

UNIVERSITÀ DEGLI STUDI DI MILANO
CORSO DI DOTTORATO IN STUDI LINGUISTICI, LETTERARI E INTERCULTURALI
IN AMBITO EUROPEO ED EXTRA - EUROPEO
DIPARTIMENTO DI AFFERENZA DEL CORSO
Scienze della Mediazione Linguistica e di Studi Interculturali

TESI DI DOTTORATO DI RICERCA

**The Effects of Bi-literacy on Phonological Awareness and Reading Ability in L2 Italian and L3
English
A Study on Young Heritage Speakers of Romanian in Italy**

Settore Se.Fa Area Umanistico Sociale

DOTTORANDA Irina Stan

TUTOR Paola Catenaccio

COORDINATRICE DEL DOTTORATO Maria Vittoria Calvi

A.A. 2019-2020

The Effects of Bi-literacy on Phonological Awareness and Reading Ability in L2 Italian and L3 English - A Study on Young Heritage Speakers of Romanian in Italy

ABSTRACT

If it holds that L3 learners are influenced by the general cognitive effects of bilingualism (Bialystok, 2001) and that bilingualism provides better opportunities for the growth of cognitive, linguistic, and academic skills provided bilinguals develop literacy in their first language (Cummins, 2000), it could be hypothesised that bi-literacy translates into benefits not only in L2 but also in L3 learning. This dissertation aims at determining the effects of bi-literacy (versus bilingualism alone) on young bilingual children's phonological awareness and reading ability. The study specifically looks for the possibility of metalinguistic awareness benefit on the level of phonology and word-level decoding by having Romanian acquired as a first and heritage language and Italian as a second language and medium of instruction. It also examines the possibility of transfer of these benefits into the third language, English, which is learnt formally at school as a foreign language. Finally, it seeks to determine whether this possible metalingual benefit can manifest differently in L2 with respect to L3.

Sixty-one 8 to 10-year-old Romanian-Italian bilingual children who met the exclusionary criterion of having Romanian as first and dominant language in the home were selected from different public primary schools in Northern Italy that were hosting Romanian language courses for young heritage speakers. Next, they were further divided into two groups, namely the bi-literate bilingual group that were participating in these courses of Romanian as a heritage language and therefore had literacy skills in Romanian, and the mono-literate bilingual group that was not attending any such course nor had literacy knowledge in Romanian. Finally, a group of Italian monolingual children, matched on demographic and socio-economic characteristics, were selected from the same schools as the bilingual groups. All participants were first assessed for their non-verbal intelligence. Then bilingual children's language proficiency was measured through three vocabulary tests, each in Romanian, Italian and English, and were assessed for their daily (passive and active) spoken language use in Romanian and Italian through a parental questionnaire. They were also assessed for their phonological awareness abilities that included phoneme segmentation and blending, syllable blending and onset-rime oddity in the three languages. Finally, the participants were assessed for their Italian and English word reading abilities through a list

of both real and pseudo-words arranged in increasing difficulty level. The monolingual children completed the vocabulary, phonological awareness and reading tests in Italian and English only.

Results from the above tests generated four important findings. Firstly, it is clear that the bi-literate bilinguals develop better phonological awareness skills in Romanian, their L1, as they outperformed the mono-literate bilinguals on all phonological awareness tasks. Secondly, the superiority of the bi-literates over mono-literate bilinguals is also visible in L2 Italian, at least as pseudo-word reading, phoneme segmentation, onset-rime oddity and syllable blending are concerned. Moreover, being Romanian-Italian bi-literate can also translate into benefits over Italian monolinguals as tests on L2 Italian onset-rime, syllable and pseudo-words have shown; at the same time, as far as L2 Italian testing is concerned, being mono-literate bilinguals does not result in advantages over monolinguals. Thirdly, the results supported the prediction that Romanian (L1) literacy skills would have a positive impact on English (L3) phonological awareness and literacy acquisition. This conclusion derives from the superiority of the bi-literate bilingual group over both the mono-literate bilingual and monolingual groups on all four phonological awareness tests and on the word decoding task. On the other hand, being bilingual mono-literates results in leverage over monolinguals only on phoneme and onset-rime testing. Finally, these results would seem to put forward that L3 acquisition is different than L2 acquisition and cannot be considered a simple variation of it, since the development of phonological and reading skills resulted to manifest themselves differently in the two languages. Therefore, it could be suggested that L2 and L3 acquisition should represent a distinct research domain.

This study contributes to early heritage language literacy learning in the Italian and European context, especially learning to read in English as a foreign language. My study provides evidence that among bilingual children, the phonological processing skill and reading ability skills can be elevated through teaching the orthographic knowledge of the first language.

Gli effetti dell'alfabetizzazione nella lingua d'origine sulla consapevolezza fonologica e sulle abilità di lettura in Italiano L2 ed Inglese L3 – Uno studio di caso sul bilinguismo precoce italo-rumeno in Italia

ABSTRACT

Se l'acquisizione di una terza lingua (L3) è influenzata dagli effetti cognitivi generali del bilinguismo (Bialystok, 2001) e se il bilinguismo offre migliori opportunità per la crescita delle abilità cognitive, linguistiche e accademiche, a condizione che i bilingui sviluppino l'alfabetizzazione nella loro prima lingua (Cummins, 2000), si potrebbe ipotizzare che la bialfabetizzazione si traduca in benefici non solo nell'apprendimento di una seconda lingua (L2) ma anche nell'apprendimento della stessa L3. Questo lavoro mira a determinare gli effetti della bi-alfabetizzazione (rispetto al solo bilinguismo orale) sulla consapevolezza fonologica e sulla capacità di lettura nei bambini bilingui. Nello specifico, questo studio intende verificare, se e in quale misura l'acquisizione del rumeno come prima lingua e lingua d'origine e dell'italiano come seconda lingua e mezzo di insegnamento in termini di consapevolezza metalinguistica sia associato a migliori livelli di consapevolezza a livello di fonologia e di capacità di decodifica a livello di parola. La tesi esamina anche la possibilità di trasferire i benefici di cui si ipotizza l'esistenza nella terza lingua, l'inglese, appresa formalmente a scuola come lingua straniera. Infine, cerca di determinare se questo possibile vantaggio metalinguistico possa manifestarsi in modo diverso nella L2 rispetto a L3.

Sessantuno bambini bilingui rumeno-italiano di età compresa tra 8 e 10 anni che hanno soddisfatto il criterio di inclusione di avere il rumeno come prima lingua dominante in casa sono stati selezionati in diverse scuole primarie pubbliche del Nord Italia che ospitavano corsi di lingua rumena come lingua d'origine. Successivamente, i partecipanti bilingui sono stati ulteriormente divisi in due gruppi, vale a dire il gruppo bilingue bi-alfabetizzato, in rumeno e italiano, che partecipava ai corsi di lingua rumena, e il gruppo bilingue monoalfabetizzato, che non stava frequentando alcun corso di lingua rumena né aveva conosciuto l'alfabetizzazione in rumeno. Infine, un gruppo di venti bambini monolingue italiani, abbinati per caratteristiche demografiche e socio-economiche, è stato selezionato nelle stesse scuole dei gruppi bilingui. Tutti i partecipanti sono stati preliminarmente sottoposti a test per valutarne l'intelligenza non verbale. Quindi la competenza linguistica dei bambini bilingui è stata misurata attraverso tre test di conoscenza lessicale, rispettivamente in rumeno, italiano e inglese; è stato inoltre stimato l'uso quotidiano (passivo e attivo) della lingua parlata rumena e italiana attraverso un questionario distribuito ai genitori. Infine, è

stata valutata la consapevolezza fonologica dei bambini bilingui attraverso una batteria di test che comprendeva la segmentazione e la fusione di fonemi, la fusione di sillabe e la discriminazione dell'attacco e della rima nelle tre lingue. Infine, ne è stata valutata la capacità di lettura di parole in italiano e inglese attraverso un elenco di parole, sia vere che pseudo-parole, disposte in ordine di difficoltà crescente. I bambini monolingui hanno completato le prove di vocabolario, consapevolezza fonologica e lettura solo in italiano e inglese.

