if a word was substituted by a similar one (same criteria as the one used in the Phonological Segmentation task), but the transposition was done accurately, this item would be awarded half a mark. This way, if a person understood *case-pig* rather than *case-big* and, as a result, produced [peɪs-kɪg] rather than /beɪs-kɪg/, s/he got 1 mark for [kɪg] and half a mark for [peɪs]. The maximum possible score for this task was 20 – 2 marks for each item (see Appendixes Y and Z for the participants' answers and scoring awarded, in English and Portuguese, respectively).

#### 4.3.3.2 Assessment of Morphological Awareness

As there is some discussion on whether grammaticality judgment tasks are only assessing syntax or whether they are also assessing inflectional<sup>33</sup> morphology, the test of MA only assessed derivational<sup>34</sup> morphology. The kinds of tests used to assess morphological or morphosyntactic awareness have also varied a lot and ranged from

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<sup>33</sup> Related to gender (in the case of Portuguese only) and number agreement for nouns and also tense/mood and number agreement for verbs (Laroca, 2005 in Mota, 2007b).

<sup>34</sup> Related to word formation (including suffixes and prefixes) or word decomposition (deleting suffixes and prefixes to arrive at the root of a word) (Laroca, 2005 in Mota, 2007b).

constructing new compound words (e.g., McBride-Chang et al., 2005) to deciding whether two words belong to the same morphological family (Mota, Aníbal, et al., 2008). Mota, Gontijo, et al. (2008) tested the reliability and validity of three tasks of derivational morphology and concluded that the best are the morpho-semantic decision and the morpho-semantic association tasks.

In a Morphological Decision task, participants listen to a set of three words once (e.g., *instrutor/feitor/major*) and then have to decide whether the second or the third word has been built in the same way as the first (i.e., whether they are from the same morphological family). In the case of the example, the second word (*feitor*) was built in the same way as the first (*instrutor*) because both of them are root + suffix *-or* (i.e., the equivalent to *the person who...*). In the Morphological Association task (only used in the pilot study, but see Appendix A2 for task instructions and stimuli, both in English and Portuguese), participants listen to a pair of words (e.g., *banda/bandeira*) and have to decide whether these two words belong to the same morphological family or not. In this case, they do not, since their roots are different.

For the pilot study, in the English version of the Morphological Decision task, the first 5 stimuli were taken from Koda's (2000) study and the last 5 items were adapted from Singson et al.'s (2000) study. For the Portuguese version of the task I used the stimuli developed by Besse, Vidigal de Paula, and Gombert (personal communication, April, 2009). In English, the words varied between 5 and 11 characters and in Portuguese between 5 and 12. In each of the versions of the tasks 5 prefixes and 5 suffixes were used. In Portuguese, *des-* was used 3 times and *re-* was used twice, *-eiro* was also used twice and *-or* was used 3 times. In English, *re-* was used 3 times and *in-* was used twice; *-ance* and *-en* were used twice each and *-tion* was used once. Though this task seems to have been more adequate for the population being investigated than the Morphological Association one (see below), because in both English and Portuguese most participants (8 and 7, respectively, out of 12) had less than 70% of their answers correct (English mean = 5.55; Portuguese mean = 6.20), changes were made as regards the stimuli used.

In both versions, the words and affixes used were controlled for frequency. For the English version, the most frequent prefixes and suffixes present in the 2.000 most frequent words of the Corpus of

Contemporary American English<sup>35</sup> were identified and then the most frequent words with these affixes were chosen to make up the stimuli. In the Portuguese version, the affixes and words were the most frequent among the 10.000 to the 15.000 most frequent words present in the Brazilian Portuguese corpus available at the Linguateca site<sup>36</sup>. This difference in word frequency, between English and Portuguese, was an attempt to build a task with stimuli that was not too difficult for beginning learners of English, but demanding enough for highly proficient speakers of Portuguese.

The stimuli used in the English version of the task had the suffixes *-ion*, *-ment*, *-er*, *-or*, and *-ate* and the prefixes *dis-*, *in-*, *im-*, *re-*, and *un-* and the Portuguese one had the suffixes *-ido*, *-ada*, *-ade*, *-ica*, and *-ia* and the prefixes *re-*, *in-* (in two sets), *ex-*, and *des-*. The words varied between 5 and 13 characters in length in English and between 5 and 15 in Portuguese (see Appendix B2 and C2 for task instructions and stimuli, in English and Portuguese, respectively). The procedures for this task were the same as for the PA tasks, with 2 small changes. This time, rather than each word being played at a time, each set of 3 words was played before I stopped playing the recording for the participant to give an answer. The other difference was that in the MA tasks participants had only one training trial (to which they received feedback).

The reason for abandoning the Morphological Association task was that I judged best not to have two MA tasks in which the participant had a 50% chance of scoring correctly simply due to chance. Then, between the two kinds of MA tasks used in the pilot study, a decision was made to abandon the Morphological Association one because it seemed to be, indeed, too easy for the participants (at least in Portuguese where the mean was 9.1 – out of 10). Thus, this task was replaced by a Suffix Choice task, adapted from Singson et al. (2000).

The Suffix Choice task is a pen-and-paper test and it presents 10 sentences (in each of the languages) where there is a word missing and four alternatives (words) are offered to fill in this gap (with only one of them being suitable). The missing words were morphologically complex nouns, adjectives, verbs, and one adverb, and all distracters in a given item had the same root as the target word (coupled with different suffixes). The objective of the test-taker was to identify that, in a given

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<sup>35</sup> Retrieved from <http://www.wordfrequency.info/> on February, 10, 2010.

<sup>36</sup> Retrieved from <http://193.136.2.104/acesso/ordenador.php> on February, 14, 2010.



gap, a verb, for example, was necessary. The test-taker should identify, among the possibilities offered, which one contained the appropriate suffix.

For the English stimuli, I started with the sentences used by Singson et al. (2000) and verified whether the roots used in their stimuli were among the 2.000 most frequent words in the Corpus of Contemporary American English. Six out of the 10 roots were very frequent and, following that, I kept them (*popul-*, *regul-*, *dead-*, *active-*, *convers-*, *critic-*). For the word *electricity*, whose root was not so frequent, I chose to maintain the target suffix (*-ity*) and look for the most frequent word that was coupled with it<sup>37</sup>. For two other items I decided to look for adjectives ending with the very frequent suffixes (according to the corpus I was consulting) *-ic* and *-ar*, and for the last item I chose to look for the most common verb ending in *-ate* (so that I would have 3 verbs in the stimuli).

Once the target words had been decided upon, I pondered whether the sentences used by Singson et al. were likely to be understood by beginning learners of English and changed two of them for simpler ones. For the other 4 items, I created the sentences myself using frequent words. Finally, as regards the distracters, I first observed whether the alternatives used by Singson et al. used the most frequent suffixes found among the 2.000 most frequent words I was using as a corpus. In most of the cases they did. In the case of the 5 words with not so frequent suffixes, I substituted their suffixes for more frequent ones. For the 12 distracters used with the 4 sentences I created, I coupled each of the 4 roots with the most frequent suffixes (as long as this resulted in a real word) (see Appendixes D2 and E2 for task instructions and stimuli, in English and Portuguese, respectively).

For the Portuguese stimuli, there were no sentences or words to start with, thus, I created the stimuli myself. The first step was to establish which suffixes were the most common ones among the 10.000 to 12.000 most frequent Portuguese words. Then, to mirror the structure of the English version of the task, I chose the 3 most common suffixes used with nouns (*-ção*, *-or*, *-io*), the three most frequently used with

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<sup>37</sup> Actually, the most frequent word was “community”, but I could not find another 3 alternatives that had very productive (i.e., frequent) suffixes coupled with the root *commun-*. I moved, then, to the second most frequent word – “activity”. However, this root was already being used on another item. I settled, then, for the third most frequent root coupled with the suffix *-ity* – “opportunity”.

adjectives (*-ido*, *-ado*<sup>38</sup>, *-ivo*), and the only one for adverbs (*-mente*). For the 3 verbs, the three most common terminations were used (*-ar*, *-er*, *-ir*). To select the roots, I just chose the first word on the list that ended with each of the suffixes and, for the sentences, I typed each of the target words on Google and used the first sentence that appeared using such word. Finally, for the distracters, I coupled the roots with the most frequent suffixes found in the Brazilian Portuguese corpus from Linguateca (as long as such combination resulted in a real word).

The procedures for these tasks resembled the ones adopted with the other tasks. I gave each participant the task sheet and, together with him/her, read the instructions and the example. Then, the participant was asked to complete one trial item, to which feedback was given and, if the person did not have any questions, I let the participant complete the rest of the task without my presence (I remained in the room, observing the participant, but no longer sitting at the table where the test-taker was).

#### 4.3.3.2.1 Scoring

Both MA tasks demanded straightforward answers. In the Morphological Decision one, the participant was required to answer to the stimulus (3 words s/he heard) with one of two alternative words or to say *the second/third (word)* or *a segunda/terceira (palavra)*. There were no instances in which a participant produced a word that was not part of the alternatives (for the participants' responses in the English version of the task, go to Appendix F2, for the Portuguese version, go to Appendix G2). The Suffix Choice task was a multiple choice test and there were no instances of doubt as regards the alternative chosen as a correct response to an item (go to Appendixes H2 and I2 for the participants' responses in the English and Portuguese versions of this task, respectively).

#### 4.3.3.3 Assessment of Syntactic<sup>39</sup> Awareness

In spite of the fact that Nation and Snowling (2000) state that the most common tests of SA are grammaticality judgment<sup>40</sup> (e.g., Capovilla et al., 2004; Jongean et al., 2007; Mota & Castro, 2007; Schwartz et al., 2007) and word-order correction tasks (e.g., Nation &

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<sup>38</sup> *-ado* was subsequently substituted by the fourth most common suffix for adjectives – *-al* – since I thought *-ido* and *-ado* were too similar.

<sup>39</sup> Bryant et al. (2000) and Lazo et al. (1997) observe that, nowadays, there is an agreement that there are no tests that assess only syntax. These tests will be always assessing semantic awareness too.

<sup>40</sup> Where test-takers read or hear sentences and have to decide whether they have deviations as regards grammar.

Snowling, 2000), in the studies I have encountered, reordering of words was rarely used. On the other hand, tests of grammaticality judgment may not be efficient since, as Mota (1996) pointed out, they are not very demanding cognitively and test-takers might get correct answers simply by chance.

Apparently, tests of error identification and correction are more cognitively demanding since they require more control over one's response (Mota, 1996 in Mota & Castro, 2007). In this case, though it is possible to get correct answers by chance, the odds are much lower, since the test-taker must reflect about the potential deviation and also be able to provide the correct form of a given sentence. Therefore, the first part of the SA test used was an Error Correction task (see Appendix J2 and K2 for task instructions and stimuli in English and Portuguese, respectively). In this task, the participants had to decide whether the 10 sentences presented in writing, one at a time, on the screen of a computer, were grammatical or not (e.g., *One of the children were sick.*). If they considered that there was some sort of deviation from the norm, they should indicate where the problem was. In the example, the problem is in the use of *were* with a singular subject (*one of the children*); thus, a correct response could be something like: *it's not 'were', it's 'was', or one of the children was sick, or é 'was' no lugar de 'were'*.

The English stimuli used in this task in the pilot study were taken from Alves (2008), Bowey (2005), and Jongean, et al.<sup>41</sup> (2007). However, because the version of the task used in the pilot study seemed to be little demanding<sup>42</sup> for test-takers (none of them had less than 50% of their answers correct and more than a half (6 out of 11) had 8 or more correct answers – out of 10), for the dissertation, four of the sentences used (the ones in which most or all participants were correct) were substituted by items taken from the stimuli provided in R. Ellis (2006) – an article where 17 grammatical structures are ordered according to their level of difficulty for implicit and explicit learning. Additionally, some of the remaining sentences from the stimuli used in the pilot study also suffered alterations. For example, in the pilot study, participants seemed to have problems with the phrasal verb “dress up” in the sentence

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<sup>41</sup> They had a test of grammaticality judgment only actually, but, still, the stimuli were useful. Their test was administered to L2 learners of English.

<sup>42</sup> For the dissertation, the idea was to include grammar structures that are usually learned in more advanced stages in English courses but maintain the vocabulary simple (using high-frequency words).

“Many of the children dressed up for the party”. Thus, this sentence was changed to “Many of the children went to the party”.

For the Portuguese Error Correction task, the only study I found that assessed SA of adults was Mota and Castro’s (2007), but, considering that some of their literate adults had a low level of literacy, the kind of deviations present in the stimuli seemed to be too obvious to be used with learners who were undergraduate students. Hence, for the pilot study I looked for stimuli on websites<sup>43</sup> with the most common difficulties Brazilian Portuguese speakers have as regards grammar. For the dissertation, this task also suffered some alterations. Once again, the items to which most (or all) participants gave correct answers were eliminated. Other sentences were eliminated on the basis of the kind of knowledge they demanded since some of them required the knowledge of very particular grammatical rules/exceptions (for example, even though I believe many literate adults could spot the deviation in *aluga-se casas*, since the verb clearly does not agree with the noun, it is less likely that these people would notice the deviation in *precisam-se de computadores* since, at a first glance, it seems that there is agreement between verb and subject<sup>44</sup>). To substitute the sentences that were eliminated (3), I resorted to other websites<sup>45</sup> and also collected some samples of deviations made by friends and relatives. In an attempt to make the task more demanding, more words were added to most of the sentences that had been previously used in the pilot study.

Due to the fact that in a review of the tests most commonly used to assess morphosyntactic<sup>46</sup> awareness Correa (2005) concludes that one test that does not have as many problems as the others is a test of error replication, this was the second task of the SA test (see Appendixes L2 and M2 for task instructions and stimuli in English and Portuguese,

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<sup>43</sup> <http://www.infoescola.com/portugues/erros-gramaticais-comuns-na-lingua-portuguesa-parte-i/>

<http://www.scribd.com/doc/2985643/Portugues-Gramatica-Aula-00-Concordancia-Verbal> ;  
<http://www.infoescola.com/portugues/erros-gramaticais-comuns-na-lingua-portuguesa-parte-ii/>  
<http://noticias.terra.com.br/vestibular/interna/0,,OI3744714-EI11636,00-Escape+dos+erros+comuns+de+Portugues+na+prova+do+vestibular.html>

<sup>44</sup> Still, although some might take “*computadores*” to be the subject of the sentence, it is actually an indirect object.

<sup>45</sup> <http://www1.folha.uol.com.br/folha/interacao/quizfo07r.shtml?sperg1=1&sperg2=1&sperg3=2&sperg4=2&sperg5=2&sperg6=1&sperg7=1&sperg8=2&sperg9=2&sperg10=2> and <http://www.vestibular1.com.br/revisao/r240.htm>.

<sup>46</sup> Correa (2005) claims that what have been commonly termed tests of SA should be actually named tests of morphosyntactic awareness since the morphological component is often part of such tests.

respectively). In this task, first the participant was shown a sentence with some grammatical deviation that had to be identified. After the response, another sentence was shown, with a similar structure but without any deviations, and the instruction for the participant, then, was to replicate the error of the first sentence in the second. In other words, to transform the correct sentence in such a way that it carried the same grammatical deviation as the sentence first presented.

The English and the Portuguese stimuli for the Error Replication tests were taken from the same studies and websites used as sources for the Error Correction task. For the English stimuli, however, since for this task I needed correct sentences that were equivalent to the wrong ones as regards the grammatical structure, I created some of the sentences used, since I was not always able to find this type of sentences in the stimuli of the studies mentioned. As in the Error Correction tasks, the pilot version of the Error Replication task, both in Portuguese and in English, suffered some alterations<sup>47</sup>. Once again, the tasks seemed not to have been demanding enough.

In the English version, in the pilot study, with the exception of two participants (out of 11), all the others managed to get at least 50% of the items correct and most (7) scored at or above the 70<sup>th</sup> percentile. In the Portuguese one, more than half (7) of the participants had a performance of 70% or more in terms of correctness and none of them had more than 5 errors (in 10 items). The reasons for these good results seemed to be different, though. Whereas in English participants took longer to answer, apparently searching for the error and probably consulting their explicit knowledge of grammar rules, in many instances of the Error Replication task in Portuguese, the stimulus itself somehow provided the learner with the answer.

To make things clearer, I will make use of an example. One of the grammar deviations in the Portuguese version of the Error Replication task in the pilot study was the use of the adverb *onde* rather than *aonde* to inquire about a person's whereabouts (as in *Onde foi sua mãe?*). In the case of the Error Replication task, when test-takers know the first sentence *will* be ungrammatical, even if a learner is not sure about the correct form, from the moment this person sees *Onde foi sua mãe?* as the first sentence of the pair, s/he may deduct that if *onde* is not the correct adverb, then the correct alternative must be *aonde*. Indeed, I did notice, at the time of data collection, that several test-takers used this

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<sup>47</sup> Six pairs of sentences were changed in each of the versions (English and Portuguese).

strategy since, when the first sentence appeared, they would say: Oh, ok, if here we have *onde* it means the correct form should be *aonde*. The same strategy could be used for the pairs *é oito horas/ são dez horas*, *é proibido/ é proibida*, *precisam-se de/ necessita-se de*, and *aluga-se/ vendem-se* and, indeed, this was a strategy I noticed some learners using to their advantage. Thus, most of these sentences were also eliminated<sup>48</sup>, along with the ones to which most (or all) participants gave a correct answer. As in the Error Correction task, the sentences that remained from the pilot study had words added to them, in an attempt to make the task more demanding.

Most deviations, in both languages and tasks, were in verb agreement (number, tense). In English, there were also deviations in the use of prepositions, the definite article *the*, the genitive case, modals, comparative, conditional, noun agreement, use of auxiliary verbs, and verb complement<sup>49</sup>. In Portuguese, besides the verb agreement deviations, there were deviations as regards the use of pronouns and one case of noun agreement as regards gender. The English sentences ranged from 4 to 11 words in length and the Portuguese ones from 10 to 22 words.

At this point, it is important to make clear that, though tests of grammaticality judgment such as the ones I used are termed tests of syntactic awareness, they are, actually, assessing more than that. As mentioned previously, they are also assessing flexional morphology and also semantics, but, more than that, they are, indeed, assessing the test-takers' knowledge of the rules for the standard grammar constructions in the languages. That is, though there is no denying that a sentence such as *The car was bought on Florianópolis* is not agrammatical but, if a participant failed in exchanging the *on* for *in* in this sentence, the answer would be taken to be wrong and, accordingly, his/her score in the L2 SA test would be lowered. In the same way, though many people would say *Sinceramente, eu não tenho certeza de que esse carro pertence a ele*, if a participant failed to say that pretence should be exchanged for *pertença*, this person's L1 SA scored would be decreased. Thus, it is good to keep in mind that besides assessing syntactic awareness, the test also assessed the participants' knowledge that some rules of grammar are expected to be followed by an educated person.

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<sup>48</sup> Only the "*aluga-se/vendem-se*" pair remained.

<sup>49</sup> Cain (2007) used subject-copula verb agreement, subject-verb agreement, and tense agreement. Plaza and Cohen (2003) used errors in determiners, subject-verb agreement, pronouns, adverbs, prepositions, conjunctions, and word-order.

Once again, before each task started, I explained it and modeled one item and the participant, after showing understanding, was allowed to practice in two items to which feedback was given. Each sentence appeared in writing in white in the middle of a black computer screen (font Arial, size 48) and it stayed there while the participant thought about his/her answer. After the answer was given, I moved on to the next sentence. As in the other tests, participants were encouraged to try and provide an answer even when they were not sure about the correctness of their response. The greatest difference between the SA tasks and the other two metalinguistic tasks was that, in this case, all stimuli were written. This measure was taken so as not to overload participants' working memory with the (sometimes lengthy) sentences. Participants' responses, however, were oral, and were digitally recorded for posterior analysis.

#### 4.3.3.3.1 Scoring

Initially, I would not have raters for the SA tasks, since their expected responses seemed very straightforward. In the Error Correction task, I would only count as a valid response if the person identified the error and could correct it adequately. In the Error Replication task, the person should not only be able to identify the deviation in the first sentence presented and correct it, but should also be able to reproduce the deviation appropriately in the correct sentence.

However, when participants' responses were transcribed, I encountered some unexpected responses and, therefore, turned to two independent raters to help me with the scoring. Both raters have PhDs in Letras (English) in the area of Second Language Acquisition and have been teachers of English for quite some time – 15 years Rater G, and 19 years Rater H.

The raters received a file with the participants' responses already transcribed and with a space for scoring and a file with scoring instructions (see Appendix N2). Comparing the scoring given by the three raters I noticed that they were exactly the same in the majority of instances, possibly due to the objectivity of most answers. There were, however, some instances in which one of the raters did not agree with the other two. Some of them were cases in which a participant corrected a sentence that had no grammar deviations. For example, one of the sentences in the Error Correction task was *Many of the children went to the party* and some participants said this was wrong, that to be correct it should have been *Many children went to the party* (see Appendixes O2 and P2 for a transcription of the participants' responses, to the English

and Portuguese versions of the Error Correction task, respectively). According to Rater H, if the alternative form provided by the test-taker was correct, that should be awarded a correct score. Rater G and I were of the opinion that the instruction of the task was clear: decide whether the sentence presents any deviations as regards grammar. If you think there is, correct it. Thus, if the sentence did not contain any deviations, it should not suffer any modifications (even if the response was also correct). After discussing that with Rater H, she agreed that, indeed, correcting a sentence that was already correct should get zero marks.

Another case of initial disagreement was in relation to “partial corrections”. For example, one of the sentences was: *One of the children were sick*, to which the target response was *One of the children was sick*. However, some test-takers who identified this sentence as incorrect said the correct form was: *One of the children is sick*. Apparently, although the person identified the deviation as regard number in subject-verb agreement, there was also a change in the verbal tense, which was not necessary. Once again, Rater H argued that, since the sentences were not contextualized and the instruction was: identify the mistake (which the person did) and say how this sentence would be correct (the response did have an accurate grammar structure), these cases should be awarded a full mark. Rater G, then, suggested including the possibility of having a half mark in the scoring for these cases, a suggestion that both Rater H and I promptly accepted. The maximum score in each of the SA tasks was 10 – 1 mark per item (see Appendixes Q2 and R2 for the participants’ responses in the Error Replication task, in English and Portuguese, respectively).

#### 4.3.4 Questionnaires and interviews

Five questionnaires were completed by the participants. At the end of the PISA and the KET tests they answered questions regarding their opinion about the adequacy of the test for their knowledge (see Appendix S2). Another questionnaire was a Profile questionnaire (see Appendix A for the version used with the Letras students and Appendix E for the version used with the Extracurricular students) whose main objective was to gather information about participants’ L2 learning history and the contact they had had or were having with the L2 at the time data was collected. There were 14 questions in total. The first 7 were related to the participants’ general characteristics (name, age, gender, L1, additional L2s), the next 4 questions were specifically about L2 learning and the participants’ past and present contact with the English language. Then, there were 2 questions about the possibility of



them having taken either the PISA or the KET test previously, and the final question was open and asked whether the participant had something else to add that had not been asked.

The fourth questionnaire was a Literacy Practices questionnaire adapted from a questionnaire developed by Terra (2009), who, in turn, had the Indicador Nacional de Alfabetismo Funcional as a basis (see Appendix C). This questionnaire consisted of 6 questions. The first 2 were related to the kinds of reading materials the participants possess at home and the frequency with which they read a number of different genres. The following 3 questions were about their beliefs about reading and writing, their reading and writing ability, and also how much they enjoy engaging in these kinds of activity (reading and writing), and the final question was about the literacy level of their parents.

A final questionnaire was completed at the end of the term and its objective was to gather the perceptions of the learners regarding their semester learning English (see Appendix T2 for the version used with the Letras students and Appendix U2 for the version used with the Extracurricular ones). This questionnaire had 7 questions. The first two were about their English course(s), the third and fourth questions were about their contact with English outside class hours, and the fifth question was about their level of motivation to learn English during the semester. The next question asked whether they allowed me to have access to the teachers' records as regards their frequency in class and also the grades in the course(s) and the final question, as in the Profile questionnaire, asked whether there was anything else they would like to add.

There was only one interview with the participants and it consisted of only one question. When the participants finished the last metalinguistic awareness task in Portuguese<sup>50</sup>, I asked them their opinion about these kinds of task, prompting them to say whether there was one metalinguistic awareness task that they found more demanding or easier than the rest and whether they found the Portuguese version of the tasks easier, the same, or more difficult than the English one.

#### **4.4 Procedures**

After the head of the *Departamento de Língua e Literatura Estrangeira* authorized my data collection (see Appendix V2 for the authorization), I contacted the *Compreensão e Produção Oral em Língua Inglesa I* teacher and arranged to go to her class on March, 8<sup>th</sup>,

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<sup>50</sup> By then, they had already done the tasks in English too.

2010 to invite the Letras students to take part in the present investigation. On this day, I briefly explained to the potential participants what the objective of my data collection was and also what they were expected to do. All participants of this group (21) read and signed the Consent Form (see Appendix W2 for the version signed by the Letras students and Appendix X2 for the one signed by the Extracurricular students). Out of these 21, only 14 completed all the tasks. For some of the analyses, data from 17 Letras students will be used, since there are 3 participants in this group who completed all tasks but the second L2 proficiency test. For the analyses where gains in proficiency are taken into consideration, the number of participants in this group will actually be 13 since, though 14 completed all tasks, one student in the group only attended the *Compreensão e Produção Escrita em Língua Inglesa I* course and, thus, had half of the amount of classes than the rest of the group had. Moreover, the fact that she was dismissed from taking the *Compreensão e Produção Oral em Língua Inglesa I* course indicates that, perhaps, she had a higher level of L2 proficiency than the rest of her colleagues.

For the selection of the Extracurricular students, the procedures were slightly different. There were 20 groups of *Inglês I* at the Extracurricular Program in the first term of 2010, and, due to time issues, instead of visiting each of the groups, I contacted the teachers and asked them to pass an e-mail list among their students, explaining that a doctoral student from the *Programa de Pós-Graduação em Letras/Inglês e Literatura Correspondente* at UFSC would send an e-mail inviting them to take part in her research. One hundred and forty-two students provided their e-mails and were contacted by me between March 17<sup>th</sup> and April 7<sup>th</sup><sup>51</sup> (for the invitation e-mail, see Appendix Y2). Though 25 of them replied, 2 of them did not study at UFSC and another 13 did not reply to the second e-mail sent by me (see Appendix Z2) or replied saying they did not have that much time available. Thus, data collection started with 10 Extracurricular students and only one did not complete all the tasks. Nevertheless, because two participants in this group were not native speakers of Portuguese (one was Mexican, and had Spanish as his L1 and one was a Brazilian who had German as his L1), the data actually used is that of 7 students. For the analyses where proficiency gains are taken into consideration, the number of

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<sup>51</sup> The reason why this first contact took so long to happen (almost a whole month) was because some teachers forgot to pass the list on the first classes and, thus, it took me longer to have their students' e-mail addresses.

participants will be 6 since one of these 7 students missed too many classes and, in the End of Term Questionnaire (see Appendix A3 for the Extracurricular students' responses) commented that she was unmotivated to learn English throughout the semester since it was her last semester in the undergraduate program. There were no such cases for the Letras group, but see the participants' responses on Appendix B3.

The procedures for data collection are summarized in Tables 2 (for the Letras students) and 3 (for the Extracurricular students) and discussed below.

Table 2

*Procedures for data collection with the Letras students*

		Procedures	Setting
Week 1	March, 9 <sup>th</sup>	L2 proficiency test – 1 <sup>st</sup> version (Reading and writing and Listening papers)	Whole group in the classroom
	March, 11 <sup>th</sup>	L1 literacy assessment	Whole group in the classroom
Weeks 2, 3, 4, 5, 6, and 7	March, 16 <sup>th</sup> to May, 20 <sup>th</sup>	L2 metalinguistic tasks – in a counterbalanced order and L2 proficiency test – 1 <sup>st</sup> version (Speaking paper)	Individually with the researcher
		L1 metalinguistic tasks – in a counterbalanced order	Individually with the researcher
Week 16	June, 25 <sup>th</sup>	L2 proficiency test – 2 <sup>nd</sup> version (Reading and writing and Listening papers)	Whole group in the classroom
		L2 proficiency test – 2 <sup>nd</sup> version (Speaking paper)	Individually with the researcher

Table 3  
*Procedures for data collection with the Extracurricular students*

		Procedures	Setting
Weeks 1 and 3	March, 29 <sup>th</sup> to April, 12 <sup>th</sup>	L2 proficiency test – 1 <sup>st</sup> version (Reading and writing, Listening, and Speaking papers)	Individually with the researcher
		L1 literacy assessment	Individually with the researcher
Weeks 2, 3, 4, 5, and 6	March, 30 <sup>th</sup> to May, 3 <sup>rd</sup>	L2 metalinguistic tasks – in a counterbalanced order	Individually with the researcher
		L1 metalinguistic tasks – in a counterbalanced order	Individually with the researcher
Weeks 13, 14 and 16	June, 24 <sup>th</sup> to July, 12 <sup>th</sup>	L2 proficiency test – 2 <sup>nd</sup> version (Reading and writing, Listening, and Speaking papers)	Individually with the researcher

The first step in the procedures of the study was to assess the participants' level of L2 proficiency – right at the beginning of the semester. Because this is a pen-and-paper test, the whole group of Letras' students took the test<sup>52</sup> at the same time, during a *Compreensão*

<sup>52</sup> In this encounter, when the whole group was together, 2 papers of the KET were administered – Reading and Writing and Listening. The Speaking paper, as described in Subsection 4.3.2 (p. 91), required oral interaction between the test-taker and the test administrator, and, thus, was performed at a different date, on the same session in which the L2 metalinguistic tests were performed.