Dagli esiti dei test sono emersi quattro importanti risultati. In primo luogo, emerge con chiarezza che i bilingui bi-alfabetizzati sviluppano migliori capacità di consapevolezza fonologica in rumeno, la loro L1, poiché hanno superato i bilingui mono-alfabetizzati in tutti i compiti di consapevolezza fonologica. In secondo luogo, la superiorità dei bilingui bialfabetizzati rispetto ai bilingui mono-alfabetizzati è visibile anche nell'italiano L2, almeno per quanto riguarda la lettura di pseudo-parole, la segmentazione dei fonemi, la discriminazione tra attacco della sillaba e rima e la fusione delle sillabe. Inoltre, la bialfabetizzazione romeno-italiano risulta tradursi in vantaggi rispetto ai monolingui italiani, come hanno dimostrato i test sugli attacchi e sulle rime, sulle sillabe e sulle pseudo-parole in italiano L2; per contro, il bilinguismo associato a mono-alfabetizzazione non comporta vantaggi rispetto ai monolingui. In terzo luogo, i risultati hanno confermato la previsione che l'alfabetizzazione nella lingua rumena (L1) avesse un impatto positivo sulla consapevolezza fonologica e le abilità di lettura dell'inglese (L3). Questa conclusione deriva dalla superiorità dei bilingui bi-alfabetizzati rispetto ai bilingui mono-alfabetizzati e ai monolingui di lingua italiana su tutti i test di consapevolezza fonologica e di lettura di parole. D'altra parte, essere bilingue mono-alfabetizzati si traduce in un vantaggio meno marcato sui monolingui, ovvero solo nei test sui fonemi e sugli attacchi e rime. Infine, questi risultati sembrerebbero suggerire che l'acquisizione di L3 è diversa dall'acquisizione di L2 e non può essere considerata una semplice variazione di essa, poiché lo sviluppo delle capacità fonologiche e di lettura si è manifestata in modo diverso nelle due lingue. I risultati convergono pertanto sull'ipotesi che l'acquisizione di L2 e L3 debbano rappresentare due domini di ricerca distinti.

Questo studio contribuisce alla comprensione dei vantaggi che l'alfabetizzazione nella lingua d'origine in contesto italiano ed europeo possa apportare in particolare nell'apprendimento dell'inglese come lingua straniera. La presente tesi fornisce una prova che nei bambini bilingui la consapevolezza fonologica e la capacità di lettura possono essere incrementate attraverso l'insegnamento non solo orale, ma anche scritto, della prima lingua.

Important note

The present study was originally part of a wider research project meant to include groups of children other than those that participated in this work and are here described, (the Romanian – Italian bilinguals and the Italian monolinguals). The aim of my original dissertation was to investigate whether bi-literacy in different combinations of languages and writing systems influences the perception of new sounds and reading skills in English as a third language. In other words, the design of my dissertation initially included a cross-linguistic comparison of such influence and therefore involved two additional groups of young speakers of different heritage languages, each group representing a different combination of language and writing system, namely Arabic - Italian and Chinese - Italian.

Nevertheless, the dramatic situation caused by the pandemic spread of Covid-19 and the consequent situation of emergency that led to the closure of all public schools in Italy stopped my process of data collection. As a consequence, I was not able to test all the children whose parents had originally responded positively to my request to participate in the study. Nor was I allowed to run all the tests in all three languages targeted for each language combination. The missing data made it impossible to pursue the original design that included all three language / writing system combinations.

The only complete data sets were those of the two Romanian – Italian bilinguals and the Italian monolinguals. Therefore, I decided to focus my study only on these three groups. To compensate for the extra analysis that data from the missing two groups would have brought, I included two more research objectives: (1) determine the effects of bi-literacy not only on English as a third and foreign language but also on Italian as a second and societal language, and (2) determine whether these effects can manifest differently in L2 with respect to L3 language acquisition.

The completion of data gathering for the other two groups is postponed until better conditions will allow it.

Table of Contents

Abstracts	2
List of tables	9
List of figures	10
List of appendices	11
1.Introduction.....	12
1.1 Phonological Awareness.....	13
1.2 Bi-literacy.....	15
1.3 Linguistic similarities.....	16
1.4 Research Focus.....	20
1.5 Research Relevance.....	20
1.6 Study Organization.....	21
2.Literature review	23
2.1 Learning to Read.....	24
2.1.2 Learning to Read in Different Languages.....	27
2.1.3 Bi-literacy Acquisition	29
2.1.4 Early Bi-literacy Acquisition.....	34
2.1.5 Factors that predict reading skills.....	38
2.2 Phonological Awareness.....	39
2.2.1 Definition and development	39
2.2.2 The Lexical Restructuring Model.....	41
2.2.3 Phonological awareness and Reading.....	42
2.2.4 Phonological awareness across languages.....	44
2.2.5 Phonological awareness and bilingualism.....	45
2.3 Third Language Acquisition.....	53
2.3.1 Definition	53
2.3.2 L2 acquisition versus L3 acquisition.....	54
2.3.3 Monolingualism versus bilingualism	56
2.3.4 The intra-bilingual distinction.....	58
2.3.5 Bi-literacy in SLA and TLA.....	59
2.4 Migration and Education	60
2.4.1 Bilingualism and Multilingualism	62

2.4.2 Bilingual Education	63
2.4.3 Maintenance/heritage language programmes	64
2.4.4 Previous research on Romanian language-minority children with an immigration background	65
3. People and languages.....	69
3.1 Romanian Migration in Italy.....	69
3.1.1 Foreign immigration in Italy.....	70
3.1.2 Romanian immigration in Italy.....	70
3.1.3 The (Italian/) Romanian Second Generation.....	73
3.1.4 LCCR courses.....	74
3.2 Language Comparisons.....	74
3.2.1 Romanian and Italian.....	74
3.2.2 Romanian and English	77
3.2.3 Italian and English.....	80
4. The Study.....	81
4.1 Research Questions and Expected Outcomes.....	81
4.2 Participants and Sampling.....	83
4.3 Measures.....	84
4.3.1 Overview.....	84
4.3.2 Instruments.....	86
4.4 Procedure.....	91
5. Results.....	92
6. Discussion.....	109
7. Conclusions.....	130
7.1 Limitations and Further Research.....	130
7.2 Implications.....	132
Reference List.....	134
Appendixes.....	152

LIST OF TABLES

Table 1. Ranking of the foreign nationalities of immigrants legally residing on Italian ground

Table 2. Ranking of the Piedmont's provinces ordered by number of Romanian residents

Table 3. Means and standard deviations on background information and cognitive measures

Table 4. Means, standard deviations, and group comparisons on the proficiency tests in the study

Table 5. Descriptive Statistics for the Romanian Phonological Awareness and Reading Ability Tasks by Group

Table 6. Romanian proficiency and Romanian PA correlations with controlled Non-Verbal Intelligence

Table 7. Means and standard deviations (%correct) and comparisons between two bilingual groups on Romanian PA tests. Means and standard deviations (% correct) on Romanian reading tasks (bi-literate group)

Table 8. Descriptive Statistics for the Italian Phonological Awareness and Reading Ability Tasks by Group

Table 9. Means, standard deviations and comparisons among three groups on Italian PA tests.

Table 10. Means, standard deviations and comparisons between groups for Italian reading tests

Table 11. Descriptive Statistics for the English Phonological Awareness and Reading Ability Tasks by Group

Table 12. Means, standard deviations and comparisons among three groups on English PA, reading and vocabulary tests

Table 13. English proficiency and English PA and reading test scores correlations with controlled Non-Verbal Intelligence

Table 14. Contribution of bi-literacy and bilingualism to composite Italian PA skills

Table 15. Contribution of bi-literacy and bilingualism to composite Italian reading skills

Table 16. Contribution of bi-literacy and bilingualism to composite English PA skills

Table 17. Contribution of bi-literacy and bilingualism to composite English reading skills.

LIST OF FIGURES

Figure 1. Mean accuracy on Romanian PA tasks (% correct)

Figure 2. Mean accuracy on Italian PA tasks (% correct)

Figure 3. Mean accuracy on Italian reading tasks (% correct)

Figure 4. Mean accuracy on English PA tasks (% correct)

Figure 5. Mean accuracy on English reading tasks

LIST OF APPENDIXES

Appendix 1. Parental Consent (Italian)

Appendix 2. Language Background Questionnaire (Italian)

Appendix 3. Romanian Test Items (PA and Reading tasks)

Appendix 4. Italian Test Items (PA and Reading tasks)

Appendix 5. English Test Items (PA and Reading tasks)

Chapter 1 INTRODUCTION

Unlike second language acquisition (SLA), third language acquisition (TLA), which refers to the acquisition of a non-native language by learners who have previously acquired or are acquiring two other languages, is a relatively new area of research that has grown rapidly in the last few years (Falk & Bardel, 2010; Cenoz, 2013). Indeed, research conducted in the last two decades, also backed up by the European Commission's action plan for promoting language learning aiming at citizens able to have "[...] meaningful communicative competence in at least two languages in addition to his or her mother tongue" (European Commission, 2003:10), allowed TLA to become a field on its own. Although TLA shares many characteristics with L2 acquisition, scholars stressed that it should not be considered simply a variant of bilingualism because L3 learners have more linguistic experience at their disposal compared to L2 learners; moreover, L3 learners are influenced by the general cognitive effects of bilingualism, and have access to two linguistic systems when acquiring a third language (Bialystok, 2001; Cenoz & Hoffmann, 2003). Indeed, among its research interests, TLA touches some very interesting concepts resulting from the bilingual experience such as interdependence of skills, transfer of skills and cognitive changes that go beyond learning and making use of two languages only.

The positive effect of bilingualism on third language (L3) acquisition, and/or the positive transfers made by trilinguals, have been reported to generally be mediated by three factors: (1) higher metalinguistic awareness—the ability to identify, analyze, and manipulate language forms (Cenoz, 2013; Jessner, 2008; Jessner, 2010; Koda & Zehler, 2008), (2) bi-literacy (language and literacy skills in both first (L1) and second (L2) language) (Rauch *et al.*, 2013), and (3) the linguistic similarity (Barac & Bialystok, 2012). Nevertheless, these three factors are intertwined and do not operate independently of one another. In fact, research has found a strong correlation between metalinguistic awareness and bi-literacy in particular (Basseti, 2007; Cenoz, 2013). In addition, a language learner is likely to transfer their L1 awareness to their L2 awareness through the linguistic similarities shared by the two languages (Durgunoglu *et al.*, 1983; Durgunoglu *et al.*, 1993; Dickinson *et al.*, 2004; Pasquarella *et al.*, 2014; Melby Lervag *et al.*, 2011; Goodrich *et al.*, 2014; Verhoeven, 2007).

In this chapter, I intend to review (1) the role of phonological awareness as a component of metalinguistic awareness, (2) bilinguals' language and literacy proficiency, (3) typological distance or linguistic similarities in second and third language acquisition contexts. Then, by referring to these factors, I state the aim of and the significance of the present study. In the remainder of this section I will briefly outline the organisation of the chapters.

1.1 Phonological Awareness

According to Bialystok (2001), metalinguistic awareness (MA) is represented by the executive functions that control attention to language forms and meanings and analyse the structure of language. Therefore, a person with high MA is able to not only grasp the meaning of an utterance but also notice the linguistic forms used by the speaker. Executive functions are responsible for attention, selection, inhibition, shifting, and flexibility (Barac & Bialystok, 2011) and their role within bilingualism has been studied extensively. In fact, research over the past 30 years has consistently found that bilingual children exhibit advantages on metalinguistic tasks relative to their monolingual peers (Adesope *et al.*, 2010). Bilingual children have demonstrated better performance on executive functioning tasks but weaker formal language knowledge when compared with their monolingual peers (e.g., Bialystok *et al.*, 2008; Carlson & Meltzoff, 2008).

MA entails various types of awareness at different linguistic levels. The awareness of language as a construction of meaningful units is defined morphological awareness (Zhang, *et al.*, 2014; Ramirez *et al.*, 2010; Wang *et al.*, 2009). The awareness of the organisation of meaning and semantic domains of language is semantic awareness (Kuo & Anderson, 2008). The understanding of how words in a language are joined to form sentences is syntactic awareness (Nation & Snowling, 2000; Kuo & Anderson, 2008). The ability to understand language as sound structures is phonological awareness (Gillon, 2004; Kuo & Anderson, 2008).

Research about L1 phonological awareness has been abundant, mostly due to its well-established relation to literacy acquisition: phonological awareness is a positive correlate and a strong predictor of reading achievement (e.g., Bradley & Bryant, 1983; Goswami & Bryant, 1990). Some researchers consider understanding the critical role of phonological awareness in reading acquisition as one of the most significant scientific findings in education of the 20th century (Stanovich, 2000). The relationship between reading and phonological awareness is considered to be causal as well as reciprocal (Serrano *et al.*,

2003): literacy increases phonological awareness, but a certain level of phonological awareness is necessary for reading to be successful: the child has to understand that words are made up of individual sounds, and to know how letters map into sounds and the other way around (Geudens, 2006).

As previously stated, bilingual children have been reported to have higher MA sub-linguistic skills, such as morphological awareness (Barac & Bialystok, 2012) and phonological awareness (Campbell & Sais, 1995; Andreou, 2007). Research has repeatedly underlined that phonological processing skills in an L1 can be transferred to subsequent language learning and previous studies have indeed demonstrated a robust and universal cross-language phonological transfer phenomenon from various first languages to L2 in bilingual populations, such as French-English (e.g., Comeau *et al.*, 1999), Italian-English (e.g., D'Angiulli *et al.*, 2001) or Korean-English (Wang *et al.*, 2006), just to name a few. One possible explanation to this was put forward by Bialystok (1994, 2001), who suggested that knowledge of two languages (and the correspondent sound systems) may increase bilingual children's attention to specific systematic features of language due to the fact that experience with two languages make specific linguistic structure more noticeable.

To date, only a very limited number of studies have investigated whether trilinguals benefit from an additional boost in attending to phonological forms when compared to speakers with experience of learning and/or using merely two languages, as posited in the field of TLA (Cenoz, 2013; Jessner, 2014, but see De Bot & Jaensch (2015) for a critical view thereof). One example is Andreou (2007), which compared the performance of young Greek-English bilinguals and Albanian-Greek-English trilinguals on a same-different matching task and a rhyming task. The trilinguals in this study were, in fact, found to perform significantly more accurately on both tasks, which was explained by the children's 'heightened sensitivity to the phonological units of words because they must attend carefully to the speech stream in order to distinguish among their three languages and organize their developing lexicon' (p. 11), and for this reason, "*the experience of three different languages is likely to result in enhanced awareness of the analysis and control components of language processing on the part of trilinguals*" (p. 12).

To my knowledge, even fewer studies looked at trilinguals' MA in an intra-bilingual design in order to identify those variables that might enhance phonological awareness within bilingualism itself. One study that was designed in a similar way is Schwartz *et al.* (2008), which compared two groups of bilingual learners of a third language and used a monolingual group that was learning the same L3 only as control. The research was conducted in Israel in a multilingual context where Hebrew was the mainstream language

used in education, and English instruction was given from the third grade. The participants were three groups of 11-year-olds: one group was bi-literate-bilingual in Russian and Hebrew, the second group was mono-literate-bilingual in Russian and Hebrew, literate in Hebrew, and the third group was mono-literate -monolingual literate in Hebrew. So bi-literacy (versus bilingualism alone) was used as an independent variable while the dependent comprised the scores from five literacy skills and four metalinguistic and linguistic skills tests in L3 English. The results showed the bi-literate-bilingual group outperformed the other two groups and the authors concluded that literacy knowledge in both languages spoken by a bilingual is needed in order to see positive effects of bilingualism on L3 phonological skills.

Building upon these first important findings from research into multilingual phonological awareness, this study seeks to shed some additional light on trilinguals' phonological awareness as part of MA, using an intra-bilingual design. In the following section I will discuss the role of bilinguals' background and target bilinguals' literacy proficiency and its role in achieving the cognitive benefits of bilingualism.