*e Produção Escrita em Língua Inglesa I* class. For the Extracurricular students the procedure was slightly different since these students belonged to different groups in the Program. As a result, they did this task individually, with me. For this reason, for the Extracurricular participants it was possible to complete the 3 papers of the proficiency test (Reading and writing, Listening, and Speaking) in one meeting. The same procedures were adopted for the L1 literacy test (group setting for the Letras group, individual setting for the Extracurricular group).

The reason why the KET and the PISA were done collectively and in this order (first the KET, then the PISA) with the Letras students was simply practicality. Since there were many tests (as described in the previous section) for each participant to take (15 in total), if I were to counterbalance the order of all tests, that would mean administering the proficiency and the literacy tests for small groups of individuals or even individually. Since each of these tasks (the KET and the PISA) took approximately 2 hours to be completed, collecting data separately could mean taking 3 or 4 weeks<sup>53</sup> just for the first 2 tests and, because the proficiency test was taken by the same learners in 2 distinct moments (in the beginning and at the end of the semester), taking too long to collect the initial measure of proficiency probably would leave too short a time span between the 2 proficiency assessments for any improvement in L2 proficiency to be statistically significant.

For the Extracurricular students it was not possible to have all volunteers taking the tests together. Most students in this group completed the L2 proficiency test and the L1 literacy test during the 1<sup>st</sup> week of data collection (that took place a couple of weeks after the Letras students had started the data collection process). However, two students did these tasks on the 3<sup>rd</sup> week of data collection. By then, April, 12<sup>th</sup>, there were only 13 weeks left until the end of their semester. Thus, there is a discrepancy in the time span between the first and the second proficiency tests between the Letras and the Extracurricular groups – 15 and 13 weeks, respectively. Nevertheless, because these two groups would have to be treated separately anyway, for the Letras students receive double (6h/week) of the amount of L2

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<sup>53</sup> See Table 3, above, for the data collection procedures with Extracurricular group. Though only 8 students took these two tests, it took me almost 3 weeks to get all of them to complete the first 2 tasks. The main constraints were time restrictions from the part of the participants and the availability of the room used to collect data.

instruction time than the Extracurricular ones (3h/week), this discrepancy does not pose a problem in the design of the study<sup>54</sup>.

After these 2 tests were completed, each participant met with me individually to perform the 3 metalinguistic awareness tests (phonological, morphologic, and syntactic, in a counterbalanced order) in the L2 (English), and, for the Letras students only, the speaking section of the L2 proficiency test. As in the pilot study, all participants first made the metalinguistic awareness tasks in English. The reason for that was that I wanted that the minimum possible amount of time passed between the first person and the last person of a group to take the metalinguistic awareness tests in English, considering that they were receiving instruction in the L2. In this meeting, participants were first informed that they would be doing three metalinguistic tests in English and that each of them was comprised of 2 tasks with 10 items in each. They were also informed that their oral performance would be audio recorded and that their responses to the stimuli presented could be either in Portuguese or English. Finally, for the Letras students, I informed the participants that the last task of the session would be the oral part of the L2 proficiency test.

At another individual meeting with me, participants performed the 3 metalinguistic awareness tests in Portuguese. The time between the 3<sup>rd</sup> session (when participants did the L2 metalinguistic tests) and the 4<sup>th</sup> (when they did these same tests in the L1) varied amongst the participants. Some of them could meet for the 4<sup>th</sup> session a week after the 3<sup>rd</sup> session, others took about two weeks.

The last test the participants took, in the 5<sup>th</sup> and final session, was a different version of the L2 proficiency test. Once again, this test was done during class hours and with the whole group (for the Letras students) in an attempt to avoid more mortality in the study. These students (the Letras ones) performed the second version of the Speaking paper of the L2 proficiency test on this same day/session. As each participant finished the written part of the test, their English teacher, who remained with them in the room while they were doing the test, sent them to another room, where I met each of them individually for the oral interview. The Extracurricular students once again went through all three papers (Reading and writing, Listening,

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<sup>54</sup> In the end, the two groups were put together for the statistical analyses, since there were no statistically significant differences in gains in L2 proficiency between the groups (see the introduction of Chapter 5).

and Speaking) of the L2 proficiency test in one individual meeting with me.

Besides completing all the tests described above, participants also answered questions (through questionnaires or interviews) concerning their opinion about the instruments. Participants also completed three additional questionnaires (the first two were previously used in the pilot study) so as to contribute with data as regards their profiles and English learning history, their literacy materials and practices, and their perceptions about their 2010/1 term in relation to their involvement with and success in L2 learning.

The Profile and the Literacy Practices questionnaires were given to participants on the day of the L1 literacy test and most of them handed them back in the next meeting with me. Questions about the L1 literacy test and the L2 proficiency test appeared in the final sheet of each of these tests and interviews about the metalinguistic awareness tasks were conducted after the Portuguese version of the metalinguistic awareness tasks was completed. The End of Term questionnaire was completed on the day of the second L2 proficiency test.

#### **4.5 Data Analysis**

Data was analyzed mainly quantitatively. The qualitative data (participants' responses to the questionnaires and the interview) was used to ensure that the population contributing with data had a similar enough profile, and was also used to shed light into the statistical results.

First, as the number of informants in the present study was quite limited (and divided in two groups), an ANOVA was run to compare the performances of these groups in the pre- and post-L2 proficiency tests so as to verify whether there were differences in growth between the groups (for more, see the introduction of the Results chapter). Because no significant differences were found, the two groups were collapsed into one slightly larger group. After that, univariate analyses were run for all variables in order to check whether the data was normally distributed. With these results, it was possible to assess the effectiveness of the tests developed to tap the participants' metalinguistic awareness skills.

Next, Pearson correlations were run to answer Research Questions 1 and 2, since they simply sought an association amongst variables. For Research Questions 3 and 4, stepwise multiple regressions were run since predictive correlations were the aim. For all tests the  $\alpha$  level was set at .05.



In the next chapter, the results obtained from the statistical analyses conducted in order to answer the research questions posed at the beginning of this chapter will be presented.



## CHAPTER V

### RESULTS

This chapter presents the results of the statistical analyses conducted in order to answer the research questions posed in the Method chapter. Besides this introduction, this chapter contains 5 sections. In the first of them (5.1) the descriptive analyses for each of the instruments employed to collect data are presented, allowing for an evaluation of the effectiveness of the tests in assessing the variables they were supposed to assess. Section 5.2 presents the results of the correlations run so as to verify whether there was a relationship between the participants level of L1 literacy and their level of L1 metalinguistic awareness. The next section (5.3) also brings correlations – this time between L1 and L2 metalinguistic awareness – that were employed with the purpose of investigating the possibility of transfer of these skills across languages. In section 5.4, the core question of this study is addressed. The results presented refer to the multiple regressions employed in order to verify whether the participants' gains in L2 proficiency from the pre- to the post-test can be explained by their L1 literacy level and/or by their level of L1 and/or L2 metalinguistic awareness. Finally, the last section (5.5) is very similar to Section 5.4, only this time the dependent variable of the multiple regressions, rather than gains in L2 proficiency, is final achievement in the participants' L2 courses.

Before going on to the next sections, however, some explanation is due with relation to a slight modification in the route of the study. As described in the Method chapter, the informants of this study were recruited from two different groups – a group of Letras (English) students and a group of students from the Extracurricular program at UFSC. Though both groups consisted of beginners, it was clear to me from the moment data collection started that the Extracurricular students had a lower level of proficiency than that of the Letras students. Nevertheless, when data collection started, both groups were commencing the first level of an English course. In the case of the Extracurricular students the course was Inglês 1 (60h/semester) and, for the Letras students, the courses were *Compreensão e Produção Oral em Língua Inglesa I* (72h/semester) and *Compreensão e Produção Escrita em Língua Inglesa I* (72h/semester). Both groups used the same textbook throughout the semester – Interchange Third Edition (Richards

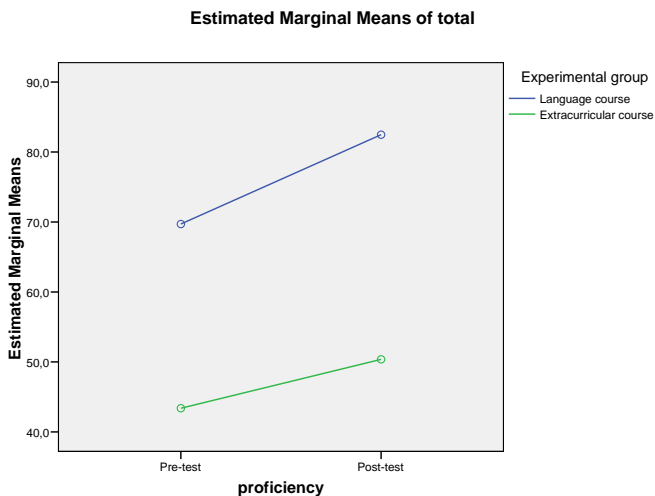
et al., 2005). Due to the difference in the amount of instruction time, the Extracurricular group used only the first 8 of the 16 units of the book.

The objective in having these two groups was to avoid a potential bias in the study in the case that only Letras students were the participants. As previously mentioned, it was brought to my attention, by a Letras student not connected to the study, that Letras students might relate to language in a different way than most of the other L2 learners, having a special relationship with language even before they enter the Letras program. This student cautioned that, perhaps, any relationship found between L1 literacy and L2 learning that had metalinguistic awareness at its core, could be due to this closer relationship (some) Letras students may have with language in general. For this reason, data was collected with a group of regular (non-Letras students) L2 learners. The initial idea was to treat these groups separately since, due to the large difference in the amount of instruction time each group would receive along the semester, it was expected that their gains, as a group, would vary greatly also. However, this was not the case.

An ANOVA for repeated measures was employed to verify whether there were gains from the pre- to the post- L2 proficiency test and also whether these gains differed between the two groups. First, the analysis within-subjects shows us that there were, indeed, significant differences ( $p < .000$ ) (see Appendix C3 for the results of this ANOVA) in the performance of the participants in both groups between their first and second enactment of the proficiency test. Moreover, by looking at the profile plot (Graph 1, below) it is possible to notice that this difference was due to both groups having higher means in the post-test. In other words, as one would expect, as a group, in both cases the participants scored higher in the proficiency test after the instruction period than at the beginning of the semester.

Graph 1

*Profile plot – Letras and Extracurricular groups (pre- and post-tests – L2 proficiency)*



Second, the between-subjects analysis allows me to state that these groups behaved significantly differently ( $p = .003$ ) from each other both in the pre- and the post-test. Again looking at the profile plot, it is possible to notice that, in fact, the Extracurricular participants had much lower scores than Letras ones at both moments (for the raw data for both versions of the KET for all participants see Appendix D3). In the pre-test the mean of the Extracurricular group was 41.8 (scores ranging from 23.4 to 65.6 out of 100) and in the post-test it was 50.3 (scores ranging from 28.5 to 75.3) (see the tables with the descriptive statistics for both groups separately on Appendix E3). For the Letras group, their initial mean was 68.6 already (scores ranging from 20.9 to 88.5) and, at the end of semester, their mean was 82.4 (scores ranging from 27.8 to 92.4).

The final analysis aimed at verifying whether the growth of the two groups throughout the semester was significantly different. Once again, if we look at the profile plot, it is possible to see that, although

the lines are parallel, the line for the Letras group is a little more inclined upwards than that for the Extracurricular one, indicating that this group had bigger gains. However, to my surprise, considering that the Letras students had many more hours of instruction than the Extracurricular ones, the proportion of gains attained by the Letras group was not significantly different from that obtained by the Extracurricular one ( $p = .086$ ).

Taking all that into consideration, in addition to the fact that the initial small number of participants in the study was further diminished due to mortality, a decision was made to treat the groups as one in all the analyses. Since the original objective in having these two groups was not having *only* Letras students as informants of the present research, this decision does not seem to hinder the validity of results in any way.

In the next section I will briefly present the results for each of the tests administered with the groups, which, from now on, became one single group.

### **5.1 Descriptive Analyses**

Tables 4, 5, and 6 report the minimum (Min) and maximum (Max) scores, the mean (M) and median (Med), and the standard deviation (SD) for each variable. The first table (Table 4) refers to the participants' scores in the PISA test, in the first and the second L2 proficiency tests, their gains in proficiency, and their achievement in the L2 course at the end of the semester. See Appendix F3 for the participants' raw scores and Appendix G3 for the histograms and the frequency tables for these variables.

Table 4  
*Descriptive Statistics – L1 literacy, L2 proficiency, and L2 achievement measures*

	N							
	V	Miss	M	Med	SD	Min	Max	MaxP
PISA	24	0	77.76	78.20	8.51	60.8	100.0	100
KET 1	24	0	60.85	66.15	20.54	20.9	88.5	100
KET 2	19	5	72.33	83.20	22.74	27.8	92.4	100
Gains	19	5	10.94	10.00	6.82	-7.9	23.0	any
Achiev	19	5	8.55	9.00	1.28	6.00	10.00	10

*Note.* N= number of participants; V = valid. Miss = missing, M= mean; Med= median; SD= standard deviation; Min = minimum score achieved; Max= maximum score achieved; MaxP = maximum possible score; PISA = participants' scores in the L1 literacy test (PISA); KET 1 = participants' scores in the L2 proficiency test (Key English Test) in the pre-test; KET 2 = participants' scores in the L2 proficiency test (Key English Test) in the post-test; Gains = difference in the participants' scores from the pre- to the post-test (L2 proficiency); Achiev = grades of the participants in the L2 course at the end of the semester (2010.1)

I will start by commenting on the L1 literacy test – the PISA. What we can confirm here is that the PISA test, though devised to be applied with learners who have not entered college yet, was, indeed, an adequate measure of L1 literacy for my participants. A mean of 77.7 for the group can be taken as an indication that the test was not too easy for them. Moreover, as can be seen in the frequency table and the histogram for this test (Appendix G3), despite the fact that there were no participants who scored below the 60<sup>th</sup> percentile, the majority of participants (18 – 75%) scored between 70 and 85, ruling out the possibility of ceiling effects.

Next, we have the two versions of the proficiency test. Though, as commented above, in the Letras group there was a tendency for scores to be at the higher end of the scale in both moments, now that the two groups were put together the scores are better spread. The mean for the group as a whole in the pre-test was 60.8 and, though the participants' scores varied widely (from 20.9 to 88.5), it was a little

surprising to find this mean. The Key English Test was chosen to be applied with these participants because it assesses the participants' skills at the A2 level of the CEFR for Languages, which is the same level of the book used for the instruction they received throughout the semester. Thus, if we think that these participants, without having received any formal instruction that semester, were already getting about 60% of the answers correctly on a test that they should be able to complete only at the end of the semester, it is, indeed, quite a high score<sup>1</sup>. Nevertheless, although only 7 participants (29.2%) scored below the 50<sup>th</sup> percentile, there were also only 7 who scored above the 75<sup>th</sup> percentile. Moreover, the most common scores amongst the participants were between 60 and 70 (9 participants – 37.5%) (see histogram and frequency table on Appendix G3). Hence, though the scores at the beginning of the semester were not as low as one would expect, there was still room left for improvement throughout the rest of the semester (something that was confirmed through the ANOVA presented above).

I now turn to the scores of the participants in the post-test of L2 proficiency. The first thing we can notice is that, although there was an increase in the means for the group as a whole (from 60.8 to 72.3), the range was still very wide, demonstrating that, apparently, the instruction the participants received during the semester was not enough to end the differences in L2 proficiency level amongst participants. At the end of the semester, 4 participants (21.1%) still scored below the 50<sup>th</sup> percentile. On the other hand, there were, this time, 12 participants (63.2%) who scored above the 75<sup>th</sup> percentile. This time, most scores were between 80 and 90. A look at the histogram for this test allows us to see how the scores were, indeed, concentrated at the higher end of the scale, something one would expect taking into consideration the fact that they were being instructed roughly in the same grammar structures as the ones required in the test.

The variable Gains shows us some interesting findings. At first, judging by the difference in means between the two enactments of the KET and by the mean for the Gains (10.9), it seems that the instruction received was successful in leading the participants to increase their proficiency level throughout the semester. However, these gains varied greatly amongst the participants (as one would expect) with one of them having actually decreased his score in 7.9 points (out of 100). All the

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<sup>1</sup> The high mean obtained for the group as a whole is mainly due to the high means obtained by the Letras group participants.



other participants had gains, but they went from as little as 5.1 points to 23 points. The majority of the participants (14– 73.7%) gained between 5.1 and 14.5 points. In other words, the trend was for participants to have modest gains. One of the reasons for that in the case of the Extracurricular participants might be the fact that, though a whole semester is being taken into consideration, they had a very limited amount of instruction during this period (3 hours a week). In the case of the Letras students, it might be that some of the students did too well in the test at the beginning of the semester<sup>2</sup> and, thus might not have had much room for improvement.

Finally, I now present the descriptive statistics for the variable Achievement. The score awarded to each participant to represent this variable was the final grade of the participants in their English courses (in the case of the Letras students, who attended two courses, a simple average of the two grades was used). Just by looking at the shape of the histogram (Appendix G3), it is already possible to notice that the scores for this variable are very different from those in the KET 2. Despite the fact that in both cases it would be expected that at the end of the semester most participants would have high grades (because they were being instructed in the L2), the Achievement scores are much higher than those of the KET 2.

To start with, the mean for Achievement (8.55 out of 10) is higher than that for the L2 proficiency post-test (72.3 out of 100). A more striking difference, however, is perceived in the range of scores. Whereas in the KET 2 the scores ranged from 27.8 to 92.4, the lowest grade in the English courses was 6 (with the highest being 10). In addition to that, when we look at the frequency table and the histogram (Appendix G3), we realize that more than half of the participants (10 – 52.6%) had scores between 9 and 10. Not only that, 8 of these 10 learners (42.1% of the total number of participants) got between 9.5 and 10. It is not possible to precise, at this point, the reason for such discrepancy between the results as regards proficiency and those related to achievement. One explanation is that, since the Achievement scores probably took into consideration partial scores deriving from tasks where students could consult other sources than themselves, the Achievement scores actually do not represent only the knowledge of the participants. Another possibility is that, due to an emotional connection

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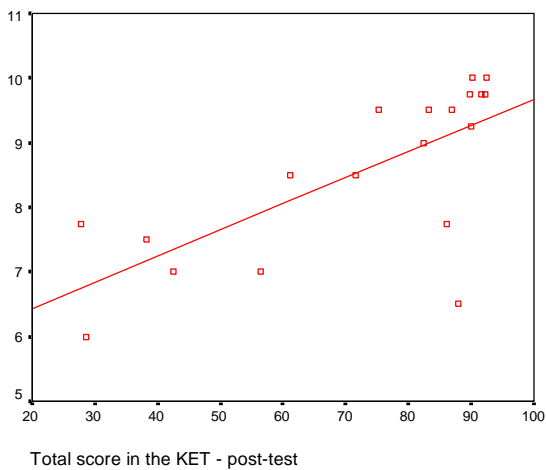
<sup>2</sup> It can be noticed in the frequency table (Appendix G3) that 9 out of the 17 Letras students (52%) got at least 70 on the test at the beginning of the semester.

with the participants/students, the teachers tended to be more lenient (than I and the raters) in their corrections and evaluations of their pupils. Still, with the data I have, it is not possible to precise why the Achievement scores were so high.

Nevertheless, there was some variability in scores in the Achievement variable. That is, it is not exactly the case that the teachers simply awarded high grades to everyone. Though the scores were higher than those for the KET 2, still there were some students who got higher grades and others who got lower grades. At this point I wondered whether those students who had the lowest grades in Achievement were the same who got low grades in the KET 2 (the proficiency test administered at the end of the semester), since this would be an indication that some students were less skilled in the L2 than others, regardless of the teacher refraining from awarding them too-low a grade. Indeed, when a Pearson correlation was run between the variables Achievement and KET 2, a positive, significant, and moderate correlation was found between the participants' scores in each of the evaluations ( $r = .718$ ;  $p = .001$ ). The scatterplot below shows that, with very few exceptions, there was consistency in the grades given by the teachers and the scores the participants got in the proficiency test. At the same time, the fact that there is some discrepancy between these scores is an indication that the 2 variables are not measuring the same skill. As a consequence, I decided to keep this variable in spite of the fact that the scores might be somewhat biased by the teachers' more subjective (and/or comprehensive) assessment.

Graph 2

*Scatterplot – Correlation between Achievement and KET 2 scores*



In Table 5, the group's performance in the English metalinguistic tasks is depicted (for the raw scores, go to Appendix H3).

Table 5  
*Descriptive statistics – L2 metalinguistic awareness*

		N							
		V	Miss	M	Med	SD	Min	Max	MaxP
Phon.	PS1	24	0	7.38	7.00	6.58	0	25	30
Awar.	PS2	24	0	12.35	40.60	21.45	9.3	84.3	100
	PT	24	0	6.52	6.50	3.36	.0	12.0	20
Morph.	MD	23	1	6.52	7.00	1.83	3	9	10
Awar.	SC	24	0	8.21	9.00	1.58	5	10	10
Synt.	EC	24	0	5.91	5.75	1.77	3.0	10.0	10
Awar.	ER	24	0	4.58	4.00	2.97	.0	10.0	10

*Note.* N= number of participants; V = valid, Miss = missing, M= mean; Med= median; SD= standard deviation; Min = minimum score achieved; Max= maximum score achieved; MaxP = maximum possible score; Morph. Awar. = MA tests; MD = Morphological Decision; SC = Suffix Choice; Phon. Awar. = PA tests; PS1= Phonological Segmentation scoring 1; PS2= Phonological Segmentation scoring 2; PT = Phonological Transposition; Synt. Awar. = SA tests; EC = Error Correction; ER = Error Replication.

I will start the presentation of these results with the tasks used to measure phonological awareness (PA). As explained in the Method chapter, when the time came for the raters to judge the participants' responses in the PA tasks, a number of issues arose and more detailed scoring criteria had to be created. At that point, one of the raters (who holds a PhD in English phonetics and phonology and who has been a teacher of phonetics and phonology for some years) pointed out that the scoring commonly used for the Phonological Segmentation tasks – either the answer is correct or it is wrong – is somewhat unfair. She contended that, when the response expected for an item is /b-i-g/, for example, there is a difference in the level of PA of a participant who answers [bi-ig] and that of a participant who answers [bi-i-g].

Traditionally, both of these answers would be considered wrong<sup>3</sup> if what was expected was phonemic segmentation. However, the rater observed that though the first participant was only able to isolate the onset from the rest of the word, the other managed to isolate all the phonemes, though one of them ([bi]) was produced with the help of the sound of the vowel following it. At the same time, this response could not be considered as correct as [b-ɪ-g]. With that in mind, besides the changes in the criteria for scoring, we decided to assess Phonological Segmentation with two different kinds of scoring – the traditional one (Phonological Segmentation scoring 1, see Table 1, in subsection 4.3.3.1.1, p. 98) and a scoring where we counted the percentage of phonemes produced correctly (Phonological Segmentation scoring 2) – and then see which one of them better captured the differences amongst the participants in the level of PA.

If we look at the scoring 1 (PS1), we will notice that the mean was quite low (7.38 out of 30 – 24.6%), even though the range is excellent (0 to 25), with people scoring all along the scale. However, through the histogram and the frequency table (see Appendix I3) it is possible to perceive that there were floor effects in this task (there were many participants who had very low scores). Half of the test-takers (12) scored below the 25<sup>th</sup> percentile (i.e., scored less than 8), with 4 people not having been able to answer to one single item correctly. It seems, then, that this test was very demanding and, at least when the more conservative<sup>4</sup> scoring was employed, perhaps it failed in capturing some differences amongst the participants. I now look at the participants' performance when the second kind of scoring is employed.

The first thing to be noticed is that the means with the second kind of scoring are already much higher (42.3%), even if the range continues to be very wide (from 9.3 to 84.3%). The histogram, this time, is more similar to the normal curve one expects, quite different from scoring 1. The frequency table confirms this distribution of scores. About half of the participants (15 of them – 62.5%) had less than 50% of the items correct but, this time, only 6 (25%) were below the 25<sup>th</sup> percentile. These results indicate that, perhaps, this more encompassing scoring might be more efficient in capturing the subtle differences

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<sup>3</sup> Though there are some authors (e.g., Durgunoğlu et al., 1993) who award a partial credit for onset-rime segmentations.

<sup>4</sup> That had, actually, already suffered some changes with the creation of the different levels of correctness in the participants' responses.

amongst the participants as regards their ability in segmenting words in phonemes.

The other task used to assess PA was the Phonological Transposition task and now I turn to its results. Once again, the mean is quite low – 6.52 (32.6%) and the range, though very good (0–12) indicates that there were not, in fact, many high scores in this task. Indeed, the majority of the participants (19 – 79.2%) scored below the 50<sup>th</sup> percentile, with 9 of them (47.3% or 37.5% of the total number of participants) having scored below the 25<sup>th</sup> percentile. The histogram (see Appendix I3 for the histogram and frequency table) does not reveal much, since the scores were spread almost evenly along the scale. Nevertheless, despite the fact that it seems that the test was quite demanding for the participants, there were not as many very low scores as when the first scoring was applied in the Phonological Segmentation task and there were 4 participants with no correct answers. This time, only one participant did not get any item correctly. Thus, because this task captured a slightly different aspect of PA, I decided to keep it, even if it seems to have been a little above the abilities of some test-takers.

I now turn to the Morphological Decision task. Taking a look at the frequency table (Appendix I3), one thing that struck me was the high number of participants (10 – 43.5%) who got a very high score – 8 or 9 (out of 10). However, the mean for the group is not that high (6.22) and the range was wide (from 3 to 9). In addition to that, a look at the histogram (Appendix I3) also confirms that, despite a tendency towards higher scores, the scores were spread along the scale, with 5 participants (26.1%) having scored less than 50%. Therefore, this task seems to have been adequate in capturing the individual differences amongst the participants as regards their level of morphological awareness (MA) in English. The same does not seem to hold for the next task to be presented – Suffix Choice.

If we look at the histogram (Appendix I3) for the Suffix Choice task, at first it does not seem much different than that for the Morphological Decision one, but a simple look at the mean (8.21) and the range of scores (5–10) already indicates that things are different. A look at the frequency table (Appendix I3) is perhaps the best way to verify the differences in the participants' performances in these two tasks. This time, there were no participants who scored below the 50<sup>th</sup> percentile, for example. Moreover, 16 of them (66.6%) had at least 8 of the 10 answers correct (5 of these 16 participants – 31.2% – had perfect scores). These results indicate ceiling effects. That is, there were too

many respondents who got all or almost all answers correct, demonstrating that the test did not distinguish among those participants with a very good level of MA. For this reason, I decided to use only the scores from the Morphological Decision test to represent the participants' MA level in English.

Finally, I turn to the test that assessed syntactic awareness (SA). I will start with the Error Correction task. A brief inspection of the histogram (Appendix I3) for this variable already allows us to perceive that the scores for this variable were well distributed. The mean for the group was 5.91 and the range went from 3.0 to 10. Though the majority of participants (18 – 75%) had at least half of their answers correct, only 4 (8.3%) scored above the 75<sup>th</sup> percentile. Hence, it does not seem that it is a case of a ceiling effect as in the Suffix Choice task. The behavior of the group in the Error Replication task, however, was quite different. The mean is a little lower (4.5) but the greatest difference is in the way these scores are distributed (this time the range was from 0 to 10) (see Appendix I3 for the histogram and frequency table). Although almost half of the participants (11 – 43.8%) got at least half of their answers correct and 5 of them (45.5% – 20.8% of the total number of participants) actually scored above the 75<sup>th</sup> percentile, as in the PA tasks, there were many low scores (6 participants – 25% – had a score of zero or one), indicating that this task was, in fact, more demanding than its simpler version – Error Correction.

In Table 6 the results for the metalinguistic awareness tests performed in Portuguese are presented (participants' raw scores in these tasks can be found in Appendix J3).

Table 6  
*Descriptive statistics – L1 metalinguistic awareness*

		N							
		V	Miss	M	Med	SD	Min	Max	MaxP
Phon.	PS1	24	0	14.00	14.00	6.99	.0	27.0	30
Awar.	PS2	24	0	70.75	76.85	15.86	43.5	94.8	100
	PT	24	0	13.50	15.00	4.58	1.0	19.5	20
Morph.	MD	23	1	8.21	8.00	1.53	4.0	10.0	10
Awar.	SC	24	0	9.87	10.00	.33	9.0	10.0	10
Synt.	EC	24	0	7.06	7.00	1.32	5.0	9.0	10
Awar.	ER	24	0	6.70	7.00	1.70	2.0	9.0	10

*Note.* N= number of participants; V = valid, Miss = missing, M= mean; Med= median; SD= standard deviation; Min = minimum score achieved; Max= maximum score achieved; MaxP = maximum possible score; Morph. Awar. = MA tests; MD = Morphological Decision; SC = Suffix Choice; Phon. Awar. = PA tests; PS1= Phonological Segmentation scoring 1; PS2= Phonological Segmentation scoring 2; PT = Phonological Transposition; Synt. Awar. = SA tests; EC = Error Correction; ER = Error Replication.

Once again, I will start by describing the results for the PA test. As in the English version of the test, my first objective here was to verify whether the scoring 1 or the scoring 2 in the Phonological Segmentation task was the best in capturing the differences in the level of PA amongst the participants. For the English version of the Phonological Segmentation task, the second kind of scoring seemed to be the most appropriate, apparently unveiling more subtle differences in the performance of the participants in the task. In the L1 version of the task, when the more traditional scoring criteria was used, the mean was 14 (out of 30 – 46.6%), almost double of the mean for the English version. The range here was also slightly wider (0–27) than in English (0–25). The biggest difference, however, is in the distribution of scores along the scale (see histogram and frequency table in Appendix K3). In English, half of the participants scored below the 25<sup>th</sup> percentile. This time, in spite of the fact that roughly half of the participants (13 –



54.5%) scored below the 50<sup>th</sup> percentile, only 4 (16.7%) had less than 25% of their answers correct. However, because in English this task, when scored in the more conservative way, showed some floor effects, I chose to inspect the performance of the participants when the scoring was done in a more detailed way, to verify whether it was not wiser to abandon the variable with the scoring 1.

When scoring 2 was taken into consideration, this variable also showed higher scores than its English counterpart. Although in English the mean was 42.3%, in Portuguese it was 70.7%, with a range varying from 43.5% to 94.8% (narrower than the English one). Additionally, with this kind of scoring, only 4 participants (16.7%) had less than 50% of the answers correctly, indicating that this is, indeed, a more lenient scoring. However, as the rater who proposed this different kind of scoring argued, this seems to be a more realistic view of the Brazilian learners' ability of segmenting words in phonemes. She mentioned that, in her experience with undergraduate Letras students who take courses on English phonetics and phonology, she has noticed how they have a hard time in perceiving that graphemes and phonemes in English have a much more opaque relationship than they do in Portuguese. For this reason, I chose to overlook the fact that the criteria used for the scoring 2 seems to have somehow inflated the scores in the Portuguese version of the test (since it does not seem to have been the case of ceiling effects) and use this variable for Phonological Segmentation rather than to keep the more conventional scoring that seems to have led to floor effects in the English version of the task. For this reason, from now on, the scores used to represent the participants' performance in the Phonological Segmentation task will be the PS2 – Phonological Segmentation scoring 2 – which, henceforth, will be referred to as Phonological Segmentation.

The other test used to assess PA was Phonological Transposition. In the English version, this test also yielded quite low scores (mean = 6.5 – 32.5%) but, once again, in Portuguese the scores were much higher (mean = 13.5 – 67.5%), something that is not completely unexpected, of course. This time, not only it was not their first encounter with this kind of task, but also they were performing in a language in which they are proficient. The range in Portuguese was wider, from 1 to 19.5 (out of 20), though, this time, only 4 people (16.7%) scored below the 50<sup>th</sup> percentile, with many of them (8 – 29.2%) scoring above the 75<sup>th</sup> percentile. The histogram (see Appendix K3) also depicts well the difference in the participants' performance in this task in the 2

languages. While in English the graph is block-like (due to the fact that the participants tended to have their scores well spread along all the scale), in Portuguese a spike at the higher end of the scale is very easily identified. Nevertheless, the majority of scores (14 – 70%) fell between 15 and 17 (75% and 85%); thus, it does not seem to have been the case of a ceiling effect.

I now turn to the results for the variables that assessed MA. As in the discussion of the results for the tasks in English, the first test we have is the Morphological Decision one. In the English version of this test the participants' scores tended to be mostly distributed at the higher end of the scale. For the Portuguese version, this trend appears magnified. The histogram (Appendix K3) is a good representative of that. It is very clear, even from a cursory look, that the scores are not evenly spread. Indeed, the mean for this task was very high (8.21). Though the range does not appear so narrow (from 4 to 10), the frequency table reveals that only 4 participants (17.4%) scored below the 75% percentile. Moreover, there were 11 participants (47.8%) who scored either 9 or 10 (out of 10). There is no doubt, then, that this instrument was inadequate in assessing the participants' differences in the level of L1 MA adequately. Consequently, a decision was made not to take these results into consideration for the analyses in the present study.

As regards the Suffix Choice task, already in the L2 the task proved to have been too easy for the population who informed the present investigation. In Portuguese, the scores were even higher (a trend observed for all metalinguistic awareness tasks). The histogram of the variable (see Appendix K3) is enough for one to notice that there were, in fact, serious shortcomings in this instrument. The only scores achieved by the participants were 9 and 10 (out of 10), leading to a mean of 9.87. Thus, I was left with no variables that could represent the participants' level of MA in Portuguese. These results somewhat mirror those of the pilot study, where the scores in the MA tasks also were quite high. According to Mota (personal communication, April, 2010), finding a task that is appropriate to assess literate adults' level of MA (in their L1 – Portuguese) can be, indeed, a challenge, and these high scores should not come as a complete surprise.

The two final tasks I will address are the SA ones. Starting with the Error Correction one, it can be noticed that the tendency for higher scores in the Portuguese version of the metalinguistic awareness tasks is, once again, confirmed. This time, the mean for the group was 7, as

opposed to the 5.9 in the English version. The range, however, is narrower – from 5 to 9 (out of 10) – than the one in English (from 3 to 10). Whilst this range is similar to that for Suffix Choice in English (from 5 to 10), which was eliminated as an adequate test of MA since, apparently, it did not capture the individual differences between the participants, this time the scores are better spread. In that task (English Suffix Choice), only 10 participants (33.3%) got less than 80% of their answers correct. This time, there were 14 participants (58.3%) that had scores between the 50<sup>th</sup> and the 75<sup>th</sup> percentile and, from the remaining 10 who had scores higher than that, 6 (25% of the total number of participants) had 80% of their answers correct. Finally, although there were 5 perfect scores in the English Suffix Choice task, there were no perfect scores in the present task. The histograms for these two variables also show these differences (see Appendix I3 for the Suffix Choice and Appendix K3 for Error Correction). This way, although the range in scores in the Error Correction task in Portuguese was narrow and a tendency for higher scores could be spotted, it does not seem to be the case that the task was too easy to be able to capture the individual differences in the level of SA amongst the participants.

As in the English version of the SA test, participants' scores in the Error Replication task tended to be slightly lower than those in the Error Correction one. This time, the mean was 6.71 (out of 10) and the range was slightly narrower than it was in English (2 to 9), though still wide. Mirroring what was observed in the Error Correction task in Portuguese, the scores in the Error Replication task tended to fall in the higher end of the scale, with most participants (19 – 79.2%) having scored above the 50<sup>th</sup> percentile. Nevertheless, only 9 of them (37.5%) were above the 75<sup>th</sup> percentile and no one had perfect scores. Thus, this measure also seems to have been adequate in assessing the participants' level of SA in Portuguese (see Appendix K3 for the histogram and frequency table).

To recapitulate then, there were 3 tasks of MA that, apparently, were not effective as instruments for assessing the variable of interest – Morphological Decision in Portuguese and Suffix Choice in Portuguese and in English and, therefore, were abandoned in the present investigation. This decision, unfortunately, affected the questions that could be answered by this investigation since it was no longer possible to assess the relationship of L1 metalinguistic awareness and L1 literacy, L2 proficiency, or achievement. Without a measure of L1 MA it was also not possible to verify whether this ability transferred from

the L1 to the L2. Nevertheless, there is not a point in carrying out statistical analyses with results from tests that, more likely, measured something else than the latent variable they were meant to be measuring.

Another decision taken was to have one single composite score that represented each of the three facets of metalinguistic awareness, in each of the languages (with the exception of MA<sup>5</sup>). Accordingly, besides the original variables there were the composites: English PA, English SA, Portuguese PA, and Portuguese SA.

Table 7 depicts the descriptive statistics for these composite variables (the participants' raw scores in these variables, the histograms, and the frequency tables for these variables can be found in Appendix L3).

Table 7

*Descriptive statistics – L2 and L1 metalinguistic awareness (composite variables)*

	N							
	V	Miss	M	Med	SD	Min	Max	MaxP
EngPA	24	0	.3727	.3875	.1611	.05	.66	1
EngSA	24	0	.5250	.5125	.2178	.20	.95	1
PortPA	24	0	.6900	.7147	.1620	.34	.96	1
PortSA	24	0	.6900	.7000	.1270	.40	.88	1

*Note.* N= number of participants; V = valid, Miss = missing, M= mean; Med= median; SD= standard deviation; Min = minimum score achieved; Max= maximum score achieved; MaxP = maximum possible score; EngPA = PA, in English; EngSA = SA, in English; PortPA = PA, in Portuguese; PortSA = SA, in Portuguese.

We can notice that the results of the group when the composite variables are taken into consideration continue along the same lines as when the original variables were analyzed. Once again, the means in Portuguese are higher than those in English. In the English tests, the mean for the SA variable is much higher than that for the PA one and, in Portuguese, these means are the same. For none of the variables the means are too high, though for the English PA variable the mean is quite

<sup>5</sup> In Portuguese, both tasks of MA were eliminated and, in English, only one task was left, and thus, there was no need for a composite score.

low due to the low scores in the Phonological Transposition task. However, as I explained above, because this task captured a different ability than that of segmentation, I decided to keep it even when it showed to be quite demanding in the L2. The range for all variables also is quite high, indicating that, indeed, these scores represent individuals with different levels of the abilities being assessed.

Thus, in the tests run to answer the research questions posed by the present study, both the original and the composite variables were taken into consideration. Despite the fact that the composite variables seem to represent well the behavior of the group in the different tests taken into consideration, it was found that, at times, using the original variables allowed a more detailed analysis of the relationship between the different variables under scrutiny. In the next section I present the results for the correlations run between the L1 metalinguistic awareness tasks and L1 literacy level, and that will allow me to answer Research Question 1.

## **5.2 L1 literacy and L1 metalinguistic awareness**

To answer Research Question 1, Pearson correlations were run between the variable L1 literacy (scores from the PISA test) and the two composite variables for PA and SA<sup>6</sup> in the L1 – Portuguese. Since measures of literacy tend to correlate with measures of both PA and SA in the early years of the literacy development, the objective of this question was to verify whether this relationship still held when the more basic processes involved in reading/writing are, very much likely, very automatized. As mentioned in the Review of the Literature, Tarone and Bigelow imagine that, at least for adults with a low literacy level, this is true.

Table 8 presents the correlations between L1 literacy and L1 metalinguistic awareness.

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<sup>6</sup> As explained in the previous section, none of the measures of MA done in Portuguese showed to be effective in capturing the individual differences in this variable amongst the participants.

Table 8

*Person correlations – L1 literacy and L1 metalinguistic awareness (composite variables)*

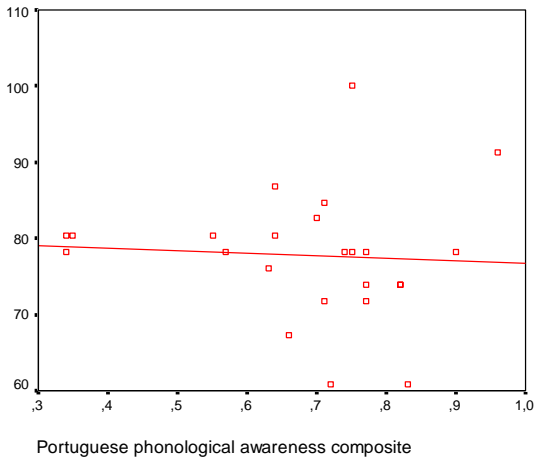
	PortPA	PortSA
L1 literacy <i>r</i>	-.067	.257
Sig. (2-tailed)	.754	.225
N	24	24

*Note.* *r* = Pearson correlation; PortPA = PA, in Portuguese; PortSA = SA, in Portuguese; N= number of participants

As can be seen in Table 8 and confirmed in the two graphs below (3 and 4), there were no significant correlations between L1 literacy and either L1 PA ( $p = .754$ ) or L1 SA ( $p = .225$ )

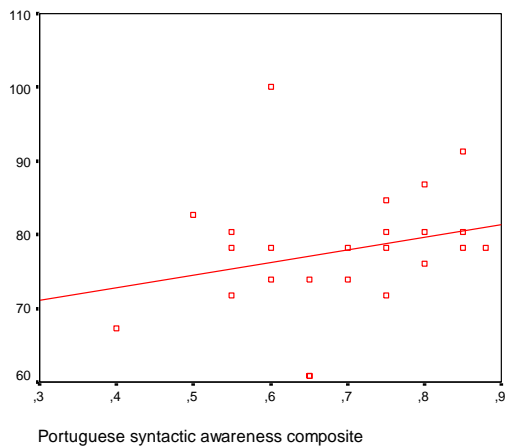
### Graph 3

*Scatterplot – Correlations between L1 literacy and L1 PA*



Graph 4

*Scatterplot – Correlations between L1 literacy and L1 SA*



Since the correlations with the composite variables were not significant, a decision was made to run correlations between L1 literacy and each of the tasks used to assess L1 metalinguistic awareness in order to verify whether there was anything in this relationship that might have been left out when we built composite variables out of the two different scores the participants had for PA and SA. Table 9 brings this information.

Table 9

*Pearson correlations – L1 literacy and L1 metalinguistic awareness (original variables)*

		PortPA		PortSA	
		PS	PT	EC	ER
L1					
literacy	<i>r</i>	-.027	-.132	-.065	.433*
	Sig. (2-tailed)	.899	.539	.763	.035
	N	24	24	24	24

*Note.* PortPA = PA, in Portuguese; PortSA = SA, in Portuguese; PS= Phonological Segmentation; PT = Phonological Transposition; EC = Error Correction; ER = Error Replication; N= number of participants

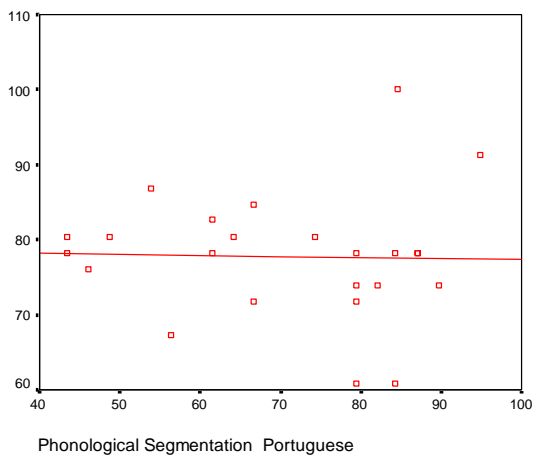
\*  $p < .05$ , two-tailed

As can be seen in Table 9, when the original variables were correlated with the participants' performance in the PISA test, one significant, moderate, and positive correlation was found between L1 literacy level and performance on the Error Replication task in Portuguese. In the four graphs below (5, 6, 7, and 8), the correlations in Table 9 can be visualized.



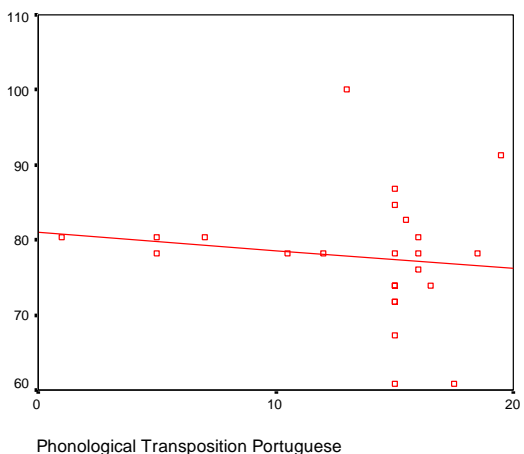
Graph 5

*Scatterplot – Correlations between LI literacy and PortPA (Phonological Segmentation)*



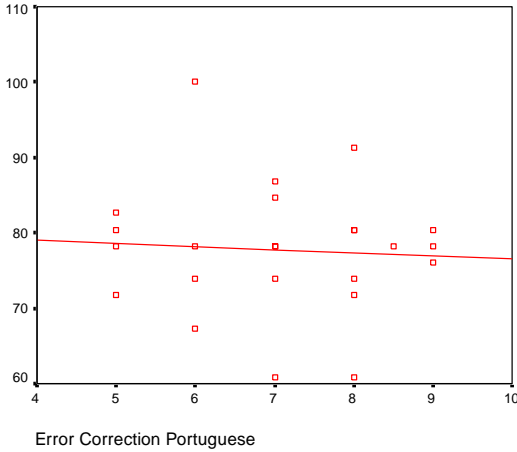
Graph 6

*Scatterplot – Correlations between LI literacy and PortPA (Phonological Transposition)*



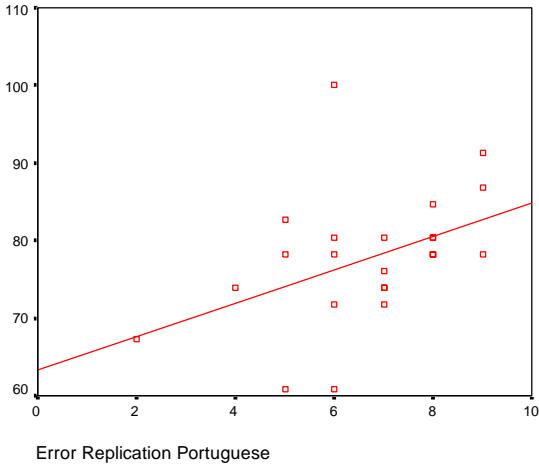
Graph 7

*Scatterplot – Correlations between LI literacy and PortSA (Error Correction)*



Graph 8

*Scatterplot – Correlations between LI literacy and PortSA (Error Replication)*



Looking at the first three graphs it is clear that the participants' performances on the L1 literacy test and their performances in both of the PA tasks and in the Error Correction task were not related. When it comes to the last graph (Graph 8), the one for the Error Replication task, the picture is slightly different. Though we do not see a perfect oblique line running from the bottom left corner to the top right corner of the graph, the best fit line does resemble that kind of line. That is, it seems that there was, indeed, a relationship between the participants' performances in these two tasks. In other words, there is a trend indicating that those participants who had the higher scores in the PISA test tended to be the same who got the best scores in the Error Replication task – a measure of L1 SA. This relationship, however, is not for all participants. Notice, for example, the participants who scored 6.0 in the Error Replication task. While the trend was for them to have scores between 7.0 and 8.0 in the PISA test, there was one of these participants who got 10 in the PISA, and one who got 6.0 in the same test.

The possible explanations for this finding, and also for the lack of correlation between L1 PA and L1 literacy (a correlation that has been repeatedly found in the literature) will be addressed in the next chapter. In the next section, I present the results for Research Question 2, which looked for a possible transfer of L1 metalinguistic awareness skills to the L2.

### **5.3 L1 metalinguistic awareness and L2 metalinguistic awareness**

To answer Research Question 2, once again Pearson correlations were run. This time, the objective was to verify whether there was an association between the L1 and the L2 metalinguistic awareness scores. As in the previous question, unfortunately, due to the limitations in the tasks used to assess MA in Portuguese, the correlations here will only take into consideration PA and SA (in both languages, of course).

The procedure adopted was the same as the one described for Research Question 1. The first correlations run used the composite variables. These correlations are depicted in Table 10.

Table 10  
*Person correlations – L2 and L1 metalinguistic awareness (composite variables)*

		PortPA	Port SA
EngPA	<i>r</i>	.810**	
	Sig. (2-tailed)	.000	
	N	24	
EngSA	<i>r</i>		.695**
	Sig. (2-tailed)		.000
	N		24

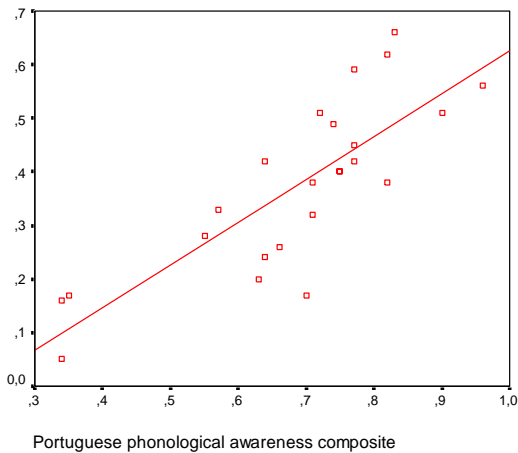
*Note.* PortPA = PA, in Portuguese; PortSA = SA, in Portuguese; EngPA = PA, in English; EngSA = SA, in English;

*r* = Pearson correlation; N= number of participants

\*\*  $p < .01$ , two-tailed

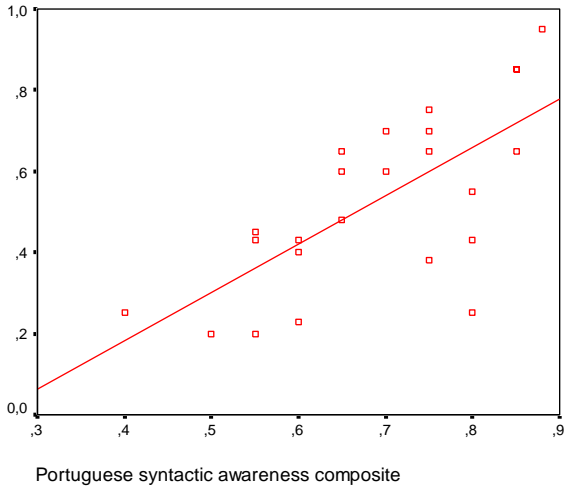
Differently from what was observed when the composite variables for PA and SA in Portuguese were entered in a correlation with the participants' scores in the PISA test (a measure of their L1 literacy level), this time they were found to be significantly, positively, and strongly correlated to the composite variables that represented the participants abilities in PA and SA in English. The two graphs below (Graphs 9 and 10) allow us to see how the performances of the participants of the present study were similar when they were performing tasks measuring metalinguistic awareness in the two languages (Portuguese and English).

## Graph 9

*Scatterplot – Correlations between PortPA and EngPA*

We can compare the way the dots are scattered in this graph to the way they were scattered on Graph 8, which also depicted a significant correlation between the variables (though much weaker). Here, the dots are much closer together and the pattern of behavior seems to be valid for almost all test-takers. That is, those participants who did well in the PA tasks in English also did well in these same tasks in Portuguese. In the same way, most of the ones who had lower scores in these tasks in English tended to have the lowest scores in Portuguese, indicating that these abilities are related.

Graph 10  
*Scatterplot – Correlations between PortSA and EngSA*



Graph 10 is more similar to Graph 8. Here we can see that some dots fall very close to the best fit line, but there are many others that fall far from it. That is, there are, once again, those participants who tended to have similar performances in the SA tasks in English and in Portuguese. We can see that there were participants with low scores in both languages and others with high scores in both languages. However, there are some participants with low scores in the English tasks (between .20 – 20% – and .40 – 40% – or a little above it) who, nevertheless, had high scores (around .80 – 80%) in the same tasks when they were performed in their L1. The discussion of these results will be presented in the next chapter. Before going on to the next research questions, however, I would like to present the correlations for the original variables, since they can lend insights as regards the performance of the participants in the two different languages. Table 11 brings these results.

Table 11

*Person correlations – L2 and L1 metalinguistic awareness (original variables)*

			PortPA		PortSA	
			PS	PT	EC	ER
EngPA	PS	<i>r</i>	.634(**)			
		Sig.	.001			
		N	24			
	PT	<i>r</i>		.492(*)		
		Sig.		.015		
		N		24		
EngSA	EC	<i>r</i>			.529(**)	
		Sig.			.008	
		N			24	
	ER	<i>r</i>				.656(**)
		Sig.				.000
		N				24

*Note.* PortPA = PA, in Portuguese; PortSA = SA, in Portuguese; *r* = Pearson correlation; EngPA = PA, in English; EngSA = SA, in English; PS= Phonological Segmentation; PT = Phonological Transposition; EC = Error Correction; ER = Error Replication; N= number of participants

\*  $p < .05$ , two-tailed

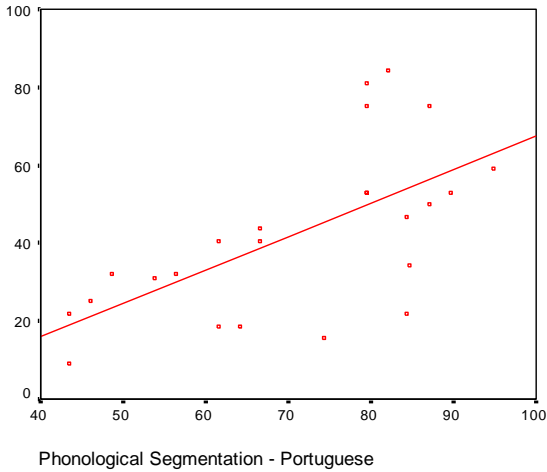
\*\*  $p < .01$ , two-tailed

One interesting thing to notice here is that, although this time the performances being compared were in the exact same task (i.e., the performance in the Phonological Segmentation task in Portuguese is being compared to the performance in this same task in English), the correlation coefficients are actually lower than when we correlated the composite variables. Nevertheless, in all cases, once again, the correlations were significant and positive, though this time some of them showed to be a little weaker (e.g.,  $r = .492$  for Phonological

Transposition and  $r = .529$  for Error Correction). The graphs below (11, 12, 13 and 14) also show these correlations.

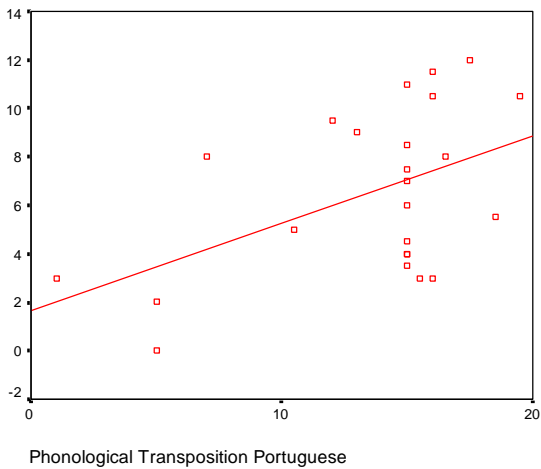
Graph 11

*Scatterplot – Correlations between PortPA and EngPA (Phonological Segmentation)*



Graph 12

*Scatterplot – Correlations between PortPA and EngPA (Phonological Transposition)*

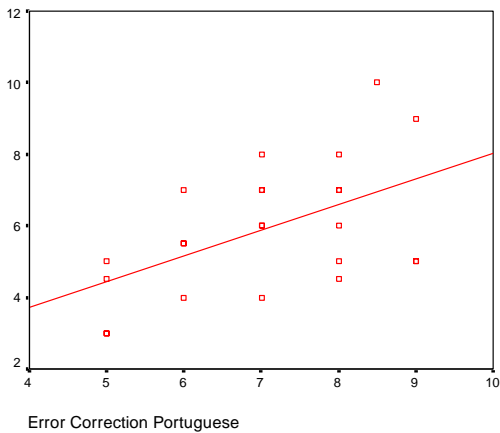




Looking at the graphs for the two tasks separately, we can notice that actually in both tests, there were, again, some participants with a low score in English and not-so-low score in Portuguese, as it had been previously noticed for the composite variables for SA. The same pattern can once again be seen below in the graphs (13 and 14) for the separate SA tasks. What is interesting to notice is that the reverse pattern is not observed. That is, even if there is the odd participant who gets higher scores in the L2 metalinguistic tasks than s/he does in the L1 ones, there are no participants who perform well in English but poorly in Portuguese. The discussion of these results will be presented in the next chapter.

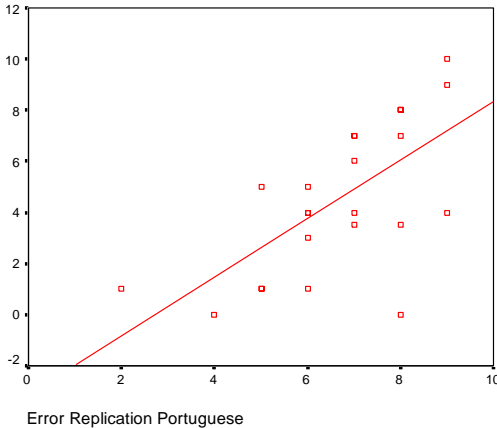
### Graph 13

*Scatterplot – Correlations between PortSA and EngSA (Error Correction)*



Graph 14

*Scatterplot – Correlations between PortSA and EngSA (Error Replication)*



In the next section, I turn to the results for Research Question 3.

#### **5.4 L1 literacy, L1 metalinguistic awareness, L2 metalinguistic awareness, and gains in L2 proficiency**

In order to answer this research question, stepwise regressions were run. Though this kind of regression is not always indicated, since they take the decisions away from the hands of the researcher (they are based upon mathematical criteria only), they are the best kind in the case of exploratory model building as it was the case in hand (Wright, 1997 in Field, 2005).

At first, the idea was to take the scores of the whole group in consideration, as in the previous questions, and to verify whether the composite variables (PortPA, PortSA, EngPA, and EngSA) and/or the PISA scores were effective in predicting the participants' gains in L2 proficiency throughout the semester. A stepwise regression was employed using the four composite variables mentioned above and the scores for the PISA test as independent variables and the variable Gains as the dependent one. However, the model derived from this regression was not statistically significant ( $p = .956$ ) (for the tables depicting the statistical results for this model, go to Appendix M3). Indeed, in the table below (Table 12), we can notice that there were no linear relationships between the dependent variable (Gains) and each of the independent ones (see the scatterplots on Appendix N3).