1.2 Bi-literacy

As mentioned in the previous section, phonological processing skills in an L1 can be transferred to subsequent language learning. In SLA, as well as in research on reading, another important topic is the transfer of L1 reading skills to L2 reading (Koda & Reddy, 2008). The idea of transfer of reading skills is closely related to Cummins's (1981) Interdependency hypothesis, which addresses language proficiency in general and posits that bilinguals' cognitive benefits, such as high executive functioning, are determined by the level of proficiency in both languages. Moreover, Cummins (1980) distinguished language proficiency in terms of two elements: basic interpersonal communicative skills (BICS) and cognitive academic language proficiency (CALP). BICS are language skills used in daily communication during informal situations wherein context is embedded.

On the other hand, CALP is required for more cognitively demanding situations, such as classroom or literacy activities wherein context is reduced. According to the BICS and CALP models, only bilinguals with both types of skills can enjoy cognitive benefits such as higher academic and language skills. Thus, in L2 learning, the more proficient one is in one's first language, the easier that person can learn the L2, although this transfer is only possible at all if a certain level of proficiency is achieved first. This hypothesis of conditional transfer is the Threshold Hypothesis (Cummins, 1979). Furthermore, according to Cummins (1991)

literacy transfer may occur in two conditions. Firstly, a person needs to have gained a high level of literacy in the dominant language or L1 which then serves as a foundation for skill transfer between languages, which also facilitates the mastering of literacy in the weaker language (Cummins, 1991). While there is both theoretical and empirical evidence that addresses the question of how L1 reading proficiency transfers into L2 reading proficiency, to our knowledge, there is still little research on how L1 and L2 reading abilities transfer into L3 reading. However, some important findings come from the aforementioned Schwarz *et al.* (2007), which found that bi-literate Hebrew–Russian bilinguals performed better than both Hebrew monolinguals and mono-literate Hebrew–Russian bilinguals on a number of English literacy tasks, such as spelling or phoneme analysis. Moreover, Rauch *et al.* (2012) suggested that literacy in both first (L1) and second (L2) language is needed for bilingualism to be positively associated with L3 reading proficiency. These studies would seem to indicate that in order to develop good reading skills in L3, being literate in both L1 and L2 is beneficial (Muñoz, 2000; Schwarz *et al.*, 2008; Swain *et al.*, 1990).

The second condition for literacy transfer to occur is language distance, which is known as the similarity between the orthography and language structure of two languages. Two languages written in an alphabetic system (e.g., Romanian and Italian) are generally considered more amenable to skill transfer than an alphabetic and ideographic language (e.g., Romanian and Chinese) (Bialystok *et al.*, 2005).

In the section below I will briefly analyze the role that linguistic similarities between the languages spoken by a bilingual can play in L1 – L2 skill transfer, particularly in PA and reading skills.

1.3 Linguistic similarities

It is generally acknowledged that for children learning to read in two languages simultaneously, literacy skills acquired in one language can “transfer,” or have a significant effect on their acquisition of the other language (Cummins, 2012; D’Angiulli *et al.*, 2001; Geva & Wang, 2001). Theories of transfer postulate that transfer is most likely to happen when there are shared features across the bilinguals’ two languages and when these shared features are more salient in one of the languages than in the other (Kuo *et al.*, 2016).

‘Transfer’, seen as “the act of applying previously learned patterns to a new learning situation” (Gass, 1979, p. 328), has been the focus of numerous studies carried out both in SLA and TLA. Studies on third language acquisition have therefore focused not only on the additive effect of bilingualism (or bi-literacy), but also on the linguistic influence of

background languages, namely on whether the languages that a bilingual speaks support or impede the learning of a third language and, if so, on how.

According to Pavlenko & Jarvis (2008), comprehension across languages that are typologically close is easier than comprehension across languages with greater typological distances; in short, the recognisability of structures facilitates comprehension. In language learning, cross-linguistic similarity also plays an important role (Ringbom & Jarvis, 2011). Ringbom & Jarvis (2011) posit that foreign language learning can draw on two types of similarities between the foreign language and the L1: (1) actual similarities or similarities that can be linguistically analyzed; and (2) assumed similarities or similarities based on the learners' assumptions. Hence, linguistic similarities among languages comprise another critical factor in determining the speed and ease of new language acquisition.

This statement was backed-up by various research. One example is Barac & Bialystok (2012), which investigated the effects of language similarity on verbal and non-executive control performance using English monolinguals, Chinese-English bilinguals, French-English bilinguals, and Spanish-English bilinguals. The results showed that the highest scores were achieved by Spanish bilinguals, whose language of instruction at school was the same as the language of testing (English), and whose L1 had more significant overlaps with English. According to Cenoz (2013) bilinguals have a potentially larger linguistic repertoire. If that is the case, it is significant, as language repertoire influences the speed and learning strategies of the learner (Jessner, 2008). The claim that bilinguals have a larger language repertoire than monolinguals has also been supported in a number of L3 acquisition studies. For example, Escudero *et al.*, (2013) investigated the effect of knowing L1 Spanish and L2 English on L3 Dutch vowel learning. The authors found that learning an L2 with a larger vowel inventory than the L1 is beneficial in word learning in an L3 with a similarly extensive vowel inventory (Escudero *et al.*, 2013). In third language learning, having background language knowledge and skills from two languages may increase the possibility of having more in-common linguistic knowledge with the L3, which ultimately supports the L3 learning.

Cross-linguistic influence also emphasizes literacy as a predictor of positive transfer and developing MA. Every writing system, with all its varied complexities, influences the development of sub-linguistic skills in MA, such as phonological, morphological, and syntactical skills and orthographical awareness (Anthony & Francis, 2005). Orthographic types (alphabetic, syllabic, or logographic) and orthographic depths (shallow, deep, or in between) shape one's sub-linguistic aspects of MA and determine transfer in the language-

learning process (Perfetti & Dunlap, 2008). Conversely, MA has also been reported to have an influence on one's literacy skill (Zipke, 2007; Zipke *et al.*, 2009; Li & Wu, 2015).

For example, Kahn-Horwitz *et al.* (2014) examined the effect that linguistic and orthographic proximity might have on the acquisition of a new script and demonstrated the positive effect of a larger linguistic repertoire on subsequent language learning. The study sought to determine whether L1 Circassian-speaking children in Israel had an advantage in learning specific English orthographic conventions over L1 Hebrew-speaking children; specifically, the researchers examined whether the L1 Circassian-speaking children's wider linguistic and orthographic repertoire led to such an advantage. Results showed that the group of L1 Circassian-speaking children outperformed the group of L1 Hebrew-speaking children and showed a significant advantage in decoding and spelling target orthographic conventions in English. The authors concluded that phonemes and orthographic characteristics that exist in a child's first or additional language system and writing system facilitate acquisition of orthographic conventions in a new language and writing system.

In another multilingual setting, Abu-Rabia & Siegel (2003) found that being exposed to a specific language influence trilinguals' literacy performances. The study investigated the interconnections of three languages, namely Arabic, Hebrew, and English, by testing 70 trilingual word and pseudo-word reading tests in the three languages. The study found significant relationships between word and pseudo-word reading skills within and across languages. Since the trilinguals were exposed least to English, their English performance was the poorest. However, the better their performance in L1 Arabic and L2 Hebrew, the better their performance in L3 English. The authors suggested that the varying performances in literacy were not only caused by the language-specific characteristics, such as orthographies, but also by exposure to a specific language.

Transfer can therefore be examined from a language and literacy acquisition perspective. Two hypotheses that explain this transfer in the acquisition of a new writing system are the Script dependence hypothesis (Geva & Siegel, 2000) and the Linguistic and orthographic proximity hypothesis (Kahn-Horwitz *et al.*, 2011). The Script dependence hypothesis relates to the orthography of a given language and claims that specific characteristics of L1 orthographic structure affect the acquisition of the writing system of a second language (L2) – decoding and spelling – due to cross-linguistic transfer (Geva & Siegel, 2000). Evidence supporting the Script dependence hypothesis comes from numerous studies examining cross-linguistic transfer of lower level decoding abilities between English and other languages (e.g. Hebrew-English: Geva & Wade-Woolley 1998; Chinese-English: Gottardo *et al.*, 2001). The Linguistic and orthographic proximity hypothesis examines the

degree of proximity between linguistic as well as orthographic characteristics of L1 and L2. Research by Kahn-Horwitz *et al.* (2011) found that Russian-Hebrew speaking bilingual bi-literates outperformed Russian-Hebrew speaking bilingual mono-literates and Hebrew speaking mono-lingual mono-literates for English reading and spelling of short vowels. Russian and English have more in common, both orthographically and linguistically, in contrast to Hebrew and Russian or Hebrew and English. Transfer is more frequent amongst similar languages, which are close linguistically and orthographically (Cenoz & Genesee, 1998; Cenoz & Hoffmann 2003). The advantage experienced by the Russian-Hebrew speaking bilingual bi-literates may be explained within this paradigm. Russian and English use a more similar vowel system in contrast to the differences in use of vowels amongst Russian-Hebrew and English-Hebrew. It appears that the specific advantage of Russian-Hebrew speaking bilingual bi-literates on short vowel decoding and spelling in English may be a result of the similar way the Russian and English scripts graphically represent vowels. In this case, the more typologically similar language might facilitate the L2 acquisition and vice versa.

According to the functional assumption, what is transferred is not a set of rules but form-function relationships that L2 users have acquired together with their mapping skills (Koda, 2008). Hence, linguistic knowledge from a bilingual-bi-literate or multilingual-multiliterate perspective is continually in the process of developing and transfer becomes a dynamic process. Transfer in the context of the acquisition of an additional language and writing system necessarily involves drawing on previously acquired resources (Koda, 2008). It can be said that the acquisition of a third language and writing system/orthography is a repeated process to the extent that acquiring a new writing system/orthography each time has characteristics in common with the previous process of acquiring a writing system/orthography. Similarities between languages and writing systems/orthographies should allow third language learners to usefully exploit the resources accumulated through prior learning experience.

In the current study, the specific characteristics of acquiring English as a third language may be influenced by the fact that the children involved have already acquired spoken L1 Romanian, written L1 Romanian (some of them) and spoken and written L2 Italian. They have gained conscious linguistic knowledge and language learning experience on which they can potentially rely when learning a further language. Thus, on the one hand, they can draw from a larger and more varied linguistic cognitive repertoire than the Italian monolinguals used as controls. On the other hand, the bi-literate-bilinguals, compared to the mono-literate-bilinguals, may benefit from further leverage gained from the acquisition

of both Romanian and Italian orthographies and therefore exhibit a different behavior when it comes to performance on L2 Italian and L3 English phonological awareness and reading ability. This also relates to the assumption that L3 performance differs from L2 performance in the complexity of potential sources for cross linguistic awareness (Gut, 2010).

1.4 Research Focus

This chapter has, so far, examined studies of bilinguals outperforming monolinguals in relation to phonological awareness and third language learning. Moreover, since a bilingual is not two monolinguals in one person (Grosjean, 1989), it has underlined the need to focus more on the study of the effect of variables within bilingualism itself in order to determine the effects that those have on the different levels of competence in the target language. This chapter has also discussed how the conditions of proficient bilinguals are necessary to gain the benefits of MA and language skill transfer for a target language. The role of literacy skills and a larger linguistic repertoire in positive cross-linguistic transfer to the third language production has also been discussed. The unique language-specific characteristics brought by every language, as well as potentially common underlying characteristics, must always be considered in multilingual studies. Therefore, a more holistic perspective in studying multilingualism is key; the whole linguistic repertoire of a multilingual speaker or language learner, as well as the relationship between languages, must be examined (Cenoz & Gorter, 2011).

Starting from these preliminary assumptions, the present study investigates the extent to which, in a monolingual context, bilingualism versus monolingualism and bilingual bi-literacy compared to bilingual mono-literacy, influence the phonological awareness and reading skills in L2 Italian and L3 English of young bilingual speakers of Romanian as a heritage language. In terms of linguistic similarity in third language learning, the present study further aims to determine to what extent a larger phonological repertoire and a hypothetic higher phonological joint expertise, from Romanian and Italian, facilitates L3 English PA and word decoding.

1.5 Research Relevance

The present study uses a language combination, Romanian/Italian/English that, to my knowledge, research has never touched upon before in examining the role of bi-literate bilingualism in phonological awareness and reading abilities. The study is conducted in a mainly monolingual social context wherein many of the bilinguals lack Romanian

instruction and are only oral or passive users of Romanian as their heritage language, i.e. users who speak Romanian but lack reading and writing skills in Romanian or understand Romanian but do not actively speak it; the context thus allows the study to test the bilingualism benefit hypothesis (Cummins, 1980). Extending the commonly employed bilingual research paradigm, which compares bilingual performance with monolingual performance only, the study incorporates a within-bilingual-sample design to specifically examine how bi-literacy affects would differ, if at all, in children with various levels of Romanian reading expertise.

Given that heritage language maintenance “is beneficial to minority children’s cognitive, educational and social-emotional development” (Goldberg *et al.*, 2008), in many places of the world, heritage languages have started to gain importance in education. Nonetheless, many speakers in a significant number of countries are still struggling to preserve their heritage languages due to the influence and dominance of a majority language. In Italy, being bilingual in a heritage language is often seen as a flaw rather than a benefit and heritage speakers consider the Italian language as more valuable and often feel ashamed of their parents’ proficiency level in L2 Italian (Calvi, 2016). Research has demonstrated the benefits of bilingualism through the facilitation of MA in bilingual contexts. If bilingualism and bi-literacy in particular in the Italian context is proven to yield positive results for young bilingual language learners, one application of this study would be to change attitudes toward heritage languages in Italy.

1.6 Study Organization

This thesis is organized into seven chapters. The remaining chapters are organized as follows. Chapter 2 is devoted to the theoretical background. It starts with a discussion of current theory on reading acquisition and phonological awareness to then continue with a comparison between L2 and L3 acquisition paradigms and finally, with a special focus on education in multilingual/ migratory contexts. Chapter 3 briefly summarizes the characteristics of the current migration situation in Italy and, especially, of the Romanian migrants, and it examines the structures of the Romanian, Italian and English languages and compares the three languages’ phonological and orthographical systems. Chapter 4 presents the research question of the present study and the anticipated outcomes and elaborates on the methodology adopted, outlining the location of the research, the participants’ characteristics and the sampling approach, the research instruments, and the procedure. Chapter 5 presents the analyses and findings of the study by focusing on

answering the main questions of the present study. Chapter 6 discusses the findings from Chapter 5 by linking them to previous studies on bilingualism, bi-literacy, phonological awareness, and word reading acquisition. Chapter 7 deals with the limitations, conclusion, and implications of the study.

Chapter 2 LITERATURE REVIEW

In the modern world, reading, alongside with writing, is considered a mandatory if not an obvious skill. In fact, we spend the first year or the first two years of instruction on learning to read and write independently of the learning context, being that a public or a private school or simply at home.

In the past decades, the rapid increase of the movement of peoples has led to a rise of the number of children that grow up speaking (at least) two languages from a young age and the increased number of bilingual children in school has led to a relatively new field of research: bilingual literacy acquisition. For several years, research in this area has analyzed bilingual versus monolingual school achievement or school-type measures in a second language (Macnamara, 1966, as cited in Bialystok, 2007). More recently, much bilingual research has focused on how the interaction between bilingual children's two languages may affect their L2 literacy development. The ultimate goal of many studies that considered monolingual language learning experience as the norm, was to compare bilingual children with monolinguals and determine whether bilingualism is a positive or negative experience for literacy acquisition in a second language. Nevertheless, as previously suggested by Grosjean (1989:3), "the bilingual is not two monolinguals in one person", and, consequently, children are likely to have different language development and achievement. Therefore, when examining bilingual children's (reading) performance, especially in a second or third language, it is important to compare bilingual children with their bilingual peers who acquire languages under similar circumstances.

In this section I will first explain what is generally meant by learning to read and what is generally learned when learning to read. Then I will explore the process of literacy acquisition from a cross-linguistic perspective to then explore the process of bi-literacy acquisition. Subsequently, I will review some of the results that research has found when examining the effects of bi-literacy on language learning both in a monolingual – bilingual comparison and as a variable within bilingualism. The second part of the chapter is dedicated to the notion of phonological awareness (its definitions, subskills, development, measurement) and the connection it has with literacy acquisition and the role it has in word-level reading processes. I will then discuss the transfer of PA across languages and the effect of bilingualism on it. In the third part of the chapter I will describe third language acquisition (TLA) and I will briefly examine those characteristics that differentiate it from second language acquisition. Furthermore, I will introduce the findings that research on third

(versus second) language acquisition has generated in the fields on phonological awareness and reading acquisition. In the fourth part I will focus on the influence that migration had on education and on the consequent relationship between the two. Among the different educational programmes offered in migrational contexts, I will illustrate the maintenance/heritage language programmes to then describe findings from studies that were conducted with L1 Romanian children with a migratory background. The chapter will end with the research questions of the study and the corresponding expected outcomes.