Table 12

*Person correlations – Gains, L1 literacy, and L2 and L1 metalinguistic awareness (composite variables)*

		L1 literacy	EngPA	EngSA	PortPA	PortSA
Gains	<i>r</i>	.009	-.175	.043	-.126	.131
	Sig.	.971	.473	.860	.608	.594
	N	19	19	19	19	19

*Note.* Gains = difference in the participants' scores from the pre- to the post-test (L2 proficiency); *r* = Pearson correlation; EngPA = PA, in English; EngSA = SA, in English; PortPA = PA, in Portuguese; PortSA = SA, in Portuguese; N= number of participants

Because the variables used for the metalinguistic awareness tasks were composites of two slightly different facets of each of these abilities, and also because MA in English (not a composite variable since only Morphological Decision showed to be a good measurement of this skill) was not entered in this equation, another model was run in which the independent variable continued to be Gains and the dependent variables were the original metalinguistic awareness variables (Error Replication, Error Correction, Phonological Segmentation and Phonological Transposition in both languages and Morphological Decision in English) and L1 literacy (represented by the participants' scores in the PISA test). Yet, once again, the model was not significant ( $p = .995$ ). That is, none of the variables entered managed to explain any variance in the gains of the participants as a whole group (for these statistical results go to Appendix O3).

Finally, yet another alternative possibility was explored – separating the groups. However, because the group of participants in the Extracurricular group was extremely reduced (6 only, at this point), the regressions could only be run for the Letras group. Nevertheless, the idea was to explore all alternatives possible and, thus, another stepwise regression was run, using the data from the Letras informants only and the composite variables as independent variables (in the same way as when the regressions were run for the whole group). This time, a model emerged as significant ( $p = .029$ ) (for the tables with the statistical analyses, go to Appendix P3). The variable Portuguese PA was shown to predict 36.4% of variance in the gains of the participants ( $R^2 = .364$ ). However, somewhat unexpectedly, this relationship was a negative one

( $\beta = -0.185$ ). That is, if one's score in Portuguese PA increased 1%, his/her points in Gains from the pre- to the post-test of L2 proficiency decreased in 0.185. Possible explanations for this pattern will be offered in the Discussion chapter.

So that I could have a better insight of this relationship and also to further explore it, another regression was run for the Letras group only, this time considering the original variables for PA and SA in both languages and for MA in English. Once again, the dependent variable was Gains in proficiency, and the independent ones were the original metalinguistic awareness tasks (Error Replication, Error Correction, Phonological Segmentation and Phonological Transposition in both languages and Morphological Decision in English) and L1 literacy. As one could expect, taking the previous result into consideration, indeed one variable showed to be effective as a predictor of the participants' gains in L2 proficiency throughout the semester (see Appendix Q3 for the tables containing the statistical results for this model) and, not surprisingly, this was one of the Portuguese PA tasks – Phonological Transposition. From that, we can infer that the relationship found between the composite variable PortPA and Gains is mainly due to the participants' ability in manipulating phonemes in their L1. The participants' scores in the Phonological Transposition task, in Portuguese, were found to account for more than 40% ( $R^2 = .444$ ;  $p = .013$ ) of the variance in gains in proficiency. Once again, however, this relationship was a negative one ( $\beta = -.732$ ).

All in all, the results for Research Question 3, despite its exploratory nature, were somewhat unexpected. None of the independent variables suspected to potentially play a role in the development of an L2 showed to be a good predictor of gains in L2 proficiency for the whole group of informants. When only the Letras students were taken into consideration, only PA, and only in the L1, appeared as a predictor of L2 success throughout one semester (and its impact was a negative one).

In the last section of the present chapter, I will address Research Question 4, which investigated whether these same independent variables that were investigated as potentially impacting L2 proficiency growth have any relationship with one's success in one semester of an English course.

### **5.5 L1 literacy, L1 metalinguistic awareness, L2 metalinguistic awareness, and L2 achievement**

The procedures adopted for the statistical analyses of the data to answer Research Question 4 were the same as those for Research Question 3. The first attempt made was to run a stepwise regression for the whole group of participants, having Achievement as the dependent variable and the composite metalinguistic awareness variables (PortPA, Port SA, EngPA, and EngSA) and L1 literacy as the independent ones. This time, a significant model ( $p < .000$ ) emerged, in which SA, in English, was found to be effective in accounting for 58% of the variation ( $R^2 = .580$ ) in the participants' scores at the end of their first semester in an English course. And, this time, this relationship was positive ( $\beta = .049$ ), indicating that for every 1% of increase in the score of the SA test in English, there was an increase in 0.049 points in one's grade at the end of his/her English course (see Appendix R3 for the tables with the statistical results for this model).

Again, another regression was run, this time using the original metalinguistic awareness variables, in order to verify whether there was one specific task of SA that was better in predicting success in the L2, and also to check whether MA, at least in English, entered this equation. Hence, the dependent variable was once again Achievement, and the independent ones were Phonological Segmentation, Phonological Transposition, Error Correction, and Error Replication in both languages, Morphological Decision in English, and L1 literacy (represented by the participants' scores in the PISA test). The model that emerged was also significant ( $p < .000$ ) and the variable that appeared as the only predictor of end of term L2 achievement was Error Replication in English, a measure of SA. Participants' scores in this task were shown to be good in explaining almost 60% of variance ( $R^2 = .597$ ) in the participants' scores in the Achievement variable ( $\beta = .343$ ) (see Appendix S3 for the statistical description of this model). As with the results for Gains, it was actually one of the tasks that better predicted the participants' success in the course. This time, the results showed that those participants who, at the beginning of their English course, were good in correcting grammatical deviations in sentences in English and afterwards replicating this deviation in another sentence were the ones who had the highest scores at the end of the semester. The possible explanations for that will be discussed in the next chapter.

Putting all the results together before going on to the discussion of the findings in the light of the literature reviewed in Chapters 2 and 3, we have the following picture. First, as regards the relationship between literacy and metalinguistic awareness in literate adults, L1 literacy was

only found to be related to a measure of SA – Error Replication ( $r = .433$ ;  $p = .035$ ). Regarding the possibility of transfer of metalinguistic awareness, both PA and SA were positively and significantly related in the two languages ( $r_{PA} = .810$ ;  $p < .000$ ;  $r_{SA} = .695$ ,  $p < .000$ ). Third, none of the independent variables (L1 and L2 metalinguistic awareness and/or L1 literacy) were found to be effective in predicting the gains in L2 proficiency for the whole group. When the Letras group only was taken into consideration, L1 PA (more specifically, the scores in the L1 Phonological Transposition task) was found to predict 44% of the variance in the participants' gains. However, to my surprise, this relationship was a negative one. Finally, L2 SA (more specifically the scores in the L2 Error Replication task) was found to predict 59% of the variance in the scores the students (from the Extracurricular and the Letras group) got from their teachers at the end of the semester in their English course.

In the next chapter, these results will be readdressed and the implications of the present results will be considered.

## CHAPTER VI

### DISCUSSION

This chapter is organized so that each of the research questions pursued by the present investigation is answered in turn, along with a discussion on how the literature informs the findings. Therefore, in the first section of the chapter (6.1) I write about the results for Research Question 1, which looked for a link between the L1 literacy level of the participants of the present study and their level of L1 metalinguistic awareness. In Section 6.2 I discuss the possibility of transfer of metalinguistic awareness from one's L1 to his/her L2. Following that, Section 6.3 presents a discussion on the findings for Research Question 3, which sought a relationship between L1 literacy, metalinguistic awareness, and gains in L2 proficiency. In the final section (6.4) the link between L1 literacy, metalinguistic awareness and L2 achievement is addressed.

#### **6.1 L1 literacy and L1 metalinguistic awareness**

According to the results of the statistical analyses run on the data collected, the answer to Research Question 1, which was *Is there an association between the L1 literacy level of college students who are beginning learners of English as an L2 and their L1 metalinguistic awareness level?* is: *In part*. The results of the correlational analyses show that L1 literacy is correlated to L1 syntactic awareness (SA), but not to L1 phonological awareness (PA). The correlation between L1 literacy and L1 morphological awareness (MA) was not assessed due to the inadequacy of the instrument used to measure L1 MA.

At the beginning of my investigation, I was surprised by the amount of literature (both theoretical and empirical) that investigated the link between PA and literacy. As made clear in the Review of the Literature chapter, there is a striking contrast in the number of studies that investigate PA and those that discuss either MA or SA. As I argued, probably due to the amount of research already conducted, the reciprocal link between L1 PA and L1 literacy is already well-established. Nevertheless, this link was not found in the present investigation. On the other hand, the number of studies in which a connection between SA and literacy was found is much smaller. Still, this was the correlation found for my participants. Thus, in the next subsections, (6.1.1 and 6.1.2, for PA and SA, respectively) I discuss the possible reasons for these somewhat unexpected findings.

### 6.1.1 L1 literacy and L1 PA

The link between PA and one's level of literacy has been widely documented. However, though Francis (1999) goes so far as stating that "a correlation between measures of metalinguistic awareness and literacy would be entirely predictable" (p. 535), this is not what happened in the present study. Before going on to presenting the possible reasons behind this lack of correlation, I would like to remind my readers of the designs of the studies in which this link was found.

Firstly, the studies were mainly conducted with children who were, at the time of data collection, in their initial years of literacy acquisition. With these groups, PA was found to be positively correlated to one's current level of literacy and also to be a predictor of higher levels of literacy. However, although most of the PA tasks used were similar to mine (in that it involved phoneme analysis<sup>1</sup>), the tests used to assess literacy were, most of the times, restricted to reading and writing at the word level (e. g., Barrera & Maluf, 2003; Capovilla et al., 2004; Durand et al., 2005; Godoy, 2005; Guimarães, 2003; Jongean et al., 2007; Juel et al., 1986; Lazo et al., 1997; Mahony et al., 2000; Mann, 1986; McBride-Chang et al., 2005; Mota, Anibal, et al., 2008; Nunes et al. 1997; Pestun, 2005; Plaza & Cohen, 2003; Rego, 1995; Swanson et al., 2008; and Wagner et al., 1994), with a much smaller number of studies also assessing reading comprehension at the level of the sentence (Barrera & Maluf, 2003; Juel et al., 1986; and Plaza & Cohen, 2003). As Salles (2008) points out, reading involves at least<sup>2</sup> two basic processes: recognizing words and understanding what has been recognized. In the same way, writing also involves two main processes: spelling and composing texts. In most of the studies mentioned above, only the most basic processes of literacy were assessed (reading words and spelling).

There were some studies, however, that assessed reading comprehension at a higher level than that of the sentence. Juel et al. (1986) and Rego (1995) had their participants read brief stories and answer questions about them. However, in Juel et al.'s study the questions were multiple-choice and in Rego's they were usually literal<sup>3</sup>. In Carlisle et al.'s (1999) study their participants were asked to analyze

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<sup>1</sup> Capovilla et al. (2004); Capovilla et al. (2007), Carlisle et al. (1999), Durand et al. (2005), Godoy (2005), Guimarães (2003), Jongean et al. (2007), Juel et al. (1986), Mahony et al. (2000), Mann (1986), McBride-Chang et al. (2005), Pestun (2005), Plaza and Cohen (2003), Swanson et al. (2008), and Wagner et al. (1994).

<sup>2</sup> And this is for reading comprehension only at a more literal level.

<sup>3</sup> E.g., *What was the name of the boy? Who picked up the hat?*



characters, identify main ideas, and interpret events described in passages, for example. As regards writing, Juel et al. (1986) was the only study in which the participants had to write a story.

Thus, the assessment made was, in the majority of cases, very different from what I did. With children who were just starting to read/write, most of the times the tests simply required decoding/encoding, and when reading comprehension of texts<sup>4</sup> was taken into consideration, the questions were more related to retrieving information from the text<sup>5</sup>. Nevertheless, was literacy found to be positively correlated to the participants' level of PA in the studies that assessed reading comprehension? As presented in the Review of the Literature, in the case of Juel et al.'s (1986) study, their participants' level of PA at the beginning of the first grade was a good predictor of their reading comprehension and writing skills at the end of that year and, *to a lesser extent*, at the end of the second grade also. In Rego (1995) the only correlation found was between SA and literacy. Finally, Carlisle et al. (1999) found that L2 PA made a significant contribution (6%) to L2 reading.

To recap, from all the studies reviewed conducted with children and contributing with evidence for the link between PA and literacy (measured through reading comprehension), there were only two that did find that these skills were correlated. In addition to that, it is good to keep in mind that in Juel et al.'s (1986) study, the contribution made by PA to reading comprehension decreased from the first to the second grade (a possible indication that, as reading becomes more automatized, PA becomes less important). Moreover, in the case of Carlisle et al. (1999), the contribution, though significant, was fairly limited, and their oldest participants were only in the third grade. It is also important to highlight that the relationship found was between L2 PA and L2 reading comprehension. It might be that, in an L2, readers will rely more on PA for decoding since there probably will be many more unfamiliar words in the L2 than there are in the texts those learners read in their L1.

In the studies which were conducted with adults, phoneme analysis was also often used (Calfee et al., 1973; Caravolas et al., 2005;

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<sup>4</sup> It is difficult to use the word text, since a single word can be a text, of course (Bentes, 2008). However, here I am using the word text in opposition to the text of a single word or sentence, for example. By text I mean a string of sentences.

<sup>5</sup> As mentioned in the Method chapter (Subsection 4.3.1, p. 87), the processes involved in the PISA are: retrieving information, broad understanding, developing an interpretation, reflecting on content, and reflecting on form.

Lehtonen & Treiman, 2007; Loureiro et al., 2003; MacDonald & Cornwall, 1995; Morais et al., 1986; and Read et al., 1986). And, once again, because in most of the studies at least part of the sample of older learners was made of individuals who were being or had just been taught to read and write, the reading tests tended to be restricted to the word reading/writing level (Dellatolas et al., 2003; Kosmidis et al., 2004; Loureiro et al., 2003; Morais et al., 1986; Mota & Castro, 2007), with only a couple of studies that, besides testing decoding and spelling, also tested reading comprehension (MacDonald & Cornwall, 1995; Caravolas et al., 2005). In MacDonald and Cornwall's (1995) study the cloze test used assessed reading comprehension only at the level of the sentence. As a consequence, the only study reviewed in which reading comprehension at the level of the text was assessed was Caravolas et al. (2005). Their participants read short texts (from 7 up to 45 words) of increasing difficulty (according to vocabulary, text length, and general world knowledge) and had to fill in the 2 words missing from each of them. In this study it was found that the PA level of the participants (from the first to the seventh grade) was one of the best predictors of reading comprehension. Nevertheless, their older participants were only in the seventh grade and they were given 5 options of words to fill each gap in the texts. Thus, what has been well documented, so far, is the link between one's level of PA and his/her ability in more mechanic kinds of reading/writing. If we take the demands made by the PISA test (see footnote 4 in this chapter), it can be noticed that the test used to assess literacy. In the present study was, in fact, more demanding than those used in the previous studies.

The idea that PA will be important only for reading and writing in the more elementary levels in school is not new. Storch and Whitehurst (2002 in Swanson et al., 2008), for example, studied children from kindergarten through fourth grade (native speakers of English) and observed that print knowledge and PA were very important only in the elementary years. Later on, reading accuracy and reading comprehension appeared as different factors, influenced by different skills. Adams (1994) comments on a report published by Chall (1989 in Adams, 1994) in which she reviewed studies where a correlation between letter or phonic knowledge and reading achievement was sought. What she found was that for prereaders and young readers, familiarity with letters and sensitivity to the phonetic structure of a language were strong predictors of reading achievement. After third grade, despite low levels of phonic knowledge continuing to be a good

predictor of low levels of reading, more phonic knowledge did not necessarily mean superior levels in reading (for these learners, IQ was more important). In MacDonald and Cornwall's (1995) longitudinal study they found that the PA score of the participants from when they were kindergarteners was a good predictor of reading (word decoding) and spelling (about 25%) 11 years later. However, it was not a good predictor of reading comprehension. For them, this is probably because PA will only be important in the beginning years of literacy development.

More evidence for a diminished role for PA in later reading comes from Capovilla et al. (2004) and Capovilla et al. (2007), for example, in which an increase in PA from the third to the fourth grade was not found (though there was an increase in the literacy level). Likewise, Godoy (2005) found that the correlation between PA and reading (words) and spelling decreased by the end of first grade<sup>6</sup>. Demont (1997 in Capovilla et al., 2007) also found that the correlation between PA and reading measures diminished with time. Calfee et al. (1973), in turn, noticed that there was greater variance in their participants' (the good and the poor ones) scores in the Lindamood test (a test of PA) until the fourth grade, an indication that, with time (and instruction), individual differences in PA are diminished. Finally, Mota and Castro (2007) and Kosmidis et al. (2004) showed that their more literate participants, though performing always better than the illiterate ones, did not always perform in a significantly different manner from the less literate participants in tests of PA. Still, in Loureiro et al. (2003), the participants' performance on an initial phoneme deletion task (a task of PA) was correlated with years of schooling, and, for the authors, this is an indication that this knowledge becomes more refined as one becomes more proficient in reading.

According to Castles and Coltheart (2004), the reason why correlations between older readers' level of literacy and PA are not always found is that PA is not used in online reading. For these authors, the impact PA has on the reading ability of proficient readers is distal, not proximal. That is, differences in the level of PA at the time of literacy acquisition (*alfabetização*) might have had an impact on the process of learning how to read and write and, later, some people became better readers/writers because they were better at mastering the

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<sup>6</sup> From a correlation of  $r = .805$  to  $r = .393$  for reading and from  $r = .726$  to  $r = .460$  for writing.

decoding/encoding processes in the past, and they were better at doing that because they had more PA.

Adams (1994) and Cunningham and Stanovich (1997) also predict that PA levels at the time of literacy acquisition might have an impact on later reading and writing abilities. For them, the problems fully literate readers have in decoding are the result of their poor decoding skills at the time of literacy acquisition. These authors advance that children who have difficulties in breaking the code from spelling to sound will be less motivated to read than their more successful peers. Adams (1994) cites a result of Juel's (1988 in Adams, 1994) investigation, where 40% of the poor fourth grader readers said that they would rather clean up their rooms than read. Therefore, they will be exposed to less text and, to make matters worse, many times the texts they do read will be perceived as too difficult to make sense of. Unrewarding early reading experiences such as this one will lead them to avoid involvement with text unless it is unavoidable and, as a consequence, it will take them much longer than the usual to develop automaticity in basic skills (such as word recognition). In addition to that, since reading for meaning is hindered, the experience with texts will continue being unrewarding and, thus, will continue being avoided or undertaken with little cognitive involvement. On the other hand, the ones who are more exposed to print will not only automatize the basic skills, but also acquire knowledge, such as vocabulary and familiarity with complex syntax, which will lack for the unskilled reader (Adams, 1994; Cunningham & Stanovich, 1996; Gough & Juel, 1991 in Durgunoğlu et al., 1993; Troia, 2004). For Adams (1994), if we want good readers, we should find a way to induce them to read constantly.

As regards the importance of word recognition for reading comprehension, in spite of the fact that word recognition is a basic and lower process in reading comprehension, fluent word reading is critical for comprehension (e.g., Adams, 1994<sup>7</sup>; Ehri, 1992 in Navas, 2008; Ehri, 1987 in Roth, 2004; Perfetti, 1996 in Roth, 2004; Roth, 2004). For reading comprehension to occur, one must hold the phonological form of the words read in his/her working memory so as to integrate this information and create meaning. The better one's decoding, the less taxing it is for working memory, which will then free up resources for discovering the meaning of the text (Gough & Juel, 1991 in Durgunoğlu

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<sup>7</sup> She goes so far as advocate that "unless the processes involved in individual word recognition operate properly, nothing else in the system can either" (Adams, 1994, p. 3).

et al., 1993; Koda, 2007; Navas, 2008), which is the ultimate purpose of reading (Adams, 1994). According to Francis (2006), readers who fail to establish coherence in a text in great part do so because their access to previous information read is lost or degraded. That is, decoding is so taxing for them that they are not able to decode text and keep previous information active in working memory for information integration to occur.

Horiba (1996) proposes that the hierarchical processes involved in reading must be orchestrated so that failure in one process will not disrupt the whole system. That is, after letter and word recognition have taken place and meaning of words has been assessed, it is time for syntax and semantics to play their role since these relationships between the words are what will enable one to make sense of a sentence<sup>8</sup>.

Taking all that into consideration, it could be that, for novice readers, PA will be very important, since they retrieve a word's meaning through decoding (i.e., converting letters and letters strings into the correspondent phonemes, holding them in mind, and reassembling the sounds to pronounce the word) (Ehri & Snowling, 2006), which is highly dependent on PA (Bialystok & Herman, 1999; Genesee, Lindholm-Leary, et al., 2006), and especially for more transparent languages (Troia, 2004), such as Portuguese (Godoy, 2005). It could be, then, that the reason why in the present study a correlation between L1 PA and L1 literacy level of college students was not found may be that their basic reading and writing processes are highly automatized, with word meaning being retrieved in a more direct manner, through the lexical route. In other words, differences in PA among my participants would not be important because they no longer use the phonological route for encoding/decoding.

However, in Adams' (1994) view, skillful word reading depends on the orthography, pronunciation, and meaning of words, with all three of them being used simultaneously and interactively. That is, PA will always be used for encoding/decoding. What she proposes is that by having all three systems active and working in parallel one will be more efficient in decoding since, if one of these ways of perceiving the input is somehow hindered, the other two can contribute to confirm or not initial suspicions derived from the less than optimal input. For Adams, the multiple inputs serve to give the system a very high degree of

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<sup>8</sup> However, see Duke, Pressley, and Hilden (2006) for a critique of the bottom-up views of reading, which seem to put word reading as the bottleneck for reading comprehension.

reliability. Additionally, if all three processes happen in parallel, word recognition will be even faster, something that has already been shown to be crucial for text comprehension. Of course, when most of the words in a text are very frequent (i.e., they have been read many times before), phonological translation might be, indeed, superfluous, but texts often contain a large amount of low-frequency words. According to the findings of a survey conducted by Carroll, Davies, and Richman (1971 in Adams, 1994), whereas many words in a text will be very frequent, the low-frequency words are the ones that bring most of the meaning to a text.

Taking that into consideration, although visual (or lexical or semantic<sup>9</sup>) decoding is much more common than the phonological one in skilled readers, since it is the fastest and the least intrusive way to read words in a text, allowing the reader to focus on constructing meaning and integrating it with meanings previously apprehended (Ehri & Snowling, 2006), bottom-up phonological processing will always be necessary to recognize unfamiliar words that, probably due to their very low frequency, were not overlearned and, thus, cannot be recognized just by sight (Adams, 1994; Bialystok & Herman, 1999; Capovilla et al., 2007; Cunha & Capellini, 2009; Dias, 2006; Genesee, Lindholm-Leary, et al., 2006; Gombert, 2003).

Thus, if PA was being used at the time my participants were reading the PISA texts, why did the differences in their level of PA not impact their reading ability? In the pilot study this link was found. Though there were limitations in the task used to assess L1 literacy (see subsections 3.4.3, p. 75 and 4.3.1, p. 87), the L1 literacy level of the participants was a predictor (58.1%) of the participants' performance on the L1 Phonological Transposition ( $F = 11.08$ ;  $p < .05$ ) task, which I took to be an indication that, indeed, the link between PA and literacy continues beyond the beginning years of reading.

One of the reasons for the lack of correlation between my participants' level of PA and their level of literacy could be that most of the words in the texts of the PISA test were very frequent and known to them, and, as a consequence, were read through the lexical route. What might have happened is that, although the test I used to assess literacy was more demanding than the tests used in other studies, the texts contained in it were built to be used with a very wide audience

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<sup>9</sup> Different terms are used by different authors to refer to the process of automatically activating the pronunciation and meaning of a word from memory just by looking at it (Ehri & Snowling, 2006).

(considering that they were developed to be administered in a variety of different countries). Thus, even though the texts might contain some complex syntax, the lexical items of the text were quite common, which might have prevented the test-takers from resorting to the phonological route during reading. If this is true, having a higher level of PA was not that helpful for the participants of the present study who took the PISA test, although it could make a difference in their reading of more technical texts, where they do not encounter so many well-known words.

It could also be that, for bilinguals, the development of another language in the system somehow disturbs the relationship between PA and literacy level. In Rosston et al. (2008), when their Spanish/English bilinguals' scores in the English tasks were entered as the outcome variable in regression analyses, L2 PA did not predict decoding, pseudoword reading, or reading comprehension (only English syntax contributed for English reading comprehension). As for their performance in Spanish, though PA contributed to word identification, once again only syntax made a unique contribution for reading comprehension. A similar pattern was found in the present study since L1 literacy level was not related to PA, but it was related to SA.

Another possibility, and one that finds support in a number of studies, is that my participants did use the phonological route when reading, but not in a letter-by-letter fashion. Scarborough et al. (1998) warns that "there is an assumption that, after beginning readers acquire sensitivity to the segmental structure of spoken words, this skill is retained and continues to be used and refined" (p. 117). However, the low accuracy of my participants in the PA tasks (even in the L1), which has also been found by Scholes (1993 in Scarborough et al., 1998), Moats (1994 in Scarborough et al., 1998), Calfee et al. (1973<sup>10</sup>), and Scarborough et al. (1998) might be an indication that this level of awareness (the level of the phoneme) is something they no longer use for regular online reading.

In a longitudinal study conducted by Scarborough (1989, 1990, 1991a, 1991b, 1995b all in Scarborough et al., 1998) he concluded that his teen participants had difficulties in PA tasks because this kind of language analysis was probably unusual to them and asked for skills that participants were not used to exercising. In the Colorado Twin Study

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<sup>10</sup> Calfee et al. (1973) found a decline in the phonemic awareness scores of their above-average readers after grade 7, and continuing up to grade 12. Actually, the scores of the tenth to the twelfth grade learners were similar to those of the second to fourth graders.

(e.g., Olson et al, 1994 in Scarborough et al., 1998; Olson et al., 1989 in Scarborough et al., 1998), carried out with learners from the second through the twelfth grade, the authors also found that many adolescent non-disabled readers failed to get 100% of their answers correct.

In the study conducted by Scarborough et al. (1998), the participants were college students and, on average, segmented adequately less than 50% of the words. As mentioned in the Review of the Literature, the possible explanation that the authors offer for this lack of PA in adults is that performance on PA tasks is affected by the emergence or acquisition of other competing strategies and habits. In the beginning, readers may decode grapheme by grapheme, but with time they probably realize that decoding by chunks is more efficient, and these syllabic and subsyllabic units<sup>11</sup> may become more familiar, a position also taken by Lehtonen and Treiman (2007) . It could be, then, that this is the way the phonological route is being used by my participants at the time of reading and writing. That is, they are, at least in relation to frequent words, relying on PA for decoding and encoding, but the level of the phonological analysis employed in decoding and encoding is no longer the phoneme one.

As Liberman (1973 in Scarborough et al., 1998; Liberman et al., 1974 in Scarborough et al., 1998), remarked, this level of analysis in phonology (the level of the phoneme) seems unnatural. My participants also mentioned that. When asked about the metalinguistic tasks, both in the pilot study and in the data collection for the dissertation, my participants complained about the foreignness of the PA tasks. It is not the case that more reading experience did not refine their levels of metalinguistic awareness; however, it might be that the refinement of PA only happens at the beginning of the process. Perhaps, later on, further experience with print, schooling, and development, will impact higher levels of the reading and writing processes. And this seems to be, in fact, what happened in the case of my participants. On this note, I move on to the next subsection.

### **6.1.2 L1 literacy and L1 SA**

According to Adams (1994), the processes skilled readers use when recognizing isolated words are probably different from those they use when reading a meaningful and connected text. When engaged in reading texts, skilled readers will take advantage of their (probably) vast

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<sup>11</sup> According to Ehri (1995 in Lehtonen & Treiman, 2007), these chunks can correspond to morphemes, syllables, onsets, and rimes. E.g., they start to treat “thr-”, and “-ing” as units).



amount of knowledge about the written text, including syntax, the semantics of language, and the way a text flows. Therefore, one could expect that the more SA one has the better reader one will be. After all, reading goes beyond decoding (Ferreira & Dias, 2008). Duke et al. explain that the good reader is not simply a good decoder; the good reader knows and recognizes different genres and, as a result, knows what to look for in a text. This reader also makes the adequate amount of inferences (i.e., this person only puts effort in making those inferences that will be really crucial for text comprehension), using his/her world knowledge.

In my pilot study, the correlation between literacy and SA was not found. At that time, L1 literacy level was found to be a predictor of L1 PA only (it was not a predictor of the participants' L1 MA or L1 SA levels). However, in the present investigation, whereas a correlation between PA and literacy was not encountered, the relationship between the participants' level of SA and their level of L1 literacy was good and significant (correlation between participants' L1 literacy level and their scores in the L1 Error Replication task –  $r = .433$ ,  $p = .035$ ).