2.1. Learning to read

One thing is sure: pre-literate children do not appreciate that language consists of words (Olson, 2002) and assume that a written word symbolizes the meaning of the word, rather than the word as a label (Berthoud-Papandropoulou, 1978). When asked whether ‘cupboard’ is a long word, a five-year-old replied ‘yes, because it has a lot of things in it’ (Berthoud-Papandropoulou, 1978) which indicates that a word is interpreted semantically rather than phonologically. As Liberman *et al.*, (1989) point out, "Surely it must be somewhat confusing to children to be told that the word ‘bag’ is spelled with three letters, when their ears tell them plainly that it has but one sound ... " (p. 6). It is also true that, when typical intelligent, literate adults are asked what letters represent, they will reply that letters correspond to speech sounds. Research has suggested that this change in awareness cannot be accounted for by the mere development or mental maturation and this holds since literate, but not illiterate, six year olds are able to learn Pig Latin, a ‘secret language’ that requires the speaker to consciously segment and manipulate speech sounds (Savin, 1972). In fact, literacy alone accounts for this difference in language processing in children and acts through developing phonological awareness (Olson, 2002). The changes that occur in early childhood are not the result of mental maturation but the result of literacy acquisition.

But what does learning to read imply? What is it learnt when learning to read? According to a “simple view of reading”, learning to read or successfully comprehending written texts requires two equally important fundamental skills: 1) decoding (or word reading), or the ability to map words to oral language to derive meaning, and 2) linguistic comprehension, or the ability to understand and interpret oral information in sentence and discourse (Gough & Tunmer, 1986; Hoover & Gough, 1990). In fact, decoding and linguistic comprehension both play a fundamental role in text comprehension as it has been validated through various empirical studies (e.g., Georgiou *et al.*, 2009; Savage, 2001). The “simple view of reading” provides a simple but essential framework in which to evaluate the early

literacy development of young children. That is, to predict future success in reading comprehension, a sound base of both decoding skills and linguistic comprehension abilities needs to be established in young children.

Models of learning to read a first language were initially established to explore the reading acquisition and the challenges that English readers experience (Chall, 1996; Ehri, 1991). Almost all English-based models of reading acquisition have in common the idea of dual processing routes for decoding (word recognition), which are employed right from the outset: one route based on the phonological process of letter-sound translation and the other based on sight word recognition. Ehri (1995) proposed that the process of L1 sight word recognition develops in four steps. In the first step (pre-alphabetic stage) beginning readers recognize words on the basis of selective associations founded on the words' visual characteristics. In the second step, (partial alphabetic stage), novice readers begin to form associations between some but not all of the letters in printed words and their sound equivalents. This leads to the third, (full alphabetic phase), where readers are able to use their full knowledge of phoneme-grapheme correspondences. As a result of practice, familiar words then come to be recognized in the fourth (consolidated alphabetic phase) automatically as wholes, and larger spelling units such as onset-rhyme divisions take the place of individual letter-sound relations in decoding new words. Ehri (1986) pointed out that for skilled readers, the stored orthographic information is more easily available, and the whole process is faster. However, the availability of that information has to be distinguished from the actual use of that knowledge as reflected in the word recognition process. Differences in availability and utilization of orthographic information may appear more dramatic in the development of literacy in an L2.

As for the second question above, regarding what is it learnt when we learn to read, one general answer was proposed by Perfetti & Zhang (1995): learning to read is learning how one's language is encoded by one's writing system. When learning to read, learners around the world need to understand and successively master the mechanism with which graphic forms map into the spoken language. With that being said, it is also true that the world presents learners with different writing systems. Reading processes across different languages involve universal behaviours of mapping written symbols to oral language (Perfetti *et al.*, 2002), yet different writing systems utilize different sets of principles to define the basic orthographic units and their relationships to language units (Perfetti *et al.*, 2002; Perfetti *et al.*, 2007). Therefore, the challenge of understanding bi-literacy development is bigger as it first requires an understanding of the universal principles of reading in general and the reading processes that take place in each of the two languages

under acquisition.

According to Perfetti & Dunlap (2008), language written forms can be distinguished based on two principles: the size of phonological information in mapping the language to written forms and the mapping rule consistency. It is useful at this point to distinct between two levels of analysis that are often confused: a *writing system* and an *orthography*. As Perfetti & Liu (2005) put it, a writing system gathers all the principles that hold for the writing-language relationship. The defining feature of a writing system is its mapping principle: graph to phoneme, graph to syllable and graph to word or morpheme. Therefore, based on the first principle, a language's writing system can be alphabetic (e.g. English, Italian, Indonesian, Korean Hangul), syllabic (e.g. Japanese Hiragana, Indian Kannada), or logographic/morpho-syllabic (e.g. Mandarin Chinese). It results that an alphabetic system is fundamentally different from a syllabic system and both are fundamentally different from a logographic system. Orthographies, by contrast, express differences within a writing system: an orthography is therefore the implementation of a writing system to a specific language (Perfetti & Liu, 2005). For example, Italian, Romanian and English share the same mapping principle, but differ in their orthographies.

Regarding the second principle, that of mapping rule consistency, a language's written form can also be distinguished based on how consistent the relationships between written and the spoken forms are. More specifically, within alphabetic writing systems, orthographies vary in the transparency of the mappings between letters and phonemes. In languages with a transparent (or shallow) orthographic system, orthography reflects phonology with a high level of consistency. In other words, they have a very high letter-phoneme correspondence. In languages as Finnish, Italian, or Indonesian for example, a given letter of the alphabet is almost always pronounced the same way irrespective of the word it appears in (e.g., Aro, 2004; Winkler & Lee, 2013; Ziegler *et al.*, 2010). In opaque orthographies, such as English and Danish however, spelling-to-sound correspondences can be very ambiguous (e.g., Frost, 2012; Seymour *et al.*, 2003). There is general consensus about the approximate classification of several languages in terms of their orthographic transparency (e.g., Seymour *et al.*, 2003). Considering orthographic transparency as a continuum, one can be certain about its extreme positions (e.g., the regular Finnish orthography at one extreme, followed by highly consistent orthographies as Italian and the irregular English orthography at the other), even though the objective location of each orthography on this transparency continuum may remain uncertain (Aro, 2004). The predominantly phonological aspect of the Romanian written language makes it that, except very few cases, there is no synonymy between letters (David *et al.*, 2018). Its transparency

was intentional through several writing system reforms that were applied in writing (Dragomirescu, 2012). So, Italian and Romanian can be both considered very transparent (or shallow) whereas English is relatively non transparent (or deep).

2.1.2 Learning to Read in Different Languages

It appears to be universally shared that reading is dependent on language and that this universal dependence is accommodated to the properties of the writing system/orthography (Perfetti, 2003). During the years however, researchers claimed that accepted models of reading acquisition in English might not be appropriate for other writing systems, even other alphabetic orthographies (Hutzler *et al.*, 2004; Share, 2008). As researchers began to study reading acquisition in other languages, the universality of models posited for English reading was questioned (Nag & Snowling, 2012; Share, 2008) and other theories have recently been proposed to systematically address the role of language-specific factors in reading acquisition (see Ziegler *et al.*, 2010; Ziegler & Goswami, 2005) and to examine the links between oral language and phonological awareness with specific reference to the learners' L1 or L2 in bilinguals (Caravolas, 2006; Nag *et al.*, 2011).