This result echoes previous findings. As mentioned in the Review of the Literature, SA is also expected to be involved in decoding/encoding, and, in fact, in previous studies the relationship between SA and literacy level was also found at the level of the word (Barrera & Maluf, 2003; Bowey, 1986; Cain, 2007; Capovilla et al., 2004; Jongean et al., 2007; Lazo et al., 1997; Plaza & Cohen, 2003; and Swanson et al., 2008) and of the sentence (Barrera & Maluf, 2003; Bowey, 1986; Plaza & Cohen, 2003; Rego, 1995; and Swanson et al., 2008). As regards text comprehension, as was the case in the present study, positive correlations between SA and literacy skills have been found by Cain (2007), Lazo et al. (1997), Rego (1995), and Swanson et al. (2008). The results of the present study also corroborate previous findings that better readers have more SA than poor ones (Guthrie, 1973 in Guimarães, 2003; Tunmer et al., 1987 in Guimarães, 2003; Guimarães, 2003; Mota & Castro, 2007; and Nation & Snowling, 2000).

If we believe one continues to increase his/her literacy level beyond the initial years – as proposed by Gombert (2003), Mokhtari and Thompson (2006), and Rogers (2008), finding a correlation between SA and literacy level for literate adults might mean that SA continues to increase after the initial years of literacy acquisition. Thus far, the evidence for SA growth was only up to the third grade (Capovilla et al.,

2004; Jongean et al., 2007<sup>12</sup>), with Bowey (1986) having found an increase only up to the second grade (although data was collected up to the fifth grade). As proposed by Mokhtari and Thompson (2006), SA is likely to continue developing through upper grades – despite not appearing in the studies mentioned above – and, in spite of the fact that I do not have measures of SA at different points of time, the results of the present study might be evidence of SA growth.

One alternative explanation for the present findings is that SA has a punctual increase at the beginning years of literacy acquisition, but its contribution for reading and writing increases at higher grades. There is at least one study that contributes with evidence for this proposal. Although the data was only collected up to the fourth grade – therefore, the study is still about the beginning years of literacy development – in Jongean et al. (2007) they found that in the third and fourth grades SA was more strongly related to word reading and spelling than at lower grades (first and second grades) (Reading lower grades and SA,  $r = .367$ ; Reading upper grades and SA,  $r = .697$ ; Spelling lower grades,  $r = .475$ ; Spelling upper grades,  $r = .744$ ).

Nonetheless, independently of the possibility of SA growth along with the development of literacy or its increased role in later reading and writing, there is still the question of why SA would be implicated in reading and writing. Cain (2007), Mokhtari and Thompson (2006), and Scott (2004) all agree that the correlation between SA and literacy found in a number of studies is still not well understood. Scott (2004) argues that this is because despite being easy to devise a study to assess the relationship between SA and literacy, understanding the nature of this relationship is difficult. An extra difficulty comes from the fact that any syntactic task will only assess a small sample of one's syntactic faculty. Nevertheless, in spite of the fact that it is still not clear how exactly this relationship takes place, a number of authors put forward their thoughts on how SA might contribute to reading and writing (and how reading and writing might change one's SA level).

First of all, SA might be correlated to literacy because of its impact on decoding. As explained in the previous subsection (6.1.1, p. 159), even skilled readers are likely to need to decode words phonologically at times, and, when there are orthographic irregularities<sup>13</sup>, input is degraded (i.e., the letters of the words cannot be

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<sup>12</sup> In both studies data was collected up to the fourth grade.

<sup>13</sup> For example, it would be SA which would help the decoding of homographs (E.g., “*sede*” and its two meanings and pronunciations in Portuguese) (Guimarães, 2008).

made out easily), or a person has difficulties in phonological decoding, syntactic contextual clues can be used to aid reading (Bryant et al., 2000; Capovilla et al., 2004; Correa, 2005; Durgunoğlu, 2002) and spelling (Rego & Buarque, 1987). However, perhaps one of the greatest contributions of SA for reading is through its impact on the construction of a mental model of the text; that is, in reading comprehension (Bowey, 1986; 2004; Byrne, 1981; Tunmer & Bowey, 1984 in Cain, 2007; Mokhtari & Thompson, 2006; Nation & Snowling, 1998b in Nation & Snowling, 2000; Scott, 2004).

According to Scott (2004), “sentences ‘do the work’ of text” (p. 340). Though the message of a text is communicated at the textual level (and not at the sentence one), sentences are the ones responsible for communicating the main propositions that will enable one to get the gist of a text. In addition, sentences vary along a continuum in the challenges they present to the reader. Scott mentions 3 factors that add to a sentence’s complexity: (1) certain features of the content words in a sentence and their relationships (e.g., reversible sentences – The cat was chased by the dog – are more difficult than irreversible ones – The apple was eaten by the boy), (2) number of syntactic operations required (usually related to sentence length), and (3) type of syntactic operations required (sentences that do not conform to canonical word order – e.g., SVO in Portuguese and English, sentences with a long distance dependency, when subject and verb are interrupted by intervening clauses or phrases – e.g., What did the boy on the team take to the game?, sentences with local ambiguities that must be reanalyzed to be resolved, garden-path sentences – e.g., After the fans applauded the players returned to the bullpen, and sentences in which reference must be resolved – e.g., Mary sees Jane is feeding herself [Scott, 2004]). Thus, being able to deal with more complex sentences could be one of the advantages of the reader with a higher level of SA.

When poor readers encounter complex sentences they tend to rely on semantics to aid comprehension (Byrne, 1981), but meaning cannot be made simply on the basis of the word meanings, since it will also depend on the way these elements are organized in a sentence and how they are related to function words, punctuation and inflectional morphemes (Bowey, 1986). Byrne (1981) reports on a hypothesis put forward by Mann, Liberman, and Shankweiler (1980 in Byrne, 1981) in which they argue that poor readers can only understand relative sentences such as *The apple that the boy is eating is red* because they rely on their world knowledge. They propose that based on evidence

from aphasics who, despite showing apparent adequate comprehension of this sentence, get stuck with a sentence such as *The cow that the monkey is scaring is yellow*, where the use of a semantic strategy is not helpful because both the cow or the monkey could be scaring one another. In other words, they might fake comprehension, but they are not able to understand text relying only on its linguistic properties.

Indeed, in Byrne's (1981) study, in a sentence such as *The snake is hard to bite*, the poor readers took the snake to be the agent of the sentence. Also, when they had to match a sentence to a drawing of its meaning, these readers had more difficulties in matching the improbable sentences (e.g., *The horse that the girl is kicking is brown*) than the reversible ones<sup>14</sup> (e.g., *The cow that the monkey is scaring is yellow*) to their drawings. This was an indication that they had difficulty to go against their knowledge of semantics and pragmatics and construct the meaning solely based on its linguistic clues. In other words, what they use to help comprehension are the strategies they used when they started learning how to read, including knowledge of what is common in the world. If this is what happened to my participants who had a lower level of SA, their reliance on semantics (in detriment of syntax) for text comprehension might have led them to misunderstand (parts of) the texts and this could explain (at least in part) their lower scores in the PISA test.

To be able to understand text, one needs to chunk the text into phrases or meaningful syntactic units through syntactic parsing<sup>15</sup>. One process of parsing is phrase construction, by means of the integration of lexical information (Koda, 2007; Kuhn & Stahl, 2003 in Mokhtari & Thompson, 2006; Dowhower, 1987 in Mokhtari & Thompson, 2006; Schreiber, 1980, 1987, 1991 in Mokhtari & Thompson, 2006) and the other is the assignment of syntactic roles to words (Koda, 2007; Mokhtari & Thompson, 2006). In sentences such as *A ACOL fez os arranjos necessários para que uma enfermeira venha administrar a vacina na empresa*<sup>16</sup> and *A população em idade produtiva é formada*

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<sup>14</sup> However, it is good to keep in mind the fact that Nation and Snowling (2000) found that reversible sentences are more difficult than normal sentences for both poor and good comprehenders, an indication that semantics, in the form of real world knowledge, will always influence reading comprehension.

<sup>15</sup> It is interesting to note that Koda (2007) predicts that differences in the level of SA will only affect reading in an L2, since, according to her, the ability to parse text syntactically does not vary much among L1 readers. In the L2 this will make a difference because one has to learn to parse in another language.

<sup>16</sup> Example taken from the PISA – text Gripe.

*pelas pessoas com idade entre 15 e 65 anos*<sup>17</sup> there are some words which can have different syntactic roles in Portuguese. Interpreting *para* as a verb (and not as a preposition), *vacina* as a verb (and not as a noun), and *formada* as a noun (and not as a verb) would certainly create problems in the construction of a mental model of the text. According to Scott (2004), one of the reading comprehension strategies of poor readers is attaching a verb to the closest previous noun, not taking into consideration if this is, indeed, the head noun of the sentence (which might actually be distant from the verb when we have a noun phrase).

In Cupples and Holmes' (1992) study, in which they compared good and average adult comprehenders, the ones who were better at reading comprehension were the ones who could better identify the class of word pairs. Although the assessment in Cupples and Holmes was of knowledge of word class rather than of SA, the results can be related to the present study since those participants who had a higher level of SA in my study probably also had more knowledge of word class and this might have helped them when reading the texts on the PISA test. Despite the fact that the SA test used was not a test of word class categorization, this kind of task has already been used to assess SA – it is part of the *Teste de Consciência Sintática* developed by Capovilla et al. (2004).

Finally, because of the role SA plays in decoding (in some cases) and in sentence comprehension, SA is also implicated in monitoring and correcting reading errors (Tunmer & Bowey, 1984 in Bowey, 2005; Durgunoğlu, 2002; Yuill & Oakhill, 1991 in Nation & Snowling, 2000). Durgunoğlu (2002) argues that when a word does not fit the representation of the text one is building, an alarm sounds. For example, if a reader misreads the adjective *ideal* as *ideia* in a sentence such as *O material ideal para isso é o couro*<sup>18</sup>, it is SA that will enable this reader to perceive that where a qualifier of a word was required, a noun appeared. As a consequence, the person will adjust his/her mental model of the text being read. Langer, Bartolome, Vasquez, and Lucas (1990 in Durgunoğlu, 2002) advanced a proposal in which they put monitoring comprehension, identifying and repairing comprehension problems, and clarifying the meaning of words as some of the “good meaning-making strategies” good readers use.

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<sup>17</sup> Example taken from the PISA – text Trabalho.

<sup>18</sup> Example from the PISA – text Tênis.

Taking all that into consideration, it is not surprising to find that the participants who had more SA did better in the literacy task. Still, according to Speece and Cooper (2006), despite correlational analysis being a good way to reveal the variables that may be implicated in the development of literacy, qualitative analyses can also be helpful in identifying contextual variables that contribute to one's literacy development. Hence, before going on to the next section, where the transfer of the metalinguistic abilities will be discussed, I take a look at the qualitative data gathered through the Literacy Practices questionnaire so as to verify whether there were any other factors that might have had a potential impact on the participants' performance on the literacy test.

### **6.1.3 Contributions from the qualitative data**

There are a number of authors who agree that one's ability to read will depend on how much this person has engaged in reading, with what kind of texts, and how this was done (Ferreira & Dias, 2008; Koda, 2007; Rogers, 2008; Thompson, Giedd, Woods, McDonald, Evans, & Toga, 2000 in Rossa & Pereira, 2008). For Koda (2007), one of the factors that help a reader make sense of a text is text-structure knowledge, since it will give clues about the relations between text elements, and to acquire this knowledge, one will need broad experience with different types (genres) of text. Thompson et al. argue that the cerebral basis that will enable reading comprehension will be established while a person is getting involved with the text, learning to read. Furthermore, Rogers (2008), Gombert (2003), and Tfouni (1995) see the process of becoming literate as never ending since every new text form that one encounters will demand new learning (and I agree with them).

For Bialystok and Herman (1999) and Miller (1990), another potential variable influencing one's reading ability might be the kind of experiences one has had before becoming literate, which might develop metalinguistic skills in the child and lead to advantages when becoming literate. Even before entering school, or at least before starting to learn how to read, the child already has contact with the written code. Parents will point out words, help children make predictions about what might happen next in a story, and encourage them to organize their own experiences in a narrative form. At a lower level, these experiences can help children understand how the phoneme-grapheme correspondence can help them to read unknown words. At a higher level, they may be

better able to identify how different types of text are used for different purposes and audiences (Miller, 1990).

Since I collected data many years after the first years of literacy acquisition of my participants, it was no longer possible to assess if, at the time they were learning to read and write, and throughout the elementary years, they engaged in much reading or not and kinds of texts they were exposed to. In the same way, it is not possible to know now whether the participants' parents (or any other literate companion) engaged them in experiences with print material before entering school. It would be possible, of course, to interview the participants' parents and ask them about those years, but this was beyond the scope of the present study and, even then, their answers might not be reliable after so many years have passed. Thus, so as to assess the possibility of these kinds of experiences having an impact on the literacy level of my participants, they answered a Literacy Practices questionnaire where they were asked about their reading habits, their parents' level of literacy, and also their attitudes towards reading and writing. As mentioned in Subsection 6.1.1 (p. 159), there are a number of authors that predict that difficulties in reading comprehension will lead to a negative attitude towards reading, something that will probably make a person read even less.

The first comparison is between those participants who had the smallest variety of reading materials at home and those who had the greatest variety. In the Letras group, participants 4, 6, and 14 had, respectively, 12, 14, and 12 items<sup>19</sup> of the list presented (see Appendix D) missing in their homes. Participants 9, 12, and 15, on the other hand, reported to have only 2, 2, and zero items, respectively, from the list, missing from their homes. The scores of participants 4, 6, and 14 – the ones who reported to have a smaller variety of genres at home – in the PISA were 60.8, 76, and 78.2 and the scores of participants 9, 12, and 15 – the ones who declared to have the widest variety of genres at home – were 71.7, 84.7, and 78.2.

In the Extracurricular group, participant 23 reported to have 10 items from the list missing in her house, whilst participants 18 and 24 reported to have only 4 items of the list missing (see Appendix G). Participant 23 – the one who reported to have the smallest variety of genres at home – score in the literacy test was 82.6 and participants 18 and 24 – the ones who checked the least number of genres in the questionnaire – scores were 80.4 and 86.9, respectively. Though there

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<sup>19</sup> E.g., dictionaries, magazines, medicine labels, textbooks, etc.

was a small difference favoring the Letras students, who reported to have a greater variety of materials at home, the differences were timid and did not appear for the Extracurricular group. That is, as regards access to a variety of genres, there were no noticeable differences between those participants who had a higher level of L1 literacy and those with a lower level.

The next comparison was more directed to their reading habits. I compared the scores of those participants who checked fewer items in the *always* (as in *I always read*) column in question 2 of the Literacy Practices questionnaire to the ones of those participants who checked more items in the same column. This time, there was 1 Letras student who apparently engaged to a lesser extent in a variety of reading experiences. Participant 4 did not check *always* for any of the items present in the questionnaire list, but checked *never* (as in *I never read*) in 7 of the 20 items presented. His score in the literacy test was 60.8 (below the group's average – 75.9). Participants 12 and 16, on the other hand, apparently are eager readers. Participant 12 declared to always read 12 of the items presented and to never read only two of the items on the list. Participant 16 reported to always read 10 of the items presented and to never read 6 of them. Their scores in the literacy test were 84.7 and 80.4, respectively (both above the group's average).

In the Extracurricular group there were 2 participants who did not seem to engage in reading so much. Participant 18 did not check *always* in any of the items, but checked *never* 15 times. Participant 21 declared to always read technical books (1 item) but to never read 8 of the items presented. Their scores were 80.4 and 71.7, respectively (both below the group's average – 82.2). Participant 24 affirmed to always read 11 of the items presented and to never read only 2 of them and her score was 86.9 (above the mean).

From these simple comparisons, it does seem that those participants who had a tendency to engage more often with reading and the reading of different genres did better in the literacy test, though the differences in scores were never striking. Considering that there was a correlation between the participants' scores in the literacy test and their scores in the SA test, it could be that the reason why some participants have a higher level of SA than others is the amount of reading and writing they engage in and the number of different kinds of genres they are familiar with.

I now go on to an analysis of the participants attitudes towards reading and writing. There were 5 Letras students (7, 10, 11, 15, and 16)



who showed good attitude towards reading and writing. All of them reported to enjoy reading and writing and to find both crucial for one's personal development. They also reported to judge their reading and writing skills good. Their scores in the PISA were: 73.9, 78.2, 78.2, 80.4, and 91.3. On the other hand, there were 2 students that did not show such a good attitude in their answers to the questionnaire. Participant 4 (who turned out to be the one to engage less in reading in the Letras group – see above) declared to not like reading or writing and to think that, although these abilities help one's personal development, they are not crucial for it. What is interesting is that, in spite of the fact that he reported to have good reading and writing skills, his score in the PISA was 60.8, one of the two lowest<sup>20</sup> ones in the Letras group. Participant 6 reported to be indifferent to reading and writing (i.e., she does not like it, but also does not dislike it), though she reported to find both crucial for one's personal development. In her perception, she has difficulties in reading and writing. Nevertheless, her score in the literacy test was 76 (a little above the group's average – 75.9). It can be noticed that the ones with a better attitude did a little better on the test too.

In the Extracurricular group, there was only one participant (Participant 19) who affirmed to enjoy reading and writing, to find both crucial for one's personal development, and to judge his reading and writing skills as good. His score was 80.4 (just below the group's mean – 82.2). There were 2 participants in this group who did not show such a good attitude towards reading and writing. Participant 20 declared to be indifferent to reading and writing, in spite of finding both crucial for one's personal development, and also to have difficulties in reading and writing. Nevertheless, in spite of this less than optimal attitude towards reading and writing, and the perception of lack of ability, this participant got 100% of the answers of the literacy test correct. Participant 21, who was one of the members of the Extracurricular group who apparently reads less (see above), also declared to be indifferent to reading and writing and to not find that writing is crucial for one's personal development (it only helps in this process, in his opinion). He also said to have some difficulties in writing. His score was 71.7.

Apparently, attitude does have something to do with performance and, perhaps, also with willingness to engage in reading. In both the Letras and the Extracurricular group, the same participants who reported a somewhat negative attitude towards reading also reported not to read

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<sup>20</sup> Participant 3 also got 60.8 in the PISA.

so much or so many different genres. In both cases their scores in the literacy test were below the average score of the group. Participant 4, of the Letras group, had a score of 60.8, when the average of the group was 75.9, and Participant 21, of the Extracurricular group, had a score of 71.7, when the average score for the group was 82.2.

It was curious to notice that some participants' perceptions of their abilities were very different from their performance in the literacy test, at times. Despite their fairly low scores in the PISA (when compared to their peers), Participant 4 reported to be good in reading and writing and Participant 21 reported to have difficulties only in writing (which is somewhat assessed by the PISA but definitely is not its focus). On the other hand, Participant 20, who apparently has a neutral attitude towards reading and writing, but perceived his skills as not so good, had a 100. In other words, it is attitude what apparently makes a difference, not one's confidence on his reading and/or writing skills.

Finally, an attempt was made to see whether the literacy level of the parents of the participants could be somehow related to their level of literacy. For the Letras group, this was virtually impossible, since all but one participant reported to have highly-literate parents (i.e., they reported that both their mother and father can/could read and write well). There was only one participant who reported that though his mother can/could read and write well, his father can/could read ok. The score of this participant was 78.2, a little above the average of the group (75.9). In the Extracurricular group there were 2 participants who did not report to have both parents highly-literate. One of them affirmed that both the father and the mother can/could read and write ok and his score was 80.4. The other only answered about the reading (but not the writing) skills of both parents and, according to her, both can/could read ok. Her score in the PISA was 82.6. In this case, both participants' scores were very close to the average of the group – 82.2. Consequently, no differences were perceived in this characteristic from the participants. This is not surprising since all had literate parents. Perhaps, if there were participants with illiterate parents some difference might emerge since, due to that, these people might have been less exposed to print before becoming literate.

I now turn to the discussion of the results for the second research question, which sought a link between the participants L1 and L2 metalinguistic abilities.

## **6.2 L1 metalinguistic awareness and L2 metalinguistic awareness**

Research Question 2 was *Is there an association between their L1 and L2 metalinguistic awareness levels?* According to the Pearson correlations run between the L1 and the L2 PA and SA, the answer to this question is: *yes*. Significant relationships were found between L1 and L2 PA ( $r = .810 p < .000$ ) and between L1 and L2 SA ( $r = .695 p < .000$ ). The relationship between L1 and L2 MA could not be assessed due to the fact that there was no reliable variable to represent L1 MA.

In this section, rather than having 2 separate subsections for PA and SA, I will discuss the results for both abilities together in the same section. The main motivation behind that is the fact that the literature on transfer of SA is extremely restricted and, thus, I will get some support from the literature about the transfer of PA, which has been widely studied and discussed.

Differently from the results for Research Question 1, this time the results of the data collection for the dissertation mirrored the results of the pilot study, where transfer was found for both PA and SA. In that study (the pilot), participants' scores in the L1 Phonological Segmentation task were effective in predicting 45.6% of variation in their scores in the same task in the L2 ( $F = 6.69 p < .05$ ); their scores in the L1 Phonological Transposition task predicted 40.4% of variation in their scores in the L2 version of the task ( $F = 5.42 p < .05$ ). For SA, whereas participants' scores in the Error Correction task accounted for 46.1% of the variation in their scores in the L2 version of the task ( $F = 6.83 p < .05$ ), their scores in the L1 version of the Error Replication task were not predictors of their performance on the L2 task ( $r = .078 p = .820$ ). Besides corroborating the findings from the pilot study, the results from the present investigation also confirm previous findings from empirical studies with different languages (see below).

The results for PA confirm Bialystok's (2007), Francis' (2006), and Melby-Lervåg and Lervåg's (2011) suspicion that PA will be easily transferred (at least when the two languages are alphabetical<sup>21</sup>, such as it was the case in the present study) and corroborate previous findings by Bialystok et al. (2005) – L1 Cantonese, Hebrew, and Spanish/L2 English, Huang and Hanley (1994 in Bialystok et al., 2005) – L1 Chinese/L2 English, Luk (2003 in Bialystok et al., 2005) – L1 Chinese/L2 English, Chikamatsu (1996) – L1 English and Chinese/L2

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<sup>21</sup> Though, as remarked in the Review of the Literature, there have been studies showing transfer even between languages with different systems (Chikamatsu, 1996; Hamada & Koda, 2008; Holm & Dodd, 1996; McBride-Chang et al., 2004).

Japanese, Cheung et al. (2001) – L1 Cantonese<sup>22</sup>/L2 English, Durgunoğlu et al. (1993) – L1 Spanish/L2 English, Ganschow and Sparks (1995) – L1 English/L2 Spanish, Gottardo et al. (2001) – L1 Cantonese/L2 English, Da Fontoura and Siegel (1995 in Gottardo et al., 2001) – L1 English/ L2 Portuguese, Hamada and Koda (2008) – L1 Chinese and Korean/L2 English; McBride-Chang et al. (2004) – L1 Chinese/L2 English, Roberts and Corbett (1997 in Riches & Genesee, 2006) – L1 Hmong/L2 English; Schwartz et al. (2007) – L1 Russian/L2 Hebrew, Sparks et al. (2008) – L1 English/L2 Spanish, French, and German, Swanson et al. (2008) – L1 Spanish/ L2 English, and Verhoeven (1994) – L1 Turkish/L2 Dutch. They also confirm Melby-Lervåg and Lervåg's (2011) findings in their meta-analysis of 47 studies of crosslinguistic transfer.

However, from all the evidence mentioned above, only in Chikamatsu's study the participants were adults who were performing in a foreign rather than a second language. Thus, the present results are particularly important in the sense that they show evidence for transfer happening even when the learners are already adults and are in a context where their exposure to the L2 is limited when compared to the majority of studies that found transfer when the L2 learner was immersed in the L2 environment. Just to cite an example, in the meta-analysis conducted by Melby-Lervåg and Lervåg's (2011), they only included L2 learners who were in contact with the L2 for at least 4 hours a day.

In the case of SA, as mentioned before, there is a scarcity of studies investigating this ability and, therefore, very few studies contribute with evidence for SA transfer. Nevertheless, a result similar to mine was found by Saville-Troike (1984). Though the author was not specifically looking for crosslinguistic transfer, she observed that her participants were using their knowledge of L1 (Japanese) syntax when performing orally in the L2 (English) (see below). Verhoeven (1994), in turn, found that SA transferred from Dutch to Turkish and Durgunoğlu et al. (2002 in Durgunoğlu, 2002) found transfer of SA from Spanish to English. On the other hand, in Swanson et al. (2008) they did not find a correlation between their participants L1 (Spanish) and L2 (English) syntax was not found. They also report on Gottardo (2002 in Swanson et al., 2008), who found a low correlation between English and Spanish syntax ( $r = .170$ ). As I discuss below, though transfer of metalinguistic

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<sup>22</sup> Some were from Hong Kong and did not have any experience with the alphabetic code and others were from Guangzhou and had learned alphabetic Pinyin.

abilities is expected to happen, there might be a minimum threshold of L2 knowledge that must be reached before transfer can take place.

Although explaining L2 learning solely on the basis of transfer is not tenable (Treffers-Daller & Mougeon, 2005), the fact is that “as far as the strictly linguistic possibilities go, any linguistic feature can be transferred from any language, to any other language” (Thomason & Kaufman, 1988, p. 14 in Treffers-Daller & Mougeon, 2005, p. 93) and both cognitive psychology and cognitive and functional linguistics predict that there will, indeed, be considerable transfer in L2 learning (Ellis, N., 2005). According to Durgunoğlu et al. (1993), once a child reflects on the components of a language, this awareness can also be applied to another language.

Apparently, the transfer of metalinguistic awareness reflects the reliance on previously acquired skills that support these processes in both the L1 and the L2, as argued by Cummins (2008), Genesee, Geva et al. (2006 in Koda, 2007), and Koda (2007). Cummins (2008) argues that there is no need to try to separate transfer from the existence of underlying attributes of the individual, since it is the presence of such attributes, which develop through experience, which will allow for transfer (two-way) to happen if the context supports such transfer. For Zehler (1981 in Saville-Troike, 1984), transfer happens because, at the metalinguistic level, a person understood how “language” works as a system. In the same way, Koda (2007) advocates that metalinguistic awareness implies understanding the language in the most abstract way, independently of the surface forms.

Odlin (2003) adverts that the claim that transfer happens more in some subsystems than others must be carefully made since it is obvious that transfer at the phonological level will be much more easily identified due to its frequency than transfer at the syntactic level for there are much fewer possible phonemes than syntactic structures. Melby-Lervåg and Lervåg (2011), in turn, argue that in some domains transfer will be more likely to happen than in others due to the complexity of the task. In their study, they found that transfer was much more likely for less complex tasks, such as decoding, than for vocabulary or listening comprehension, for example. If we take these issues and the fact that there is much less empirical research on SA than on PA transfer, it is understandable that findings of transfer of SA are so rare.

In regard to PA, Francis (2006) contends that it seems that there are mechanisms that link phonological structures and their orthographic

representations that do not depend on the language one is exposed to. Durgunoğlu et al. (1993), when studying Spanish/English bilinguals, also argued in favor of this “click” underlying word recognition. According to them, people learning to read and write need to identify the phonological subcomponents of the spoken words and to match them to adequate orthographic representations. Koda (2007) argues that the first levels of PA – such as the knowledge that words are made up of segments – emerge before literacy instruction, as a by-product of oral language development. Therefore, because word segmentation is not a facet that is typical of one single language, once this understanding happens, it should be available for use in any language. Gottardo et al. (2001) also claim that transfer of PA happens because the process underlying PA is not language specific – it has to do with the ability to reflect upon all phonology one is at least minimally exposed to.

In relation to transfer of SA, Koda (2007) explains how a general grasping of syntactic knowledge can transfer to another language by giving the example of English and explaining that, in that language, SA can be understood as the realization that the order in which words appear in a sentence will determine sentence meaning. A language-specific understanding would be the understanding that the most common word order in English is subject-verb-object. Nevertheless, considering that metalinguistic awareness is refined by contact with print, its development is related to one’s linguistic development and, for this reason, even if some awareness facets will be language-independent, others will be attuned to the characteristics of the language and the writing system a person is exposed to (Koda, 2007).

Verhoeven (1994) found that while performance on a grammatical awareness task (sentence imitation) in the L1 and the L2 was correlated at the beginning of the first grade, in the next moments (end of first grade and end of second grade) this interdependence became weaker and non-significant, what made the author conclude that these abilities developed more or less independently. Hence, it might be, indeed, that one uses more of his L1 strategies at the beginning and, with time, specializes in the L2 SA.

All in all, there is strong evidence for transfer of PA, to which the results of the present study are added. There is also at least some evidence for transfer of SA, which might be a reflection of the limited number of empirical studies having been conducted on the transfer of SA, rather than the implication that such phenomenon does not happen. As it has been argued by a number of authors, crosslinguistic transfer of

metalinguistic awareness can be explained by the fact that some metalinguistic insights will be useful in a number of languages. But does that mean that transfer will always happen, then? And is the transfer of skills and/or strategies from the L1 to L2 (or vice-versa) always beneficial?

Cummins (1981 in Verhoeven, 1994) proposes that for L1 competencies to transfer to the L2, there is the need for adequate exposure to the L2 (though he does not define what *adequate* would mean) and motivation from the part of the learner. Moreover, Genesee, Geva, et al. (2006 in Melby-Lervåg & Lervåg's, 2011), taking the Contrastive Analysis Hypothesis into consideration, argue that, apparently, only having similar structures between two languages is not enough for transfer to occur, the learner has to be somehow aware of these similarities, and this is where instruction comes into play. In addition to that, in Cisero and Royer's (1995) study they found that only those participants who did well in rhyme awareness improved in the other PA tasks (which required awareness at the level of the phoneme). Thus, it might be that for transfer to happen from one language to the other it is necessary not only that the person have some L2 knowledge, but also that the skill have developed to at least some extent in the L1. Finally, Bialystok (2007) predicts that when the 2 languages have different systems, transfer might be more difficult, something I also believe. Nevertheless, there is evidence of transfer even in these cases, as mentioned previously.

What is good to keep in mind is that not always transferring one's metalinguistic skills from the L1 to the L2 will be beneficial for L2 learning. In Saville-Troike's (1984) study, as mentioned above, she perceived that her participants would transfer from the L1, applying their knowledge of Japanese syntax in English, even when the result was not totally successful. She gives the example of a construction of one of her Japanese participants in which the order of the words in the sentence is very different from what is commonly used in English. Nevertheless, so as to be able to produce language in the L2, this participant relied on what he had, and this was his knowledge of the L1 syntax.

In the present study, it was found that, though only SA was related to literacy (i.e., the link between literacy and PA at the level of the phoneme might be no longer relevant), both PA and SA seemed to transfer from the L1 to the L2. In other words, those same participants who had high levels of PA and/or SA in Portuguese are the ones who had a high level of PA and/or SA in English. Taking that into

consideration, and the studies presented in the Review of the Literature where it was found that PA can help vocabulary learning and that higher levels of PA and SA were found to be correlated with success in L2 learning, one would expect that in the multiple regression run in order to see which variables contributed to gains in L2 proficiency, the metalinguistic abilities of the participants would emerge as good predictors. To my surprise, that was not the case. In the next section, I discuss the result of Research Question 3.

### **6.3 L1 literacy, L1 metalinguistic awareness, L2 metalinguistic awareness, and gains in L2 proficiency**

According to the results of the multiple regression tests run on the data collected, the answer to Research Question 3, which was *Does their level of L1 literacy, L1 metalinguistic awareness, and/or L2 metalinguistic awareness predict their L2 proficiency growth over one semester?* is: *In part*. Multiple regressions run with data from all participants did not yield any significant results. When multiple regression tests were run only using data from the Letras students, L1 PA emerged as the only significant predictor.

The rationale behind this exploratory question was that the more one engages with print and with different kinds of texts (which tend to become more complex after the initial years of literacy acquisition), the more one's literacy level increases and, along with it, the more sophisticated his/her L1 metalinguistic abilities become. It follows from that that, if the metalinguistic abilities transfer across languages, the ones with a high level of metalinguistic awareness in the L1 would be the same with a high level of metalinguistic awareness in the L2, and this could help them be more successful in learning an L2.

As regards the first part of the proposal, the link between L1 literacy and L1 metalinguistic awareness was only found for SA<sup>23</sup>. Concerning PA, the relationship that has been widely documented with younger learners and/or with adults at the beginning stages of literacy acquisition was not found for my literate participants (probably because they do not use PA at the level of the phoneme when reading nowadays).

On the other hand, positive and significant relationships were found between L1 and L2 PA and SA measures<sup>24</sup>. As a consequence, at

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<sup>23</sup> Since none of the L1 MA tasks used were effective in capturing the individual differences in this skill amongst my participants, it was not possible to verify whether such correlation exists.

<sup>24</sup> Once again, it was not possible to test this correlation for MA due to the limitations on both tasks used to assess L1 MA.



this point, the connection of the dots stands in the following way. A somewhat weak line between the first 2 dots (L1 literacy and L1 metalinguistic awareness) and a strong line between dot 2 (L1 metalinguistic awareness) and dot 3 (L2 metalinguistic awareness). We now turn, then, to the last part of the dot-connecting activity – seeing how (and whether) all of that is related to success in L2 learning. For that, gains in L2 proficiency from the beginning to the end of the semester were taken to represent one's degree of success on the task of improving his/her L2 skills, and the other variables mentioned above (L1 literacy and L1 and L2 metalinguistic awareness) entered the equation as potential factors that could be related to more or less success in L2 learning.

However, the multiple regression run to verify that showed that none of these factors could account for L2 success for all participants. When the participants were separated and another multiple regression was run, for the Letras group only, only one of the variables emerged as having some relationship to the amount of gains the learners had in L2 proficiency throughout the semester – L1 PA. However, this impact was negative. Before discussing the possible reason for this finding, I will briefly address the lack of relationship between the other variables and gains in L2 proficiency.

First of all, concerning the link between L1 literacy and L2 learning, this was an exploratory avenue of investigation and it was based on the supposition that, if L1 literacy and L1 metalinguistic awareness develop interdependently, it might be that L1 literacy level also emerges as a predictor of success in L2 learning. Since it was seen that it is not exactly the case that both PA and SA will continue growing alongside literacy, it is not completely unexpected to see that a correlation between L1 literacy and L2 learning was not found. The relationship found was between L1 literacy and L1 SA, and since L1 SA did not emerge as a predictor of L2 learning, there was no reason why literacy level would be found to have an impact on the gains in L2 proficiency for the participants in the present investigation. In my pilot study participants' scores in the PISA test were, indeed, predictors of their L2 proficiency test scores, accounting for 38.2% of the variation in the latter scores ( $F = 5.55$   $p < .05$ ), but we have to keep in mind the fact that the literacy measure had its limitations and, more importantly, that only L2 proficiency level was assessed in that study, and not growth. That is, only one test of L2 proficiency was done by the test takers.

Therefore, growth in L2 proficiency from the beginning to the end of the semester could not be assessed.

A somewhat more unexpected result was the fact that none of the L2 metalinguistic tasks showed to be predictors of gains in L2 proficiency. That is, having more or less metalinguistic knowledge in the L2 (and for this analysis, PA, SA and MA were taken into consideration, once one of the L2 MA tasks seemed to be adequate in assessing this variable) does not make a difference when it comes to L2 learning, something that, in my opinion, is counterintuitive. However, we must take into consideration the fact that this multiple regression test was run with data from only 12 participants (the Letras students who completed all tasks) and, thus, it might be that the amount of data was too limited for a statistical impact to be noticed. In the pilot study, where there were only 11 participants, but the statistical test run was a linear (rather than multiple) regression, a relationship between L2 PA and SA and L2 proficiency was found. In the case of SA, participants' performances on both of the tasks used were good predictors. The performance on the Error Correction task predicted 76.9% of the variance in the performance on the L2 proficiency test ( $F = 30.02$   $p < .05$ ) and participants' scores in the Error Replication task predicted 71.2% of variance ( $F = 22.19$   $p < .05$ ). In the case of PA, only the scores in the Phonological Transposition task were good predictors of behavior in the L2 test. Something interesting, taking the literature reviewed into consideration, is the fact that PA was found to contribute very little to L2 proficiency (when compared to the contribution made by SA) – 19.4% ( $F = 2.17$   $p < .05$ ). L2 MA did not show any contribution for the L2 proficiency scores.

Finally, concerning the possibility of L1 metalinguistic awareness contributing to success in L2 learning, there was one facet of L1 metalinguistic awareness which emerged in the model as the only significant predictor of gains in L2 proficiency throughout a semester – PA. If L1 PA were the only variable to have been found to contribute to success in L2 learning, this result would simply be a confirmation of the phonological coding deficit hypotheses that has been postulated by Ganschow and Sparks' group of research for some time now (e.g., Sparks & Ganschow, 1991) and for which there are a number of studies contributing with empirical data (e.g., Meschyan & Hernandez, 2004; Sparks et al., 1998; Sparks et al., 1992). However, the puzzling finding was that L1 PA appeared as the only variable from the ones taken into consideration to contribute against L2 learning. That is, according to the

model, the higher the level of PA of a participant at the beginning of the semester, the less this learner gained in L2 proficiency throughout the semester.

This result is also surprising taking the result from the pilot study into consideration (though, as I have been stressing throughout this section, in that case the outcome variable was the L2 proficiency level of the participants and not their gains in proficiency). In that study, both L1 MA and L1 PA showed to be good predictors of L2 proficiency (and, in both cases, the impact was positive<sup>25</sup>). In the case of MA, participants' scores in the Morphological Decision task accounted for 38.7% of variation ( $F = 5.68$   $p < .05$ ) in the performance of the participants on the KET. For PA the variation in scores in the Phonological Transposition task explained 40% of variation in the L2 proficiency test ( $F = 5.33$   $p < .05$ ).

This time around, with the data collected for the dissertation, L1 PA was also shown to contribute with roughly 40% for the participants' outcome on a measure of L2 learning. However, the beta was negative ( $\beta = -0.185$ ). Jongean et al. (2007) explicitly state that, if a person has high L1 PA and PA transfers to the L2, this person will have advantages in dealing with the L2. However, this result is intriguing even if we do not take the proposals made in the literature into consideration. I, at least, cannot think of a reason why more linguistic knowledge (although it is knowledge of the L1) would hinder language learning. There is a number of authors that point out that the L1 should be seen as a support for L2 learning (Aarts & Verhoeven, 1999; Cummins, 1983; Francis, 2000; Genesee & Riches, 2006; Jongean et al., 2007; Reyes, 2006; Coracini, 1995 in Terra, 2008).

Indeed, as presented in the Review of the Literature, there are a number of empirical studies that provide evidence for such positive interaction between L1 and L2 skills. Saville-Troike (1984), for example, found that a child's L1 proficiency level was the best predictor of L2 learning, while Olshtain et al. (1990) established that L1 academic proficiency was related to L2 academic proficiency. Besides that, a number of studies reviewed by Genesee and Riches (2006), in addition to the empirical studies conducted by Aarts and Verhoeven (1999), Francis (2000), Sparks et al. (2008), and Verhoeven (1994), also found a

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<sup>25</sup> The Beta for the variable Phonological Transposition was 4.717 and the one for the variable Morphological Decision was 7.00.

correlation between L1 and L2 reading skills (especially in academic contexts, as proposed by Cummins [1983]).

Besides these studies where the relationship between the L1 and the L2 was more general, Sparks and Ganschow (1991) have proposed that metalinguistic awareness, and, more specifically, L1 PA, is the locus of L2 learning difficulties. A number of studies confirmed their proposal that difficulties in phonological coding (which depends on PA) are what lie at the core of both L1 reading difficulties and L2 learning (Dufva & Voeten, 1999; Gottardo et al. 2001; Meschyan & Hernandez, 2002; Ganschow et al., 1994 in Sparks & Ganschow, 1991; Sparks et al., 1989 in Sparks & Ganschow, 1991; Ganschow et al., 1991 in Sparks & Ganschow, 1993; Sparks et al., 1998; Sparks et al., 1992).

Meschyan and Hernandez (2002), Hu (2007), and Hu and Schuele (2005) argue that one's L1 PA level will impact L2 learning because of the role PA plays in L2 vocabulary learning. According to Hu and Schuele (2005), the first and more frustrating task in learning words in a nonnative language is to access the individual segments of a novel sequence of sounds (a nonnative word). However, being able to repeat these unfamiliar sounds is part of learning new vocabulary (Hu, 2007; Hu & Schuele, 2005; Meschyan & Hernandez, 2004). It might be that perceiving speech in its flow, with its prosodic features is not that difficult for the average L2 learner; however, due to the fact that the aural stimuli is fleeting and also that there are overlaps, the details of the phonology of the language will be lost (Hu, 2007). These authors' proposal is that L2 learners with more PA would be better able to perceive the details of the L2 phonology and also to rehearse the new strings of sounds (words) which are presented to them. This ability, moreover, would be especially important when one does not have that much knowledge of the L2 (Meschyan & Hernandez, 2004). After all, after some vocabulary is learned, at least in one's L1, it will be vocabulary knowledge itself that will lead to vocabulary growth (e.g., Gathercole, Willis, Emslie, & Baddeley, 1992 in Meschyan & Hernandez, 2004) (though Hu [2007] found L1 PA to be a predictor of L2 word learning even when L2 vocabulary knowledge was entered first in the model). In the present study, for example, it could be that higher levels of PA would be particularly important for those participants with a lower level of L2 proficiency (at the beginning of the semester).

As previously presented in the Review of the Literature (Section 3.3, p. 66), Hu and Schuele (2005) found that their participants with a low level of PA did, in fact, have difficulties in repeating pseudowords.

Moreover, this difficulty was not related to learning in general, but only to novel verbal information. That is, they did not have difficulties in repeating words they knew in their L1 or novel information which was not verbal (the doodles which were used to name the cartoon characters). Apparently, the problem was in constructing a phonological representation for a new word. In another study, Hu (2007) found that both L1 and L2 PA were correlated to L2 word learning, with L1 PA predicting 6% of variance in word learning after the effects of L2 vocabulary knowledge (i.e., their previous knowledge of L2 vocabulary) were controlled for.

This way, Hu (2007) and Hu and Schuele (2005) challenge those who postulate that there will be a negative interference from the L1 system on the L2 one when one starts to learn an L2 after the L1 system is well-established. Additional empirical evidence for the beneficial influence of L1 knowledge on L2 learning comes from Hamada and Koda (2008), Cheung (1996 in Meschyan & Hernandez, 2002), Cheung (1999 in Meschyan & Hernandez, 2002), Gathercole & Baddeley (1993 in Meschyan & Hernandez, 2002), and Meschyan and Hernandez (2002) (all in the Review of the Literature).

If we take this proposal into consideration, what we would expect is that those participants in my study with a higher level of L1 PA would be the more successful ones in learning new words in English and who, in turn, would have the greatest opportunities for improving their L2 proficiency throughout the semester. However, what happened was exactly the opposite.

Tarone and Bigelow (2007) also propose that having a low level of L1 PA will hinder L2 learning. For them, the impact of L1 PA will be on noticing (Schmidt, 1990), since they predict that a person with low L1 PA is likely to have problems in perceiving that his/her utterance has been rephrased by his/her interlocutor in a recast. This would be because the person has difficulties in perceiving, for example, that the word order in the interlocutor's recast is different from his/hers, or that a given word contains an extra morpheme. According to the authors, not noticing the changes in a recast would impede restructuring from occurring, since only when the recast is noticed can a comparison of one's utterance and the recast be made. By noticing the difference between these two instances of language one would be able to create new form-meaning mappings.

Still, in their studies, Tarone and Bigelow did not assess L2 learning or metalinguistic awareness. Their proposal was made based on

the results of an empirical study (Bigelow et al., 2006) in which they found a correlation between literacy level and the ability to recall recasts. That is, they assumed that their low-literacy participants also had a low level of metalinguistic awareness. Another assumption was that their participants who were better able to recall the recasts would be more successful in L2 learning. In other words, besides the fact that they did not assess metalinguistic awareness, there is still the issue of whether noticing changes in a recast (and modifying one's speech based on these recasts) will lead to learning. Tarone and Bigelow (2007) themselves present a qualitative analysis of the interaction between one of their low-literacy participants and a researcher in which it becomes clear that perhaps only noticing a recast once or twice will not necessarily lead to restructuring.

In the samples of speech analyzed by Tarone and Bigelow (2007)<sup>26</sup>, despite the fact that the researcher repeated the recasts and emphasized the changes until Abukar repeated the question in its correct form (their focus was on the use of the auxiliary *is* in questions), up until the end of the section, although the participant had repeated the correct form of the question a number of times (either prompted by the recast of the researcher or voluntarily), she would continue to either omit the auxiliary or to fail to invert noun and auxiliary in her questions. For the authors, this could be evidence that restructuring did not happen (in spite of the fact that the person noticed the changes in the recasts and, at times, incorporated them in her speech). An alternative explanation for this participant's behavior, put forward by the authors, and with which I agree, is that Abukar did change her function-form mappings, but was unable to alter her output so promptly. When the focus of the recast was on vocabulary, however, she soon noticed it and showed to incorporate at least one of the new items in her speech in the same session (Tarone & Bigelow, 2007). Of course, if we think that the syntactic changes in her speech were devoid of semantic value, her behavior was not at all unexpected.

How, then, can we conciliate the present results – PA emerging as a hindrance for L2 development – with the previous theoretical proposals and empirical findings? Perhaps a likely explanation, taking into consideration the small number of participants who contributed with data for this specific multiple regression, would be that the result is spurious – an artifact of the data obtained with PA tasks that were

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<sup>26</sup> See Section 3.3 (p. 66) for a more thorough review of this interaction.

adaptations made from other tests to my population. However, though possibly valid, this would be an entirely uninteresting path. I, thus, chose to wander towards more promising and enticing trails. After all, in the case of an exploratory question such as this, and for which the findings are puzzling, I cannot see anything better than to pursue all avenues one can think of.

First of all, it is important to notice that the negative impact of one's L1 PA on his/her L2 is not totally unheard of. In Swanson et al.'s (2008) study, whereas the measures of L1 and L2 PA were correlated (.47), when (L1) Spanish PA was entered in a regression model to predict (L2) English literacy<sup>27</sup>, the beta weights were negative. In addition to that, Spanish vocabulary knowledge was negatively related to English reading comprehension. According to the authors, these negative correlations might be the result of a trade off between dominance in one or the other language. Since their participants were L1 speakers of Spanish attending classes in their L2, apparently, at the third grade, when data was collected, the English skills started to dominate, preventing the Spanish skills from continuing to develop. Still, Swanson et al. (2008) were dealing with children learning the L2 as a second rather than a foreign language. In view of that, their explanation might fit their context, but it might not fit mine. My participants were beginning<sup>28</sup> L2 learners and had their contact with the L2 limited to some hours a week. An alternative possibility would be that, somehow, the L1 PA is hindering these participants' L2 PA and this lack of L2 PA prevented some of the participants from developing their L2 skills to the most throughout the semester. However, because there was a positive correlation between these scores (L1 and L2 PA), this alternative has to be abandoned.

Another possibility that can be entertained is that the transfer that happened between L1 and L2 PA was not only the transfer of general PA universals that are common to many (or all) alphabetical languages. It might be that, because these learners (my participants) are still beginners, they are actually transferring more than they should from the L1 to the L2. As the contrastive analysis would postulate, it might be that these learners are transferring L1 patterns to the L2 in spite of the fact that those patterns do not share structural similarities. Perhaps this was not evident in the L2 PA task because they did not have to produce

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<sup>27</sup> Word and pseudoword reading and passage comprehension.

<sup>28</sup> Though they, indeed, had a good amount of L2 knowledge even when they were starting their English courses (especially the Letras ones).

language (they only produced some strings of phonemes and non-words that resulted from the Phonological Transposition task). As previously mentioned, in Saville-Troike's (1984) study their participants showed to rely on L1 (Japanese) syntax in order to produce language in the L2. However, this reliance was not always such a good strategy since some of the sentences orally produced by their participants were strings such as *They had Mr. Smith teach they my class three people* and *If I go my mother with shopping and my mother didn't shopped my like-things, I don't like*.

Though one could argue that there is some communication taking place through these utterances and that this person did what was possible with the resources available to him/her, in the L2 proficiency assessments I conducted, accuracy was taken into consideration, including pronunciation (in the Speaking paper of the KET). Thus, if some of my participants were relying on their abilities in L1 pronunciation, they might have produced language that was very poor as regards L2 pronunciation and, as a result, might have been penalized in the oral interviews. If this person did that both at the beginning and at the end of the semester, his/her gains would be quite low and, consequently, we would have an explanation for high L1 PA levels coupled with low gains in L2 proficiency. However, if this were the case, there should be a negative correlation between the scores obtained in the Speaking papers of the KET 1 and the KET 2 and the participants' scores in the L1 PA tasks. Through a Pearson correlation run between these variables, it was possible to determine that this was not the case (Phonological Segmentation and Speaking KET 1 –  $r = .333$   $p = .191$ ; Phonological Segmentation and Speaking KET 2 –  $r = .322$   $p = .283$ ; Phonological Transposition and Speaking KET 1 –  $r = .165$   $p = .527$ ; Phonological Transposition and Speaking KET 2 –  $r = -.059$   $p = .847$ ).

Another possibility is that low levels of L1 PA will only hinder L2 learning for those who have an extremely low level of PA and who present learning difficulties, since these are the kinds of learners that Sparks and Ganschow's group tend to study. In my study, all Letras students had gains from the first to the second enactment of the L2 proficiency task, and all succeeded in ending the semester with grades good enough so as to enable them to go on to the next level of the English course on the following semester. This could be taken as an indication that none of my participants were learners who had L2 learning difficulties. Perhaps when a minimum level of PA is reached, learning happens normally – despite low levels of PA – and, for some



unknown reason, the same ability (L1 PA) that once was essential to L2 learning becomes a hindrance in this process.

Yet another possible source of explanation for the negative relationship between L1 PA and L2 learning could be something the learners do that, at the same time, helps L2 development and hinders L1 PA. One possibility would be that the ones with low L1 PA were also the ones who engaged more in contact with English outside class hours (which would make up for their limitations in PA) and, for this reason, learned more (e.g., Johnson, 1983, Strong, 1983 both in Saville-Troike, 1984). Still, this correlation is unlikely since the participants with low L1 PA (who were the ones who had the greatest gains in L2 proficiency) were also the ones with low L2 PA. Intuitively, I cannot imagine how having more contact with the L2 outside classroom hours would have led these learners to have less L2 PA than the rest of the participants. Nevertheless, with this possibility in mind, correlations were run between the quantitative results and some of the qualitative data provided through the Profile questionnaire and the End of Term questionnaire.

The variables entered in the correlation were: number of years studying English previous to data collection (besides the regular English classes from school), number of hours (per week) of contact with the English language outside classroom hours at the beginning of the semester, perception of how much advantage they took from the English classes throughout the semester (1= very little; 2= little; 3= ok, as expected; 4= more than expected; 5= great), grade assigned by the learner for his/her L2 proficiency growth throughout the semester, number of hours (per week) of contact with the English language outside classroom hours throughout the semester, learner's reported motivation for learning English throughout the semester (1= very little/unmotivated; 2= a little; 3= ok; 4= very motivated), scores in the L1 Phonological Segmentation task, and scores in the L1 Phonological Transposition task. Table 13, below, depicts these relationships.

Table 13  
*Pearson correlations – L1 PA and qualitative variables*

		Hours					
		Years	March	Term	Advant	Grade	Motiv
PT	<i>r</i>	-.571*	-.662**	-.527	-.257	-.282	-.236
	Sig.	.017	.004	.064	.396	.350	.437
	N	17	17	13	13	13	13
PS	<i>r</i>	-.244	-.101	.038	-.289	-.110	-.170
	Sig.	.345	.699	.901	.338	.722	.578
	N	17	17	13	13	13	13

*Note.* PT = Phonological Transposition; PS = Phonological Segmentation; *r* = Pearson correlation; N = number of participants; Years = number of years the participant has studied English (besides the regular school); Hours March = number of hours (per week) the participant reported to engage with the L2 (English) at the beginning of the semester; Hours Term = number of hours (per week) the participant reported to engage with the L2 (English) throughout the semester; Advant = perception, from the part of the participants, on how much advantage they took from their English course throughout the semester; Grade = Grade the participants gave to themselves for their growth in L2 proficiency throughout the semester; Motiv = level of motivation the participants reported to feel towards the English course throughout the semester.

\*  $p < .05$ , two-tailed

\*\*  $p < .01$ , two-tailed

Somehow to my disbelief, my suspicion was confirmed. Those participants who had more L1 PA (and, more specifically, higher scores in the Phonological Transposition task, which showed to be the responsible for L1 PA having emerged as a significant predictor of gains in L2 proficiency) were the same ones who engaged, at the beginning of the semester, with less English. In addition to that, they were the ones who had studied English for the smallest number of years. Moreover, though the relationship was not significant, there was a trend indicating they were also the ones who engaged with the L2 for the smallest amount of hours throughout the semester. To make things clearer, there is a group of participants in the Letras group who have high L1 and L2 PA, not many years of study of English or much contact with English

outside classroom hours, and who did not increase as much their L2 proficiency throughout the semester. On the other hand, there are those participants who have a low level of L1 and L2 PA, but who have been studying English for some years already and who engage with the L2 for longer periods than their peers, and who had a bigger increase in L2 proficiency.

At this point, I wondered whether the participants with more L1 and L2 PA were the same ones to have the highest scores in the first enactment of the L2 proficiency test, at the beginning of the semester. This could be the explanation for their smaller growth. That is, if they had high scores, there would be not much room for improvement and this would explain their smaller growth in L2 proficiency. However, a correlation between the participants' L1 PA level and their scores in the KET 1 was not significant (Phonological Segmentation  $r = .344$ ,  $p = .177$ ; Phonological Transposition  $r = .118$ ,  $p = .652$ ). An alternative possibility would be that having studied English for a number of years before data collection, and using the L2 to some extent more regularly in their lives, made up for the low levels of PA in the participants who had greater gains in L2 proficiency. If this was the case, gains should be correlated to the number of years studying English and/or to the number of hours using English outside class hours. Once again, this correlation was not significant (Years studying English  $r = .335$ ,  $p = .263$ ; Hours using English outside class hours  $r = .337$ ,  $p = .260$ ).

I end the discussion for this apparent hindering role for L1 PA in L2 learning leaving my readers without a definite answer. As I have exposed above, there are a number of possible reasons why L1 PA was found to be negatively correlated to L2 learning; however, none of them seems to hold. This result, then, is left unexplained.

At this point I decided to go back to the data and try to understand why L2 SA appeared as a significant predictor of L2 achievement but not as a significant predictor of L2 proficiency growth. Since I already knew that those participants with a high level of L2 SA were also the ones who were more proficient at the end of the semester<sup>29</sup>, I wondered whether it was the case that the participants with the highest level of L2 SA were also the ones with the highest level of L2 proficiency at the beginning of the semester. If this were the case, it

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<sup>29</sup> L2 SA predicted L2 Achievement and L2 achievement was correlated to the participants' scores in the KET 2 – the L2 proficiency test taken at the end of the semester  $-r = .718$ ;  $p = .001$ . This correlation is for the whole group (i. e., Letras and Extracurricular students together).

might be that their proficiency level did not improve much because there was not enough room for improvement.

To verify that, I ran a Pearson correlation between the participants' scores in the L2 Error Replication task (because this was the task that appeared as a predictor of L2 achievement) and their scores in the KET 1 (the proficiency test done at the beginning of the semester). As I suspected, this correlation was positive and significant ( $r = .858$ ;  $p < .000$ ). So, if what occurred was that the ones with more L2 SA were actually the ones with less gains (because they were already too proficient in the L2 to start with), a *negative* correlation should be found between the participants' scores in the L2 Error Replication task and their gains in L2 proficiency. However, this was not the case ( $r = .078$ ;  $p = .751$ ). I then turned to the raw scores of the participants to see if I could understand why things did not seem to be adding up. See Table 14 for the data I will use to explain what seems to have happened as regards the relationship between the learners' level of L2 SA and their gains in L2 proficiency.

Table 14

*L2 SA scores and L2 proficiency scores*

L2 SA range	Participant	L2 ER	KET		Gains	Gains Ave.
			1	2		
Low (0- 1)	19 (Extra)	0	23.4	28.5	5.1	8.12
	25 (Extra)	0	33.4	42.5	9.1	
	5 (Letras)	1	20.9	27.8	6.9	
	8 <sup>a30</sup> (Letras)	1	49	no	no	
	21 (Extra)	1	26.9	38.3	11.4	
	23 <sup>b</sup> (Extra)	1	32.7	-----	-----	

<sup>30</sup> I have included participants 8, 23, 6, and 10 in this table just because of their scores in the KET 1 task. None of these participants were included in either of the multiple regression analysis (the one with L2 proficiency gains as its outcome and the one with L2 achievement as its outcome).

Medium-low (3-4)	20 (Extra)	3	46.6	61.1	14.5	14.66
	6 <sup>c</sup> (Letras)	3.5	70.2	-----	-----	
	13 (Letras)	3.5	62	83.2	21.2	
	7 (Letras)	4	69.5	88	18.5	
	14 (Letras)	4	66.7	86.1	19.4	
	18 (Extra)	4	64.4	56.5	-7.9	
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High (8-10)	12 (Letras)	8	74.2	82.5	8.3	9.52
	15 (Letras)	8	76.9	86.9	10	
	17 (Letras)	8	77.6	90.2	12.6	
	10 (Letras)	9 <sup>d</sup>	88.5	no	no	
	11 (Letras)	10	85.2	92.4	7.2	

*Note.* L2 SA range = the range of scores in the L2 Error Replication Task; L2 ER= scores in the L2 Error Replication Task; participants' scores in the L2 proficiency test (Key English Test) in the pre-test; KET 2 = participants' scores in the L2 proficiency test (Key English Test) in the post-test; Gains = difference in the participants' scores from the pre- to the post-test (L2 proficiency); Gains Ave.= an average of the gains of the participants for each of the three groups depicted on the table.

<sup>a</sup> This participant did not take the KET 2 test.

<sup>b</sup> This participant took the KET 2 test, but she missed more than a month of classes at the end of the semester and reported, in the End of Term questionnaire, to have given up on the course at the end.

<sup>c</sup> This participant took the KET 2 test, but she was taking only one of the English courses (differently from the rest of the Letras students).

<sup>d</sup> This participant did not take the KET 2 test.