It is also true that despite their many potential differences, alphabetic orthographies share the critical characteristic of being all based on the alphabetic principle, the idea that graphemes represent phonemes in spoken language. Within the context of literacy acquisition, this shared characteristic is crucial (Caravolas, 2006). Since the importance of the understanding and mastery of the alphabetic principle in alphabetic literacy is broadly acknowledged (Goswami & Bryant, 1999), the extent that different orthographies adhere to the alphabetic principle – or the consistency of given language – is a key factor determining the rate of reading acquisition across different languages (Ziegler & Goswami, 2005). This concept corresponds to the Psycholinguistic grain size theory proposed by Ziegler & Goswami (2005). This theory attempts to integrate cross-linguistic research on reading acquisition and dyslexia into a theoretical framework. The authors reviewed a large body of cross-linguistic studies on phonological development, reading development, and dyslexia and concluded that phonological processing plays a fundamental role in reading acquisition. The theory proposes that the degree to which spoken language maps onto written language varies across languages. For example, the print-sound relationship in some alphabetic languages such as Spanish and Italian is more consistent than others such as English. Therefore, children's differences in reading efficiency across languages depend on the ease or difficulty of recoding phonology in print. The concept is that phonemes represent smaller

grain size than onsets or rimes, which in turn are smaller than syllables and consequently learning to read more consistent languages requires recoding small grain sizes, whereas learning to read inconsistent languages involves small and large grain sizes. These differences across languages result in developmental “footprints” in reading (Ziegler & Goswami, 2005, p.3). In other words, the characteristics of languages in terms of orthography and phonology would lead to different developmental paths to skilled reading.

One of the most striking demonstrations of the importance of orthographic consistency in reading acquisition comes from a cross-language investigation in which reading performance was measured at the end of Grade 1 in 14 European countries (Seymour *et al.*, 2003). Whereas reading accuracy in most transparent languages (e.g., Italian, German, Greek, Spanish, and Finnish) reached ceiling at this time, accuracy in less transparent languages (e.g., Portuguese, French, and Danish) was lower, around 80%. However, reading performance in English, the least transparent of the orthographies studied, was only 34%. Similar evidence comes from the studies conducted in several transparent orthographic systems, e.g. Italian (Tressoldi *et al.*, 2001).

As previously mentioned, research has suggested for transparent orthographies with highly regular grapheme-phoneme correspondences to be more easily acquired than complex and opaque orthographies with a high proportion of irregular and inconsistent spellings (e.g., Aro & Wimmer, 2003; Seymour *et al.*, 2003). This is because in opaque orthographies, the mastery of the alphabetic principle provides only part of the key for decoding and many words cannot be sounded out accurately without having access to the stored phonological representation of the whole word. This may lead to the development of multiple recoding strategies that enable the learner to decode at several different “grain sizes”, supplementing grapheme-phoneme correspondences with the recognition of letter patterns for rimes and attempts at whole-word recognition (Ziegler & Goswami, 2005), demanding the engagement of a wider range of cognitive skills.

Another language characteristic that is believed to play a role in the early reading process is syllabic complexity (Seymour *et al.*, 2003). More specifically, syllabic complexity is responsible of how quickly children become sensitive to the phonological structure of their language (Borleffs *et al.* 2017, Duncan *et al.*, 2000), a critical pre-reading skill. More open structures are more easily segmented into smaller units of which the learner becomes aware. For example, French children were found to demonstrate more phonological awareness prior to any formal instruction than their English counterparts, since French has a relatively simple syllabic structure characterized by a predominance of open syllables compared to the syllabically more complex English language (Duncan *et al.*, 2000). Moreover, the

embedding of grapheme-phoneme correspondences in consonant clusters has been suggested to impede the reading acquisition process (Seymour *et al.*, 2003). Sprenger-Charolles & Siegel (1997) found French first-graders to have more problems reading and spelling bi- and trisyllabic pseudo-words with more complex syllabic structures than those with a simple structure. Clusters are possibly treated as phonological units and are difficult to split into phonemes (Treiman & Zukowski, 1991). Furthermore, the high level of co-articulation in the consonant phonemes in the cluster might exacerbate the problem (Serrano & Defior, 2012). These difficulties might reflect a deficit in phonological awareness resulting in a difficulty in phonemic segmentation of complex syllable structures and consonant clusters. While Italian is generally considered to have a mainly simple syllabic structure and English a rather complex one (Seymour *et al.*, 2003), syllables in Romanian have a vocalic character (David *et al.*, 2018). The Romanian language contains three times more open syllables than closed ones (Scifos, 2008) and the most frequent syllabic structures are consonant-vowel, consonant-vowel-consonant. I will explore the orthographic transparency of Italian, Romanian and English and their syllabic structures into more depth in Chapter 3.

2.1.3 Bi-literacy Acquisition

Along the years, bi-literacy was defined in various ways, ranging from ‘any and all instances in which communication occurs in two (or more) languages in or around writing’ (Hornberger, 1990: 213) to ‘an advanced state of bilingualism where the person can not only speak two languages fluently but also read and write these two languages’ (Niyekawa, 1983: 98). It is beyond the scope of this study to offer an articulated definition of bi-literacy and therefore I will leave the meaning of the term ‘bi-literacy’ assumed to be, roughly, reading and writing well in two languages. Consequently, a bi-literate may be defined as someone who is not only able to speak two languages but has also a certain degree of proficiency in terms of literacy skills in those two languages. This definition echoes previously suggested definitions (Cummins, 1981; Hornberg, 2003; Ng, 2015).

Studies on bi-literacy have largely been conducted from the perspective of cross-linguistic influence/language transfer and orthographic transfer in terms of reading (for a review see Ng, 2015).

Cross-Language Transfer

Bi-literacy development among young children can be understood by two sources of

influence. As we have seen in the previous sub-section, one concerns the processes involved in learning each of the two languages *per se*. The other involves any interaction between the learning of the two languages, the focus of the current sub-section. Such interaction is often captured by the observation of cross-language relationships between learners' L1 and L2. In the literature, a cross-language relationship is also operationally conceptualized as cross-language transfer - a central concern among L2 researchers (Koda, 2004). With a long history, investigation of transfer issues in second language learning and teaching can be dated back to the 1940s (Gass & Selinker, 1994). Its initial focus was on L2 acquisition of linguistic structures, such as phonology and grammar. Recently, serious research attention has been devoted to the role of transfer in reading among second language learners or bilingual learners (e.g., Genesee *et al.*, 2006; Koda, 2004).

The term 'cross-linguistic (or cross-language) transfer' can be generally understood as a process of speakers applying knowledge from their native language/L1 to the learning of a second. Selinker (1964) once pointed out that theoretical understanding of how cross-linguistic transfer operates requires three fundamental questions to be answered: 1) What can be or actually is transferred (what is transferable)? 2) How does language transfer occur? 3) What types of language transfer occur?

Researchers do not agree on their answers to these questions in their theorization of transfer (e.g., Koda & Zehler, 2008). There are several reasons for conceptual disagreement on what transfer actually entails in L2 learning. First, language learning is a complex process, involving specific linguistic rules and cognitive processes as well as general strategies. Differential emphasis has been placed on various aspects of the process in theoretical considerations and empirical interpretations of language transfer, ranging from linguistic forms or rules (e.g., phonology and grammar) to cognitive/metalinguistic processes (e.g., phonological awareness). Second, from an effect perspective, transfer can be generally understood as two opposite processes: negative vs. positive transfer. The former illustrates inhibiting effects of learners' L1 on acquisition of L2, and is dominated by studies in light of an early model – the Contrastive Analysis Hypothesis – that deals with the use of L1 characteristics to predict errors in learning L2 phonological and grammatical systems (see Odlin, 1989). The latter concerns facilitating effects of L1 on L2, particularly under more recent contentions that a learner's prior language experience helps create an essential foundation for establishing an additional linguistic system (Cummins, 2000; Genesee *et al.*, 2006; Koda & Zehler, 2008). Third, transfer concepts have been explained within quite a few theoretical frameworks, with each emphasizing different aspects of transfer issues.

These frameworks include but are not limited to the Contrastive Analysis Hypothesis

(Fries, 1945; Lado, 1957), the Linguistic Interdependence Hypothesis (Cummins, 1979, 2000), and the Transfer Facilitation Model (Koda, 2008). The Contrastive Analysis Hypothesis highlights the importance of considering linguistic characteristics of learners' L1 and L2, and the necessity of comparing the two languages at a fine-tuned level when examining cross-linguistic transfer. Yet the Linguistic Interdependence Hypothesis incorporates the psychological and cognitive dimensions of cross-linguistic transfer, and as well considers the developmental dependence between the two languages under acquisition. Finally, the Transfer Facilitation Model is specifically relevant to conceptualization of transfer in reading, through the investigation of metalinguistic abilities. Again, there are many other theoretical models accounting for the issue of transfer. These models are highlighted here because of their particular relevance to the current work.