The first thing that can be noticed in Table 14 is that the average of gains in L2 proficiency does not differ much from those participants with a high L2 SA level and the ones with a low level. In spite of the fact that the high L2 SA group does have a little advantage, it is, indeed, a small difference. However, let us look at the scores of these participants in the KET 1. The difference between the scores of the 2 groups is very clear. The same difference, and perhaps even more marked, can be noticed in relation to their scores in the KET 2. Hence, what seems to be happening here is that these two groups did not improve as much in their L2 proficiency throughout the semester for different reasons. It appears that, in the case of the group with a low

level of L2 SA, though they had plenty of room for improvement, they did not manage to develop their L2 much more than what they already had at the beginning of the semester. In the case of the participants with a high level of L2 SA, it might be that the test used to assess L2 proficiency at the end of the semester did not allow them to reveal all the development in the L2 that took place during the English course. Because the KET 2 test was a test equivalent to the KET 1, they did not have much more where to go (beyond the point they already were at the beginning of the semester).

Now, if we focus on those participants which I have put in a group I termed as having a 'medium-low' score in the L2 SA test, we see that the gains, in general, were much greater than those of the participants in either of the other groups. In this analysis, I am not taking into consideration participant 18, who had a loss of 7.9 points from the first to the second enactment of the task. As this participant did not report any learning difficulties<sup>31</sup> throughout the semester in his End of Term form, I believe something distracted him on the day of the second test. Although I did not notice anything at the time, and he also did not mention anything, the apparent loss of L2 proficiency from the part of this participant is uniquely due to his score in the Listening Paper in the KET 2. Despite the fact that his score in this paper in the KET 1 was 48, in the KET 2 he scored only 16. For this reason I am not taking him into consideration in the raw data analysis. He was included in the multiple regressions, though. I decided to include him for two reasons. First, the number of participants contributing with data for the multiple regressions was already very limited without eliminating yet another participant. Second, eliminating him from the group did not make any significant changes in the pattern of the results. As can be seen with the raw data presented here, this participant is not the reason why L2 SA did not appear as a significant predictor of L2 gains.

Going back to Table 14, what the raw data shows is that those participants with a low level of L2 SA did not increase their L2 proficiency much throughout the semester. Those with a little higher level of L2 SA, however, improved quite a lot, in general, and those with a high level of L2 SA also probably had a good increase in their L2 proficiency level, but the second L2 test applied was perhaps too easy for this improvement to appear. Putting it all together, it seems that L2

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<sup>31</sup> He awarded himself a grade 7 for his growth throughout the semester, and declared that he profited ok from the course (though he mentioned he had not been so motivated to learn English in that semester, since he was involved in many other activities).

SA is, indeed, implicated in the learning of an L2. What probably occurred was that those learners which had very low score in the L2 Error Replication task (0 or 1) had virtually no knowledge at all about the syntax of the L2 and were, throughout the semester, relying mostly on their knowledge of the L1 syntax, which might have prevented them from making many advances in the restructuring of their interlanguage.

For those learners who had already some knowledge of the L2 syntax, being exposed to and instructed in the L2 was beneficial since they probably had opportunities to test hypotheses they had about the language and, consequently, to increase both their explicit and implicit knowledge of the L2. Taking this into consideration, I propose that L2 SA is indeed, important for L2 learning, since it seems that a low level of L2 SA will prevent learners from benefiting much from the L2 instruction received. In the next section, I discuss the results for Research Question 4, which looked for a link between L1 literacy, metalinguistic abilities, and the participants' achievement at the end of the semester in their English courses. I also bring support for the argument posed above.

#### **6.4 L1 literacy, L1 metalinguistic awareness, L2 metalinguistic awareness, and L2 achievement**

The main difference between Research Question 4 and Research Question 3 is the fact that Research Question 3 had the participants' general gains in the L2 as its outcome variable and Research Question 4 takes the participants' ability to learn what they were taught throughout the semester in the English course into consideration. Research Question 4 was *Does their level of L1 literacy, L1 metalinguistic awareness, and/or L2 metalinguistic awareness predict their L2 achievement in one semester of an English course?* and the answer to it was: *In part*. In the multiple regression model run with data from all participants, only L2 SA emerged as a significant predictor of end-of-term L2 achievement.

As in the previous section, I will start by briefly discussing the variables that were found not to contribute to the variance in participants' grades at the end of one semester of their English courses and then I will move on to the one variable that emerged as a significant predictor of L2 achievement – L2 SA. This time, the data taken into consideration is from all participants (i.e., Letras and Extracurricular students) and, thus, perhaps the results speak to a wider population than that of Letras students, who, as mentioned in the Method chapter, might be seen as learners with a particular relationship with language in general.

First of all, once again L1 literacy did not show to be implicated in the L2 grades achieved by the participants. This time the result is a little puzzling since SA, which was found to be related to literacy, appeared as a predictor variable in the model that had achievement as its outcome variable. As I explained in the previous section, the possibility of literacy having any relationship with L2 learning would be due to its interdependency, in terms of development, with metalinguistic awareness. Because L1 SA and L1 literacy were related, it is speculated that they developed interacting with each other so that, by now, my adult literate participants who have high levels of L1 literacy also have high levels of L1 SA. Moreover, it was also proposed that probably the way the L1 metalinguistic abilities would somehow impact L2 learning would be through their transfer to the L2, which was found for both PA and SA. Nonetheless, in spite of the fact that the dots linking L1 literacy to L2 achievement seem to be all connected (that is, L1 literacy is related to L1 SA, which is related to L2 SA, which, in turn, is a predictor of L2 achievement), it seems that any connection that L1 literacy might have with L2 learning is indirect, through its relationship with L1 SA.

As already mentioned in the previous section (6.3, p. 184), although L1 literacy was found to be a predictor of L2 performance on the pilot study, accounting for 38.2% of the variation in the latter scores ( $F = 5.55$   $p < .05$ ), there were limitations on the test used to assess literacy at the time and, therefore, it might be that that result, though significant, was actually due to chance.

Just like the L2 metalinguistic skills of my participants did not show to be related to their gains in L2 proficiency, this time it was the participants' L1 metalinguistic scores that did not show to be implicated in the variation of their end-of-semester grades. On the one hand, it is not surprising that an L2 rather than an L1 variable is effective in predicting L2 performance. On the other hand, the L1 and L2 metalinguistic abilities of the participants were found to be related, and, in addition to that, it was an L1 ability that proved to be the only variable to account for the variance in gains in L2 proficiency for these participants. Moreover, in my pilot study both L1 MA and L1 PA appeared as predictors of L2 proficiency in linear regressions. The scores in the Morphological Decision task accounted for 38.7% of variation ( $F = 5.68$   $p < .05$ ) and the scores in the Phonological Transposition task accounted for 40% of variation ( $F = 5.33$   $p < .05$ ) in the participants' scores in the KET.



As regards L2 metalinguistic awareness, there is one finding that was also unanticipated if we take the findings from the pilot study into consideration. In that study, not only L2 SA but also L2 PA were found to contribute to variation in L2 performance. However, whilst the L2 SA tasks made large contributions for variance in L2 performance (Error Correction = 76.9% [ $F = 30.02$   $p < .05$ ]; Error Replication = 71.2% [ $F = 22.19$   $p < .05$ ]), the role of L2 PA was much less marked (Phonological Transposition = 19.4% [ $F = 2.17$   $p < .05$ ]). Therefore, since at that time linear rather than multiple regressions were being run, one of the reasons for why L2 PA did not appear as a significant predictor of L2 performance in the present study might be the fact that the impact of L2 SA is much greater than that of L2 PA and, in a multiple regression model, did not allow for the influence of PA to emerge as significant.

Consequently, the only relationship to mirror the result from the pilot study is the relationship between L2 SA and L2 performance. As I argued at the time of the pilot study, such a relationship should not come as a surprise, once it is completely predictable that teachers will somehow take the participants' knowledge of L2 syntax into consideration, especially the kind measured through a grammaticality judgment task (where the participants can apply their explicit knowledge of L2 grammar rules to the successful completion of the task), when awarding grades to students. Still, due to the lack of empirical studies conducted in which L2 SA was taken into consideration, the only study I am aware of to have found a result similar to mine was Ranta's (2002), though her results were for children learning an L2 as a second (rather than foreign) language.

As previously mentioned in the Review of the Literature (Section 3.3, p. 66), in Ranta's study, L2 SA<sup>32</sup> also was positively and significantly correlated to L2 proficiency – vocabulary knowledge, listening comprehension, and reading comprehension. The magnitude of these correlations varied from .320 – for listening comprehension – to .600 for reading comprehension.

In addition to Ranta's (2002) results, Swanson et al. (2008) found that L2 SA was helpful for L2 reading. Olshtain et al. (1990), in turn,

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<sup>32</sup> Though she uses the umbrella term metalinguistic awareness rather than syntactic or even grammatical awareness, the test she used – error correction – was, in fact, a measure of SA (and, arguably, of morphological and semantic awareness also, as claimed by Correa (2005; 2009), for morphology, and Bryant et al. (2000) and Lazo et al. (1997), for semantics). Nevertheless, my point here is that though she did not use the term SA, the test she used is one of the most common ones used to assess SA.

found a relationship between *L1 SA* and *L2 proficiency*, with their participants' ability to correct errors and produce acceptable forms in the *L1 (Hebrew)* explaining 37% of their achievement in an English test (they were in their 3<sup>rd</sup> year of English learning). Actually, *L1 SA* was the best predictor of their *L2 achievement* (better than motivation and/or attitude towards learning the *L2*).

But how exactly would one's level of *L2 SA* be implicated in his/her *L2 learning* (if we take the participants' grades to reflect their success in learning the content covered throughout the semester in their English course)? According to *Cots (2008)*, instruction in explicit language knowledge in the *L2*, that is, metalinguistic knowledge, will help in one's rate of acquisition and the ultimate level of attainment. Though her proposal goes against *Krashen's (1982 in Cots, 2008) Monitor model* of *L2 learning* - which predicts that explicit *L2 knowledge* will not be much useful in *L2 production*<sup>33</sup> since the focus will be on meaning and not on form - *Cots* argues that teaching through *Focus on Form (Long, 1991)* can conciliate these perspectives. In this approach, though priority is given to meaning, form will gain the floor in those moments where the task itself asks for the solution of linguistic problems for its accomplishment (*Cots, 2008*).

A positive association between explicit *L2 knowledge* and *L2 learning* was also found by *Norris and Ortega (2001 in Ranta, 2008)*. These authors conducted a meta-analysis on the effectiveness of instruction in 49 studies and concluded that explicit knowledge had an impact on the development of *L2 grammar* that was greater than the impact of communicative input alone. Despite the fact that this analysis was criticized for having taken into consideration too many studies that actually used outcome measures that relied on explicit knowledge, in another review (*Ellis, 2002 in Ranta, 2008*), of 11 studies in which the outcome measures were of free speech, *Ellis* found that *Focus on Form instruction* can, indeed, be helpful to the development of implicit knowledge (*Ranta, 2008*). This seems to have been the case for my participants too, since the ones who had more explicit knowledge of the *L2 syntax* were the same who achieved the highest grades in the English courses.

Prompted by *Jongean et al.'s (2007)* observation that, in general, *L2 SA tasks* will be more demanding than *L1 ones* because they require

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<sup>33</sup> Although explicit knowledge might be useful for noticing and monitoring (while planning or revising output produced) (*Cots, 2008*).

a certain degree of language proficiency to be completed, I speculated whether it was the case that those of my participants who were more proficient in the L2 at the beginning of the semester were the same who did better in the L2 SA tasks. If this were the case, it could be that the reason why high L2 SA participants had greater success at the end of the semester was their higher level of L2 knowledge when they started the semester. It is not difficult to imagine that a learner who is more proficient in the L2 will do better in the tasks assigned by the teacher throughout the semester. In addition to that, this person is likely to be an active participant in class and, as a result, will have a higher grade at the end of the semester. Thus, it could be that the relationship between L2 SA and L2 achievement was actually the result of a third intervening variable – level of L2 proficiency at the time the L2 SA task was completed. To determine that, Pearson correlations were run between the participants' scores in the two L2 SA tasks (Error Correction and Error Replication), participants' scores in the L1 KET, and participants' scores in Achievement. Table 15, below, depicts these correlations.

Table 15

*Pearson correlations – KET 1, L2 SA, and Achievement*

		EC	ER	Achievement
KET 1	<i>r</i>	.606**	.858**	.699**
	Sig. (2-tailed)	.002	.000	.001
	N	24	24	19

*Note.* KET 1 = participants' scores in the L2 proficiency test (Key English Test) in the pre-test; *r* = Pearson correlation; N= number of participants; EC = Error Correction; ER = Error Replication; Achievement = grades of the participants in the L2 course at the end of the semester (2010.1).

\*  $p < .05$ , two-tailed

\*\*  $p < .01$ , two-tailed

As suspected, there is a great chance that the participants' performance on the L2 SA task was influenced by their L2 proficiency level at the time the test was taken. And, as expected, the learners who were more proficient at the beginning of the semester were, indeed, the ones who received higher grades from the teachers at the end of the course. Looking at this evidence, it seems that L2 SA can be dismissed as having anything to do with the success of the participants at the end

of one semester of their English courses. Nonetheless, there remains the possibility that it was actually their initial level of L2 proficiency that was the result of their L2 syntactic abilities. Unfortunately, the design of the present study does not allow for the solution of this chicken and egg dilemma.

Taking the results discussed into consideration, the findings from the present study do not contribute with evidence for the well-established correlation between one's level of L1 literacy and his/her level of L1 PA. That is, Hypothesis 1, which stated that *the L1 literacy level of the participants is associated to their L1 PA level*, was not confirmed. The most likely reason for that is the fact that the vast majority of evidence contributing to this reciprocal relationship comes from studies that have measured reading/writing at the level of the word and with learners who were in the beginning years of their literacy development. That is, the evidence comes from studies with people who probably still make frequent use of the phonological route for reading and who rely on grapheme/phoneme correspondences for decoding. Apparently, more skilled readers might still use the phonological route (along with the lexical one); however, their efficient reading and writing probably come from a phonological decoding/encoding that does not happen at the level of the phoneme, but, much more likely, relies on onset-rime, morphemes, or syllable units.

Hypothesis 2 (*the L1 literacy level of the participants is associated to their L1 MA level*) could not be tested, since the tasks used to measure L1 MA were not efficient in capturing the individual differences of the learners as regards L1 MA level. Hypothesis 3 –*the L1 literacy level of the participants is associated to their L1 SA level* – however, was confirmed. A correlation was found between L1 literacy and L1 SA, another indication that, for literate adults, being good at higher-order processes (rather than decoding/encoding) is more important than only being a good and fluent decoder/encoder (though a poor decoder/encoder will probably have difficulties in reading comprehension and writing).

Significant correlations were also found between L1 and L2 PA and L1 and L2 SA. That is, Hypothesis 4, which predicted that *the L1 PA level of the participants is associated to their L2 PA level* and Hypothesis 6, which stated that *the L1 SA level of the participants is associated to their L2 SA level* were confirmed. In the case of PA, the results come to add to a fairly large amount of studies with different languages in which the transfer of phonological skills from the L1 to the

L2 (and vice-versa) has been found. The finding for transfer of SA across languages is more relevant, in the sense that there are very few studies that contribute with data concerning transfer of SA. Apparently, these metalinguistic skills have some “universals” that will be apt to be used in a number of different languages, although there might be some language-specific “parameters”, which may actually hinder learning/communication. As with Hypothesis 2, Hypothesis 5 (*the L1 MA level of the participants is associated to their L2 MA level*) also could not be tested due to the lack of reliable data for L1 MA.

As regards the relationship of one’s literacy level and metalinguistic awareness level and one’s growth in L2 proficiency along a semester of an English course, only L1 PA emerged as having a significant, though negative, impact on L2 learning. In other words, Hypothesis 8 –*the L1 PA, MA, and SA levels of the participants are predictors of their L2 proficiency growth over the period of one semester* was partially confirmed, though Hypotheses 7 (*the L1 literacy level of the participants is a predictor of their L2 proficiency growth over the period of one semester*) and 9 (*the L2 PA, MA, and SA levels of the participants are predictors of their L2 proficiency growth over the period of one semester*) were not confirmed. Because this finding was counterintuitive taking the literature reviewed into consideration, a number of possible reasons for this interplay between L1 and L2 skills was offered. However, at the moment, possible explanations are speculations and the finding remains puzzling.

Finally, participants’ scores in the L2 SA task showed to be the only variable to significantly predict the differences in their grades at the end of the semester. This means that while Hypotheses 10 (*the L1 literacy level of the participants is a predictor of their L2 achievement in one semester of an English course*) and 11 (*the L1 PA, MA, and SA levels of the participants are predictors of their L2 achievement in one semester of an English course*) were not confirmed, Hypothesis 12, which proposed that *the L2 PA, MA, and SA levels of the participants are predictors of their L2 achievement in one semester of an English course* was partially confirmed. Though this result seems plausible and has been found a couple of times before, the fact that the participants who had the highest scores in the L2 SA task also had the highest level of L2 proficiency at the time the L2 SA task was taken might be an indication that, actually, the relationship between L2 SA and L2 achievement is due to both relying on one’s knowledge of the L2.

In the next chapter, I will address the limitations of the present investigation and also the avenues it opens for further research. In addition to that, there will be subsections dedicated to the pedagogical, methodological, and theoretical implications derived from the results of the present study.

## CHAPTER VII

### CONCLUDING REMARKS

The main objective of this chapter is to summarize the most important findings of the present study, which aimed at investigating a potential link between L1 literacy, metalinguistic awareness, and L2 learning, and this is done in Section 7.1. In addition to that, Section 7.2 points out some limitations of the study and also presents suggestions on how further research could avoid these shortcomings. Finally, Section 7.3 highlights the theoretical, methodological, and pedagogical implications of the results obtained.

#### **7.1 Conclusions**

As stated above, the general objective of the present investigation was to verify whether there is a link between one's level of L1 literacy and his/her success in L2 learning, as suggested by Tarone and Bigelow (e.g., Bigelow et al., 2006; Tarone et al., 2007). In addition to that, and with the purpose of overcoming a limitation in Tarone and Bigelow's empirical investigations, an attempt was also made to scrutinize the role one's level of metalinguistic awareness (be it in the L1 or the L2) could have in this relationship.

It was assumed that the participants with the highest level of L1 literacy were also the ones who, previously, had had more experiences with the written code (in terms of amount of reading and/or writing experiences but, mainly, in terms of the variety of experiences as regards contact with different genres). From that, it was hypothesized that the same participants who had the highest levels of L1 literacy would also have the highest level of L1 metalinguistic awareness (which would have been further developed due to the greater exposure to different kinds of print material through life). In addition to that, taking previous empirical research into consideration, it was also expected that learners would transfer their metalinguistic abilities from the L1 to the L2. Finally, I anticipated that those learners with more metalinguistic awareness (in the L1 and in the L2, if metalinguistic awareness was, indeed, found to transfer) would also be the more successful ones when it came to learning an L2.

Data was collected from 24 adult and literate Brazilians, beginning learners of English as an L2, who completed tasks of L2 proficiency at the beginning and at the end of one semester of an English course and also tasks of L1 literacy and L1 and L2

metalinguistic awareness. These participants also contributed with qualitative data, through their answers to 3 questionnaires, which were used as a support in the interpretation of the results of the quantitative analyzes conducted. With these data, the following findings were obtained.

First, whereas a relationship between phonological awareness (PA) and literacy was not found, the participants' scores in the literacy test were significantly and positively correlated to their scores in the syntactic awareness (SA) test. This finding seems to point to a different role for the metalinguistic abilities at different moments of the reading/writing acquisition process. Taking into account the fact that the reciprocal relationship between literacy level and one's level of PA has found support in a number of studies with participants who were, at the time of data collection, in pre-school or in their beginning years of literacy acquisition (children in elementary school, illiterate adults or adults who were becoming literate at the time), it might be that what happens is that, with time, as phonological decoding and encoding become more automatized, PA (at least at the level of the phoneme) is no longer used for reading comprehension. As a consequence, what will make a difference in the quality of the mental model a reader constructs while reading will be his/her knowledge of sentence structure, that is, his/her SA level. Nevertheless, it is good to keep in mind the fact that one's level of SA will probably be further developed only if one does not need to devote as many attentional resources to the task of decoding text. Thus, having a good level of PA is important for literacy development, but, as Castles and Coltheart (2004) argued, the relationship PA probably has with the reading/writing processes of literate learners is more as a distal rather than a proximal cause. That is, differences in these participants' PA level were at least in part responsible for the way the system is in their adulthood, but PA itself (at the level of the phoneme) does not seem to be implicated in online reading/writing at the present.

Second, the results as regards transfer of metalinguistic awareness across languages showed that both PA and SA, apparently and, regardless of the language one is using (L1 or L2), will rely on an underlying pool of knowledge which will subserve, at least to some extent, the abilities in both languages. It seems that, indeed, once some insights are gained about language, in general, these will be helpful when performing in an L2. It might be that this is what allowed those



participants with a quite limited knowledge of the L2 to perform fairly well in some of the L2 metalinguistic awareness tasks.

Third, none of the variables investigated appeared as a significant predictor of the participants' growth in L2 proficiency throughout the semester. Although this finding could be an indication that neither L1 literacy level nor metalinguistic awareness play any role at the time one is learning an L2, an analysis conducted with the data only from the Letras students showed that one's L1 PA level was a predictor of success in L2 learning. Since the model showed that the higher the L1 PA level of a participant, the less this person increased his/her L2 proficiency during one semester of an English course, it seemed, at first, that having more metalinguistic awareness was actually harmful for L2 learning. Due to the fact that this was a counterintuitive finding, taking a previous theoretical proposal (the Linguistic Coding Deficit Hypothesis – Sparks & Ganschow, 1991) and previous empirical findings into consideration, the relationship between metalinguistic awareness and L2 learning was further explored.

Though there are no significant statistical findings which can be brought to support my proposal, it appears, from the analysis conducted, that SA, at least, is helpful for L2 development. My contention is that due to the limited number of people who contributed with data in the present study (and especially for this analysis, where only the Letras students were taken into consideration) and the fact that some of those who took the first L1 proficiency test did not take the second one, did not allow for a significant role for L2 SA to emerge in the model where gains in L2 proficiency was the outcome variable. Nevertheless, an inspection of the raw scores of the participants in both proficiency tests and in the L2 SA test shows a clear trend (both for the Letras and the Extracurricular participants) indicating that from the moment an L2 learner achieves a threshold level of L2 SA, this person is able to capitalize on this knowledge to have marked gains in his/her L2 proficiency level.

This proposal gains power when we take the fourth finding into consideration. When L1 literacy and L1 and L2 metalinguistic awareness were entered in a model with the aim of verifying whether any of these variables was implicated in one's final grades in one semester of the English course, L2 SA emerged as the only variable to be a significant predictor. That is, those learners who enter an English course with a higher level of L2 SA are the ones who are more successful in learning what is taught in the L2 course. Since these

participants were also the ones who started the course with the highest levels of L2 proficiency, it could be that they simply got higher grades because they started off the course with more knowledge of the L2. Nevertheless, it does seem that it is L2 SA which is pushing the learners forward since the ones who had better grades in the first L2 proficiency test were also those who had higher scores in the L2 SA task and, since L2 SA level seems to be a function of L1 SA level, and this is something that was developed (at least in part) before learners got in touch with the L2, we can expect that it is SA which is underlying L2 performance and not the other way around.

In general lines, research results bring evidence for the fact that, in spite of one's level of L1 literacy not being a direct predictor of success in L2 learning, engaging with different genres of text may, indirectly, have an impact on one's L2 development. The results from the present study support a view in which metalinguistic awareness, and, more specifically, SA, is a driving force which will enable both efficient L1 reading and L2 learning. The proposal I make is somewhat similar to that made by Sparks and Ganschow's group, with the crucial difference that while they put *PA* at the core of L1 reading and L2 learning *difficulties*, I argue that *SA* is crucial to L1 reading and L2 learning *success*. This does not mean, however, that our proposals are inconsistent with each other. In my point of view, the findings from the present study, of adult L2 learners who do not have (at least apparently) any deficits in L1 reading/writing or L2 learning, come to corroborate and expand the proposal made by those authors.

As I argued in the first section of the Discussion chapter (Section 6.1, p. 159), *PA* seems to be, indeed, crucial for those who are in the process of becoming literate (be them adults or children). After all, a number of studies have already found empirical support for this proposal. At the same time, it seems that for those who do not have any deficits in phonological processing, this process very soon becomes automatized, allowing learners to turn his/her attentional resources to other more demanding and complex features of text, such as syntax. With time, and with the opportunity and/or need to engage in the reading/writing of more complex and varied types of genres, a person's SA will become more and more sophisticated and refined and this will allow him/her to be a more efficient reader. That is, to be a better text comprehender.

Because at least part of the syntactic knowledge of the L1 gained through the reading of texts will also subserve the L2, these learners will

rely on that knowledge when learning an L2, applying more sophisticated strategies for word learning, for example, than just internal speech rehearsal (which is thought to rely on PA). As Guo, Roehrig, and Williams (2011) point out, SA (besides PA) can also be used to learn vocabulary in the L2. With one's knowledge of the L2 syntax, it is possible to infer meanings of new words one reads or listens, for example, based on the contextual syntactic clues present in the text. In the case of a learner who has deficits in L1 PA, the processes involved in L1 reading will always be limited by his/her lack of reading fluency and, for this reason, though this learner might have the need and/or the opportunity to engage with more complex and varied kinds of texts, s/he will not be able to use these opportunities to gain much syntactic knowledge about the L1. With this limitation as regards SA, their vocabulary learning in the L2 will depend mainly on rehearsal (since they will not always be able to use the contextual clues to deduct word meaning). However, due to their low levels of PA, they will also have difficulties in learning new words this way since they have difficulties in internal rehearsal of these nonword-like words.

Still, in spite of the present results offering an appealing proposal, it is wise to keep in mind the fact that this was a small-scale and exploratory study. As such, it has a number of limitations, which will be addressed in the following section.

## **7.2 Limitations and suggestions for further research**

Regardless of the fact that the present study was anchored in the existing literature on literacy, metalinguistic awareness, and L2 learning, and that the procedures and the instruments used for data collection were carefully designed and previously piloted, the results here presented should be treated with caution. In this section, besides presenting the limitations of the present investigation, I also offer some suggestions for future research.

1. Measurement of literate adults' PA level – As already mentioned in the Discussion chapter (Subsection 6.1.1, p. 159), there have been a number of studies which have found that adolescents and adults have difficulties with PA at the level of the phoneme. As previously argued, it might be that there are differences amongst my participants in the efficiency with which they can read infrequent words using the phonological route; nonetheless, it is likely that they do not analyze printed words grapheme by grapheme. What is more likely is that even when they use the phonological route they decode chunks of words and, for this reason, even the ones who are better at decoding

although the phonological route are not that good in a PA task which requires analysis of the word at the level of the phoneme. Hence, using tasks which assess PA at the level of the phoneme might not be adequate with a literate adult population. The suggestion for other studies is that measures of PA at other levels, such as the syllable, onset/rime, and morpheme be taken into consideration.

In addition to that, reaction time could also be taken into account in PA tasks. In Cisero and Royer's (1995) study, they perceived that a fast response in the PA task in kindergarten did not mean that the participants knew the correct response, it simply meant that they were guessing the answer. In the first grade they took longer to produce answers but, apparently, this was because they were only then really analyzing the stimuli so as to produce a correct answer. Another suggestion is related to the way the stimuli were delivered to the participants since they often had problems understating the oral stimuli in the PA tasks (both in the L1 and the L2). Consequently, they may have made mistakes due to specific difficulties in speech perception rather than difficulties in manipulating the phonemes. Thus, a suggestion for other studies is that the participants be asked to repeat the stimuli before proceeding with the analysis.

2. Tasks used to assess morphological awareness (MA) – due to the fact that ceiling effects were found in both tasks used to assess L1 MA, some hypotheses posed in the present study could not be tested. In addition to that, ceiling effects were also found in one of the L2 MA tasks. Despite the fact that the L1 and L2 Morphological Decision tasks had been previously piloted, and after had their stimuli controlled in a number of ways, still the L1 version of the task was too easy for my participants. A Suffix Choice task was used to replace the Morphological Association one, which, in the pilot study, showed to be much too simple for my population but, nevertheless, only having a test where there were 4 alternative answers rather than two<sup>1</sup> did not prevent ceiling effects from occurring again. I shall return to this discussion on the methodological implications section (7.3.2), but, there is definitely the need for future studies to develop more demanding MA tasks to be used with literate adults. Perhaps one way to overcome ceiling effects would be using pseudowords rather than real words in MA tests.

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<sup>1</sup> Cisero and Royer (1995), Gombert (1992), and Mota (2008) remark that tests which have a correct by chance probability of 50% cannot be expected to be highly reliable.

3. Intervening variables – in other studies in which metalinguistic awareness and literacy were investigated, and in studies which research L2 acquisition, a number of other variables are usually also entered in the equation so that their impact on the relationship under investigation can be partialled out. Some of these variables are: non-verbal intelligence, IQ, working memory capacity, articulation or listening difficulties, vocabulary knowledge, socioeconomic status, short term memory, occupation, and general cognitive ability. Accordingly, the suggestion for future studies is that at least some of these variables be controlled for. In addition to that, due to the small number of informants in the present study, neither could I strictly control the participants' class attendance. Though I have asked the teachers of the English courses for their roll calls, I included in the data pool all participants who attended at least 75% of the classes. Perhaps the ideal choice, in another study, would be to include only those who attended all classes, or that missed only one or two classes at the most.

4. The literacy test – as mentioned in Chapter 2 (Section 2.1, p. 11), there is a great debate regarding the definition of literacy. I define literacy as one's ability to use the written code to respond to the social demands in his/her daily life. Because my population was comprised of undergraduate students, I used a test of literacy which was developed to be used with people who are being instructed in school. Nevertheless, it is always good to keep in mind that this literacy test actually only assessed one kind of literacy – the schooled one. According to Scribner and Cole (1973), this is complicated because schooled literacy is different from the one we actually use in real life. For them, since the experiences in school are too different from real life, this way of thinking and learning is not useful for people's daily lives. Thus, in another study where literacy is measured, perhaps a more encompassing assessment of literacy level could be used.

Moreover, even if the PISA test is supposed to be assessing both reading and writing (once some of the answers in the test are open-ended and depend on the learner making him/herself understood), there is no denying that the PISA is basically a test of reading comprehension. As a result, the other suggestion I would make for a prospective study is that the writing aspect of literacy be assessed more thoroughly. Perhaps simply by asking the participants to write an argumentative composition one would already have a better measure of the participants' writing skills.

5. Causality cannot be claimed with the design of the present study – the statistical analyses employed in the present study were all correlational in nature. Even in multiple regressions what is observed is how the variability in one attribute co-varies with later observed abilities so that it is possible to precise how much of the outcome of a given variable can be explained by that first attribute. That is, evidence is correlational, not consequential (Meschyan & Hernandez, 2004). In other words, though multiple regressions are a kind of test in which *predictor* variables are identified, still it is not possible to claim that a predictor variable caused a given outcome, considering that might well be that there is/are a third/fourth/fifth variable(s) which is/are underlying this relationship (Castles & Colheart, 2004). The only way to attempt to observe causality is through a longitudinal study (Juel et al., 1986) and, in spite of the fact that the present study could be defined by some as longitudinal, it has to be pointed out that an interval of roughly 15 weeks between the 2 enactments of the L2 proficiency tests is a very limited amount of time if we think about L2 learning. The suggestion, then, is that other studies leave a longer interval between the first and the second L2 proficiency tests and also that a delayed L2 proficiency test be included.

6. Number of participants – although an attempt was made to have more participants in the study (almost 150 invitation e-mails were sent to Extracurricular students who were, at the time, taking the level 1 English course), the sample who contributed with data was quite small. In the group of the Letras students (21 students), all of them agreed to take part in the study; however, there were some who only took one or both of the tests which were done in class at the beginning of the semester – L2 proficiency (KET 1) and L1 literacy (PISA). In addition to that, there were students who did not take all the tests and one who was taking only one of the two English courses (*Compreensão e Produção Escrita em Língua Inglesa I*). As regards the Extracurricular students, the initial number of participants was already very small – 9 – and there was also mortality throughout the data collection process. One participant only took the literacy test, one was eliminated because his L1 was not Portuguese, and one missed the final month of classes (her data was used only for the 2 first research questions). Having such a small number of participants makes it more difficult to find significant results in the statistical tests. According to Field (2005), for multiple regression analyses, the rule of thumb to calculate the ideal number of informants is the following equation: 50 participants + 8 x the number of predictors

entered in the model. Therefore, the ideal number of participants in my study would be  $50 + 8 \times 5$ , that is, 90. Moreover, when no variables appeared as predictors of gains in L2 proficiency for the whole group of participants (Letras and Extracurricular students, all together), an attempt was made to run multiple regressions for the groups in separate. However, with only the data of 6 participants from the Extracurricular group, this multiple regression could not be run and, hence, the result for Research Question 3 is only for the Letras group<sup>2</sup>. Taking that into consideration, my suggestion is that an attempt be made, in other studies, to include data from a greater number of participants.

7. The way L2 achievement was assessed – As described in the Method chapter (Subsection 4.3.2, p. 91), the measure used to express L2 achievement was the participants' final grade in the English course they were taking at the time<sup>3</sup>. This grade was taken to be a measure of their success in learning what was being taught throughout the course. However, because I did not consult the teachers, I do not know what kind of instruments were used to assess these students' progress in the course. As I mentioned in the Results chapter (Section 5.1, p. 126), being a teacher of English myself and having taught both at the Extracurricular program at UFSC, and in the first semester of the oral English course for the Letras/Inglês students<sup>4</sup>, I know that the teachers are instructed to assess their students' progress throughout the semester and also to apply at least one exam at the end of the semester. I am also aware that many teachers in the Extracurricular program, besides myself, assess their students throughout the semester asking them to hand in written assignments (such as short paragraphs, for example) and also by observing their oral production when performing tasks in the classroom. Another common practice is to have an oral and a written test at the end of the semester. In the Letras program, I believe that many teachers have a very similar approach to that of the Extracurricular ones<sup>5</sup>, with the difference that, if one is teaching the oral course, the assessment will be mostly based on a student's ability to sustain speech, and if the course being taught is the written one, the assessment is mostly based on a student's writings.

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<sup>2</sup> Although, as explained in the Discussion chapter (Section 6.3, p. 184), the correlations run between L2 SA and other variables were run for the group as a whole. Therefore, the discussion related to this aspect is for the group as a whole, and not only the Letras students.

<sup>3</sup> In the case of the Letras students, an average of their grades in the 2 courses was used.

<sup>4</sup> Teaching Internship in Higher Education (Estágio de docência).

<sup>5</sup> I happen to be acquainted with a number of students from the Letras/Inglês program at UFSC and often they comment on the tasks they are working in for the language classes.

Nonetheless, the teachers may have used any kind of measures they wished to assess these students' L2 performance. Since I did not ask them how they got to a final grade for each of their students, there is no way of knowing which kinds of skills the instruments used were assessing. Moreover, different teachers have different approaches when correcting material. For example, when I got the scores of rater C for the Speaking Paper of the KET (both versions) I perceived that her grades were always a little higher than the ones I had given. In one specific case, when the difference was a little more marked, I asked her why she had given such a high grade when the language produced by the participant was so poor. She replied explaining that though this was something which was not explicit in the criteria for the KET test, she always gave a greater grade in "Interactive Communication" when a participant was clearly a risk-taker and attempted to stretch his/her resources to the most, even if this culminated in very inaccurate language. I believe this example is a good illustration that even when the instrument is the same and there are criteria to be followed, there is some subjectivity in the way teachers define what means being successful in using the L2. Thus, perhaps the best would be to conduct interviews with the teachers of the courses the participants are taking so as to verify which instruments were used to assess their achievement in the course and also to gain knowledge of the teachers' stance towards success in learning what is being taught in the L2 classroom.

8. L2 SA did not appear as a significant predictor of gains in L2 proficiency – this is an important point that cannot be forgotten. Even though L2 SA was found to be a significant predictor of L2 achievement, it did not appear as a significant predictor of L2 proficiency growth. In the Discussion chapter (Section 6.3, p. 184) I have made a case for the fact that L2 SA also seems to be underlying L2 proficiency growth. For that, I relied on significant correlations between the participants' scores in the L2 SA test and their scores in the KET 1 and the KET 2 (for all participants) and also on an analysis of the raw data of the participants. Nevertheless, irrespective of the fact that it might be that L2 SA did not appear as a significant predictor of gains in L2 proficiency due to the fact that some participants dropped out from the study before all data had been collected, this is a finding that cannot be overlooked and it might be an indication that, despite the fact that L2 SA may be playing a role in L2 learning, there are a number of other variables which will be more important than one's abilities in SA.



Despite the limitations put forward above, the results of the present endeavor cannot be dismissed and its insights might contribute to a better understanding of the complexities involved in the acquisition of an L2. In view of that, the next section will address the possible theoretical, methodological, and pedagogical implications which arise from the present research.

### **7.3 Implications**

#### **7.3.1 Theoretical implications**

As regards the theoretical implications brought about by this study, the first thing I would like to remind my readers of is that from the start my intention was never to confirm or verify a causal link between L1 literacy level and success in L2 learning (especially because this would not have been possible with the design of the present study). With the investigation I conducted I was much more interested in proposing some hypotheses as regards this relationship, investigating the possibility of such link for an adult literate population, and paving the road for other studies which can more directly assess whether a causal relationship exists between one's level of L1 literacy and his/her development when it comes to learning an L2.

Nonetheless, the results from the present investigation bring evidence for two possibilities which I have advanced in the Discussion chapter and in Section 7.1 and which I restate now. First, according to the findings of the correlations run between L1 literacy and metalinguistic awareness, differently from what happens for readers/writers who are in the initial years of literacy acquisition, PA level was not correlated to literacy level in the present study. Literacy level was significantly related only to SA. Second, SA, rather than PA, is what seems to make a difference for L2 learning when learners do not have low levels of PA<sup>6</sup> (i.e., when their PA level has developed up to the point where phonological decoding/encoding can happen automatically).

As regards the first finding, the theoretical implication it has is for models of reading/writing and literacy acquisition. The results of the present study can be thought to bring evidence both for a top-down model of reading and to an interactive model of reading. Not having found a correlation between PA and literacy level does not necessarily mean that the phonological route is no longer used by experienced readers. As it has been argued by a number of authors, there will always be the need for phonological decoding of words when not very frequent

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<sup>6</sup> Something Guimarães (2003) also suspects to happen.

words are encountered by a reader, and this is very common (as the study of Carroll, Davies, & Richman [1971 in Adams, 1994] has shown – see Subsection 6.1.1, p. 159). However, as some empirical studies have demonstrated, it appears that the specific ability of matching graphemes to phonemes in this phoneme-by-phoneme fashion is something that is not much used once one gets more acquainted with text. Thus, what is more probable is that my participants did, indeed, decode phonologically a number of words in the texts they read; however, because this decoding was not being made at the level of phoneme, their difference in the ability of being able to perceive and manipulate phonemes in isolation apparently was not what explained their difference in performance on the L1 literacy test.

On the other hand, the variable which did correlate to one's ability to perform in the PISA test was the participants' level of SA. That is, being able to capitalize on one's knowledge of sentence structure probably helped the participants to be more accurate in the literacy test. In addition to that, there was also some indication that having contact with a greater variety of texts genres and having a positive attitude towards reading and writing might also be factors contributing to one's level of literacy. This, somehow, corroborates the claims of authors such Adams (1994), Gough and Juel (1991 in Durgunoglu et al., 1993), Cunningham and Stanovich (1997) and Troia (2004) that the relationship between reading and/or writing skills and the pleasure one derives from these kinds of activities is an interactive and circular one.

As regards the importance of having contact with different genres, it is wise to keep in mind that the contact with the written code might be beneficial only for those learners who have a good level of PA. Guimarães (2003), for example, found that poor readers who were in the sixth grade had SA levels which were similar to those of good fourth grade readers, though both groups had lower levels of SA than the good sixth grade readers. For her, this was evidence that in spite of the fact that SA seems to improve through further reading and writing practices (since good readers in the sixth grade had more SA than good readers in the fourth grade), it is likely that the poor sixth grade readers could not benefit from the extra exposure to text, since their low level of PA probably prevented them from attending to the syntactic structure of the text.

Taking all that into consideration, what seems to happen is that after the initial phases of literacy acquisition, when the

grapheme/phoneme correspondences become overlearned for a number of words, differences in one's PA level will no longer directly impact one's ability to read/write online. Once enough resources are left after decoding has taken place, what a reader will start to focus on are the syntactic features of a text (and, possibly, how they vary according to genre) – that is, the ways the words are combined to convey meaning at the level of the sentence. If this person, then, is exposed to a variety of different genres, together with this sentence-level kind of knowledge, probably this learner will develop some textual awareness, which should enable this person to identify texts genres by their common characteristics. By using this knowledge, s/he will become a better comprehender.

Still, this does not mean that differences in PA level at the moment of literacy acquisition will not matter. Though the design of the present study does not allow for any conclusion in this sense, it could be that those learners which had a lower level of PA at the time they were learning to read and write, and who did not receive instruction which allowed them to overcome this limitation, never managed to completely automatize their phonological decoding process. Due to that, perhaps they could not fully develop their SA level, which may be reflected in a lower ability for text comprehension in the present. In sum, PA might still be a distal cause of reading difficulties, but, at least as regards the awareness at the level of the phoneme, PA level does not seem to be enough to distinguish between better and poorer readers when we take literate individuals into consideration.

In relation to the second finding – the relationship between metalinguistic awareness and L2 learning – the evidence encountered also indicates that the role of PA in this process might not be as simple as it was thought up until the moment. As described in Chapter 3 (Section 3.3, p. 66) and later readdressed in the Discussion chapter (Subsection 6.1, p. 159), so far, all evidence found concerning the relationship between one's PA level and his/her L2 learning process pointed to a beneficial role for a heightened level of PA. More specifically, the arguments brought by Hu (2007), Hu and Schuele (2005), and Meschyan and Hernandez (2002; 2004) were that a higher level of PA would allow one to acquire L2 vocabulary more easily. However, what was found in the present study was that a higher level of L1 PA was actually implicated in a smaller growth in L2 proficiency amongst the learners under scrutiny.

Going further in this investigation, it was also found that differences in the level of L2 SA might be playing a role in success in L2 learning. In spite of the fact that the evidence was only correlational (i.e., L2 SA did not appear as a significant predictor of gains in L2 proficiency), the tendency observed was for those learners who had a “medium-low” level of L2 SA (those who had about 35 to 40% of their answers in the L2 SA test correct) to have the biggest increases in scores from the first to the second enactment of the L2 proficiency test. Apparently, what might have caused L2 SA not to have appeared as a significant predictor of L2 proficiency gains was the fact that those who had a higher level of L2 SA (more than 80% of their responses correct), already at the beginning of the semester had quite high grades in the L2 proficiency test (between 74.2 and 88.5). Hence, once again, it seems that it is SA and not PA which is really making a difference in the performance of these adult literate learners.

As in the case of literacy development, it seems that PA level will be important up to some point to L2 learning. Because most of the studies conducted by Sparks and Ganschow’s group had as informants participants with a low level of PA, it might be that, similarly to what happens in the case of reading, if one’s PA level is too low, this person’s level of SA will not be able to develop much, since s/he will be always spending too much of his/her attentional resources in decoding/encoding when reading/writing. Since apparently it will be L1 SA which will support L2 SA ability (once there was a positive correlation between L1 and L2 SA levels), this learner will also have a low level of L2 SA. From the moment the level of L2 SA surpasses a threshold (which does not seem to be too high), however, this person is then able to rely upon this knowledge in order to further develop in the L2.

All in all, the main theoretical contribution of the present study is to bring SA to the spotlight in relation to L1 literacy and L2 development. The evidence we had so far, which was mostly gained from studies with children, illiterate (or barely literate) adults, and L2 learners with learning difficulties, all pointed out to the importance of PA in helping fostering both L1 literacy and L2 learning. When data was collected with adult individuals who do not seem to have any learning problems and who, apparently, have fully mastered decoding/encoding through the phonological route, differences in PA no longer seem to be as important. For those who are able to go beyond the constraints imposed by deficiencies in decoding/encoding, it seems that

it will be the expertise related to text and sentence structure gained from contact with a variety of texts that will matter.

### **7.3.2 Methodological implications**

The results of the present study allow two main methodological implications. The first one is in relation to the scarcity in studies investigating metalinguistic abilities other than PA, and the second is the need for the refinement of metalinguistic awareness assessment instruments to be used with literate adults.

Concerning the first issue, when I first started reading about metalinguistic awareness and its relationship to literacy, I was surprised by the number of studies scrutinizing PA. With time, I also encountered studies of MA and SA (more often separately, but also treated jointly as grammatical awareness). Throughout this search, the need for more studies in which MA and SA (besides PA) measures be included was often voiced by researchers (e.g., Ferreira & Dias, 2008; Mokhtari & Thompson, 2006; Scarborough et al., 2008; Troia, 2004), especially as some of them started to find evidence for a contribution of MA and SA to literacy which was beyond that which could be accounted for by differences in PA. My suspicion is that the lack of consistent and insightful evidence as regards the roles MA and SA play in literacy acquisition and how these abilities develop reciprocally might well be due to the lack of more research about them. The fact that in my study the correlation between literacy level and metalinguistic level was found for SA but not for PA reinforces the view that our knowledge about the role of SA and MA in reading/writing is still very limited.

In the same way, there is a myriad of studies which have investigated the possibility of transfer of PA across languages. However, when it comes to MA and SA, I have found only 5 studies which investigated transfer and, at least for SA, the findings are mixed. Once again, the result obtained in the present investigation comes to add to this very limited body of evidence for transfer of SA across two languages. Finally, MA and SA were also left behind in the study of L2 learning. In the investigations of Sparks and Ganschow's group, though they predict that limitations in SA (and semantics) can have a hindering role in L2 learning, the focus of their empirical investigations was almost solely on PA. Having found, as proposed above, that perhaps for most L2 learners (those who do not have limitations as regards PA) SA is actually more important in fostering L2 learning than PA also makes a strong argument for this ability to be better investigated.

The second major contribution of the present investigation as regards research methods is in relation to the tasks used to assess metalinguistic awareness. As I have been stating throughout the chapters, most of the research linking metalinguistic awareness and literacy revolves around the relationship between the latter construct and PA. Moreover, these studies were mostly conducted with children who were in their beginning years of literacy acquisition and/or with adults who were illiterate or who were, at the time of data collection, learning, or had just learned, to read and write. Another complicating factor is the fact that not many times L2 metalinguistic awareness has been assessed in empirical studies, let alone with fully literate adults. Taking all that into consideration, choosing the tasks to assess L1 and L2 metalinguistic awareness in the present study was, perhaps, one of my greatest challenges.

In the pilot study I had the opportunity to test some of the tasks I intended to use for the data collection for the dissertation and also to calibrate and change them. Even so, results show that there is the need to further modify and test these tasks so that they are more reliable measures of the variables they intend to be assessing. For each of the 3 metalinguistic abilities the tests employed included two different tasks, which were supposed to be testing, perhaps, slightly different facets of each of the skills. In fact, this seems to have been the case since for both PA and SA one of the tasks appeared as the one which better captured the individual differences amongst the participants. In the case of PA, it was the Phonological Transposition task and, in the case of SA, it was the Error Replication one. It is interesting to note that these tasks were, in both cases, the more difficult ones of the pair, as I explain below.

For PA, one of the tasks required the segmentation of a word according to its appropriate phonemes (Phonological Segmentation). The other (Phonological Transposition) demanded not only that the participant also made this segmentation (even though the participant did not have to overtly demonstrate his/her skill in doing so), but also required an exchange of phonemes between the two words. In the case of SA, whereas the Error Correction task required that the participant only corrected a given sentence, something that could have been done more or less instinctively taking into consideration one's knowledge of the L2, the Error Replication task demanded that the participant explicitly pay attention to the deviation in a sentence and that the test-taker be able to correct it and also to identify in a correct sentence what change would bring about the same mistake.

In the case of the MA tasks, whereas there was an attempt to create a more demanding task for the participants that could replace the Morphological Association one (which proved to be inadequate in the pilot study), this attempt was not successful. The Suffix Choice task proved to be as easy (or even easier) for the participants as the Morphological Association one was. In addition to that, concerning the tasks employed to assess MA in the participants' L1 – Portuguese – even the Morphological Decision task yielded ceiling effects. The greatest challenge then, perhaps, is for us to develop tasks that can assess differences in L1 MA in literate adults. As I mentioned in the previous section (7.2, p. 211), one way to do that would be to use pseudowords rather than real words. In addition to that, in previous studies the stimuli used on MA tasks were manipulated as regards the phonological relations between the words (i.e., using words with more opaque relationships<sup>7</sup> makes the task more demanding<sup>8</sup>) (Mota, 2007b; Fowler & Liberman, 1995 in Mota, Anibal, et al., 2008), structural salience (words that have a lexical base [such as *re-solve*] are more salient than words that have a sublexical or latinate base [such as *re-volve* and *in-clude*] and, thus, are more quickly analyzed [Koda, 2000]), and orthographic irregularities<sup>9</sup> (pairs that have irregularities in their orthographic relationships would be harder to judge, even when the stimuli presentation is oral [Carlisle, 2004]).

Besides these two main contributions, the results from the present study also draw attention to the need for studies with a larger population. Unfortunately, while we continue to collect data with a small number of participants, there will be limitations in the kinds of statistical analyses that can be run and, mainly, on the possibility of generalizing the results obtained. And last, but not least, the results also point out to the importance of gathering qualitative data to shed light into one's quantitative results. In the final section of this chapter I offer some suggestions as regards the ways the results from the present endeavor can enlighten our pedagogical practices.

### 7.3.3 Pedagogical implications

From the results obtained and the discussion presented in Chapter 6, there are three ways in which the results from the present study can inform pedagogy. First of all, it seems that overcoming any deficiencies

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<sup>7</sup> E.g., asking participants whether *razão* and *racional* are from the same morphological family.

<sup>8</sup> Though Singson et al. (2000) found that a phonological shift created problems in associating two morphologically related words only for pseudo words.

<sup>9</sup> E. g., *decide/decision* x *enjoy/enjoyment*.

in PA at the time one is learning to read and write might lead one to be a better reader and L2 learner. Second, if SA (rather than PA) is what will effectively make a difference for reading comprehension and for L2 learning, there is the need to encourage learners to read more and more varied genres so as to increase their SA level. Finally, the fact that L2 SA seems to be beneficial in increasing one's level of L2 proficiency lends power to proposals that advocate for a beneficial role for explicit knowledge of the L2, such as the Focus on Form proposal made by Long (1991).

As for the first pedagogical implication derived from the present investigation, if, in fact, the development of SA only happens after a child has freed enough attentional resources from the decoding task so that attention can be paid to the syntax of texts, it is important that teachers help any learners who may have difficulties in using the phonological route for decoding/encoding.

Second, taking the results from the present investigation into consideration, it does seem that, as Adams (1994), Cunningham and Stanovich (1997), Gough and Juel (1991 in Durgunoğlu et al., 1993), and Troia (2004) proposed, better readers will read more and, in turn, become even better readers. This seems to be a reciprocal relationship that eventually will lead the good reader to become an excellent one, but that also will prevent poor readers to further develop their skills once they will not feel motivated to engage in such an unrewarding task. It is with these learners (the ones with difficulties) that teachers must be concerned. Perhaps through more focused instruction teachers can help them to overcome some of their difficulties and get them to engage in reading regardless of the challenge this act brings to learners with reading difficulties.

Though it is not for me to prescribe how this should be done, I personally believe that with the variety of media and technology available nowadays, there is some kind of reading that will attract all possible reading profiles. It is important to highlight that what seems to be crucial is the experience with different genres of text. As Rogers (2008) points out, there is no such a thing as acquiring a set of literacy skills and then applying them to all kinds of texts, “[e]very new text form that is encountered calls for new learning” (Rogers, 2008, p. 139). Therefore, perhaps teachers can make an attempt to lure these learners with a not so good attitude towards learning with materials that interest them and also that are adequate to their reading abilities. With time, as these learners gain confidence in reading/writing, teachers can



start to introduce different genres and different themes to reading classes.

Last, but perhaps most importantly, the results of the present study point out to a beneficial role for the explicit knowledge (something R. Ellis [2006] terms analyzed knowledge) of the L2 grammar in L2 learning. By explicit knowledge I do not mean here the kind of knowledge involving metalanguage that a teacher of English usually has (termed metalinguistic knowledge by R. Ellis [2006]). What was shown was that those learners who could better spot grammar deviations in an L2 SA test were the most successful students at the end of one semester of an English course. That is, I do not know and did not verify whether these learners knew the grammatical rule that was underlying the deviations that they had to correct or replicate. However, they had the knowledge that some things are accepted as regards the form of the language while others are not. More importantly, the differences appeared in the Error Replication task. Thus, we can rule out, I believe, the possibility that these learners were correcting some of the sentences in a more instinctive way, only based on their familiarity with some constructions (the correct ones). Since they could identify where the error was and also transform a correct sentence in such a way that the same deviation of the first sentence was present in the second one, it seems that they, indeed, had an explicit knowledge of the possibilities allowed by the grammar of the L2.

If we think of an instructional setting such as Brazil, where the L2 is learned as a foreign rather than a second language, this finding is very appealing. That is, differently from what Krashen argued, formally learning features of the L2 appears to be beneficial for L2 development. Nonetheless, since the idea is not simply to focus on the teaching of isolated linguistic structures, it is important that the teacher balances this need to focus on the more formal aspects of language and communicative activities where the main focus will be on meaning. The proposal of Focus on Form instruction (Long, 1991) comes as a possibility to achieve these goals concomitantly. What we must keep in focus, when proposing that some focus on form is beneficial to L2 development, is the fact that this might lead to a view of language teaching that resembles the decontextualized kind of teaching, solely focused on structure, which was a reality not so long ago. The idea is to

have this practice and these kinds of activities inserted within a communication oriented approach to teaching<sup>10</sup> (Cots, 2008).

In Ranta (2008), she presents a number of ways in which focused form instruction can be implemented as a way to improve oral production, and I believe we can stretch her suggestions to L2 learning in general. Her first suggestion is to use consciousness-raising tasks. These moments of awareness raising can happen both in a deductive and/or in an inductive way and, according to White and Ranta (2002 in Ranta, 2008), who had encouraging results as regards the effectiveness of consciousness raising tasks with their participants, these tasks make the target forms more noticeable in the input and, with time, they probably become part of one's implicit knowledge. Another possibility Ranta presents is structured output practice, a proposal made by Gatbonton and Segalowitz (2005 in Ranta, 2008) within a task-based approach they term *Automatization in Communicative Contexts of Essential Speech Segments (ACCESS)*. The idea is that fluency can be improved through focused work with chunks in communicative tasks. In this proposal, there are 3 phases, as in the well known *Presentation-Practice-Production* technique. However, this time the learners start with something that resembles the *Practice* phase (where they use formulaic chunks repeatedly in different contexts), then they move on to a moment when they focus on form (during which more explicit instruction happens), and finally they have a free communication phase (Ranta, 2008).

Other possibilities for L2 development put forward by Ranta (2008) are structured input and corrective feedback. Knowledge consolidation through structured input practice is a proposal headed mainly by VanPatten (2002 in Ranta, 2008), who proposes that by processing the input learners will restructure their interlanguage and, as a consequence, will be able to use this knowledge in oral production. He predicts that this kind of instruction will go through 3 phases: 1) students learn about the rule of a given structure, 2) students learn about efficient and inefficient input processing strategies, and 3) learners do activities in which input processing is pushed. Finally, Ranta also proposes corrective feedback as a way to focus on form in the L2 classroom. Still, the author does not offer many practical suggestions since the evidence for the effectiveness of error correction is mixed

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<sup>10</sup> Though there is no evidence for the superiority of the focus on form proposal over the traditional focus on forms one (Sheen, 2003 in Cots, 2008).

(many times the learners do not perceive that it is form, rather than meaning, that is being corrected and, thus, do not make any changes in their utterances) and it is still unknown which kind of corrective response (just a recast of an erroneous sentence or a more explicit way of correction) is the best (Ranta, 2008).

Another perhaps interesting way of increasing learners' metalinguistic awareness (and L2 learning) is the proposal made by Swain, which she terms *linguaging*. This proposal is a modification of her Output Hypothesis (Swain, 1995), which suffered a shift from an almost solely cognitive perspective to a more social approach where peer-peer interaction is seen as the thrust for L2 learning (Swain & Lapkin, 2002; Tocalli-Beller & Swain, 2005). According to the author, it is the collaborative dialogue<sup>11</sup> that happens when learners are talking about language while producing it and during the revision of such production that is behind L2 learning (Swain & Lapkin, 1998, 2002; Swain, Brooks, & Tocalli-Beller, 2002). This way, output is useful not only to generate and test hypotheses, but it also has a cognitive function that will be realized through interaction (Swain & Lapkin, 1998, 2002). Moreover, Basturkmen, Loewen, and R. Ellis (2002) advocate that explicit comments on form involving metalanguage<sup>12</sup> are one of the ways to accomplish focus on form (Long, 1991). Just to cite one piece of empirical evidence, Swain and Lapkin (1998) found that the pairs of students who were the participants in their study who produced more language-related episodes while carrying out a jigsaw task were the ones who did best in the posttest<sup>13</sup>. Moreover, the authors were able to demonstrate, using the pre- and posttest data, that some language-related episodes were, in fact, the site of learning.

All in all, I see the results from the present study as both encouraging and intriguing. Encouraging because we can notice how intervention can, apparently, have an impact on the development of cognitive abilities, perhaps helping learners to overcome some of their limitations and to make up for deficits that are not so amenable to instruction. Intriguing because, as most pieces of research happen to be, the present investigation raises as many (or perhaps even more)

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<sup>11</sup> Even more recently, Swain (2006 in Vidal, 2007) has substituted collaborative dialogue by the term *linguaging* ("process of making meaning and shaping knowledge and experience through language" Swain, 2006, p.151 in Vidal, 2007, p.4).

<sup>12</sup> "[L]anguage used to analyze or describe language" (Johnson & Johnson 1998 in Basturkmen, Loewen, & Ellis, 2002).

<sup>13</sup> A tailor-made test built based on the learners' oral interaction while conducting the jigsaw task.

questions as it offers answers. This way, I end with an invitation to fellow colleagues in the areas of L2 learning, literacy acquisition, and metalinguistic awareness to join me in further scrutinizing the issues dealt with in the present work.

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