Contrastive Analysis Hypothesis

The general contention of the Contrastive Analysis Hypothesis (CAH) is that difficulty or ease of L2 learning can be predicted by the characteristics of the learner's native language (Fries, 1945; Lado, 1957). In its early version, the CAH, overstressed the interference of a learner's first language in the acquisition of an additional language, and was mainly used as a predictive tool to foresee difficulties that second language learners from a particular language background would encounter in learning the second language. A contemporary version of this hypothesis considers an additional factor introduced by the L1-L2 distance, and acknowledges that both interference and facilitation may occur in language learning depending on similarities and differences between languages (Genesee *et al.*, 2006; Koda, 2004). In a sense, learners tend to make errors or encounter difficulties (interference) when learning structures in a second language that differ from or are unfamiliar to them in their first language. Yet, when encountering structures that are shared by the two languages, learning becomes relatively easy (facilitation).

The pioneering role of the CAH in L2 research has been widely acknowledged, in that it was one of the earliest models proposed in relation to cross-language transfer. In fact, its birth marked the beginning of theoretical and empirical interest in the issue of cross-language transfer in language acquisition research. Meanwhile, the CAH has often been criticized for a lack of accuracy in its predictability, or inadequacy in explaining certain aspects of transfer. For instance, some researchers have found that certain errors made by the L2 learners are similar to those made by L1 speakers (Bailey *et al.*, 1974), and therefore, L1 characteristics are not sufficient predictor of L2 outcomes. Instead, some errors are developmentally determined and hence universal for both L1 and L2 learners. Nevertheless,

one most significant contribution of the CAH lies in the fact that it brings learners' first language into the picture of L2 learning, and in particular, accentuates the importance of systematic comparison of linguistic structures between L1 and L2. This L1-vs-L2 comparative paradigm sets a cornerstone for conceptualizing and interpreting many subsequently proposed L2 theories (e.g., language universal vs. language specific theories; Bialystok, 2007; Perfetti, 2003). This is also where the current thesis stands, in that empirical evidence of cross language relationships may need to be interpreted with the consideration of L1 and L2 structural features in order to pinpoint what is actually transferred and why.

The Linguistic Interdependence Hypothesis

The Linguistic Interdependence Hypothesis (LIH; Cummins, 1979, 2000) in many ways complements the Contrastive Analysis Hypothesis by stressing the essential roles of psychological and cognitive factors in cross-language transfer, and considering other factors such as language exposure and motivation. In Cummins (1981: 29), the LIH was formulated as it follows: "To the extent that instruction in a certain language is effective in promoting proficiency in that language, transfer of this proficiency to another language will occur, provided there is adequate exposure to that other language (either in the school or environment) and adequate motivation to learn that language." Unlike the CAH, which mostly concerns the inhibiting effects of L1 experiences on L2 learning, the LIH focuses more on possible cognitive benefits of learning two languages, including more flexibility in cognitive manipulation and thinking, and more advanced meta-linguistic abilities.

Moreover, unlike a unidirectional L1-to-L2 impact emphasized in the CAH, the cross-language influence postulated in the LIH is reciprocal between L1 and L2. It is further interpreted as a hypothesis that "not only predicts transfer from L1 to L2, but also from L2 to L1" (Verhoeven, 1994: 383).

Nevertheless, such bi-directional cross-language transfer is not without constraints. As specified in the Threshold Hypothesis (another hypothesis also proposed by Cummins, 1979), minimum levels of linguistic competence in both L1 and L2 need to be attained to allow cross-language transfer to occur. In particular, Cummins (2000) strongly argues for advantages associated with maintaining high L1 proficiency in bilingual development, and states, "academic proficiency transfers across languages such that students who have developed literacy in their first language will tend to make stronger progress in acquiring literacy in their second language" (p. 173).

The LIH has also been empirically confirmed through many studies demonstrating

transfer of L1 language and literacy skills to L2 literacy abilities (e.g., Abu-Rabia, 2001; Verhoeven, 1994), and gained popularity in bilingual research and education. Nevertheless, it is still often criticized for lack of specificity in explaining what is actually being transferred across languages. In Cummins' notion, it is common underlying proficiency that is transferrable or transferred between L1 and L2; though the construct itself is vaguely defined. Genesee *et al.* (2006) refer to it as: "procedural knowledge that underlies language use for academic or higher order cognitive purposes and entails for example, the skills involved in defining words or elaborating ideas verbally as is often required when language is used for academic purposes" (p. 157). But still, it has been understood as a very general construct. Therefore, solely relying on the LIH is not sufficient for identifying what specific skills or abilities are transferred.

The Transfer Facilitation Model

Koda (2008) proposed the Transfer Facilitation Model (TFM) in an attempt to explain cross-language transfer pertinent to reading development. In essence, the model highlights the potentially important role of metalinguistic awareness developed in one language in promoting reading acquisition in another, among diverse groups of second language learners. Metalinguistic awareness refers to the ability to make language forms objective and explicit through identification, analysis and manipulation (Koda, 2008). Its significance in literacy acquisition is expressed by Koda (2008) as it follows:

The significance of this ability lies in its capacity for enabling the learner to analyze words into their phonological and morphological constituents. Since learning to read entails learning to map between spoken language elements and the graphic symbols that encode those elements, metalinguistic awareness, emanating from oral-language development, substantially expedites the initial stages of reading acquisition. Therefore, systematic examinations of first-language metalinguistic contributions to second language reading acquisition are likely to yield substantial insights into shared resources, across languages, available to second-language learners. (pp. 68-69)

Within this model, Koda (2008: 78) defines transfer as "an automatic activation of well-established first-language competencies, triggered by second-language input". In other words, cross-language transfer has been viewed as a developing, ever changing, interplay between well-established L1 competencies, in this case metalinguistic awareness, and cumulative print exposure to L2. As such, transfer is a dynamic rather than static process.

The model underscores that L1 facilitates L2 acquisition, in that metalinguistic capacity developed in L1 can be readily available and similarly functional in L2 reading development. A growing body of research has examined such cross-language cross-modal effects of metalinguistic abilities and generally supports the prediction of the TFM. For instance, a cross-language cross-modal relationship has been established between phonological skills and word reading among children who learn two typologically similar languages, such as Spanish-English (Durgunoğlu *et al.*, 1993), and English-French (Comeau, *et al.*, 1999), and those who learn typologically dissimilar languages, such as English and Hebrew (Wade-Woolley & Geva, 2000), or English and Chinese (Wang *et al.*, 2005).

2.1.4 Early Bi-literacy Acquisition

Bi-literacy acquisition has been studied within various scenarios varying from bilinguals' or partly bilinguals' literacy acquisition in a weak versus a strong language, to monolinguals' versus bilinguals' literacy acquisition of different languages, and to the cognitive and linguistic component of fluent reading in a second language (Bialystock, 2002). It is important at this point to make a distinction between research on bi-literacy acquisition in a second/foreign language acquisition scenario, often carried out with learners that already master their L1 literacy, from research conducted with yearly bilingual learners that acquire bi-literacy concurrently or do not fully master their L1 literacy yet when they start reading and writing in a second language. A growing body of studies of children's reading progress in bilingual or immersion programs has shown that reading and cognitive skills transfer across languages and that L1 cognitive, linguistic, and reading skills predict progress in learning to read in a second language (e.g., Cisero & Royer, 1995; Comeau *et al.*, 1999; Durgunoglu *et al.*, 1993; Gottardo *et al.*, 2001; Lindsey *et al.*, 2003; Riccio *et al.*, 2001). On the other hand, studies that investigated fluent reading in second/foreign language learning were mainly concerned with the involved cognitive processes as the contribution of linguistic knowledge of the second language or the impact of the literacy knowledge from the first language (Bassetti, 2007a; Bernhardt, 1991; Durgunoglu, 1997; Koda, 1994), differences between L1 and L2 reading in terms of speed and accuracy (Segalowitz, 1986) or monolinguals' versus bilinguals' literacy acquisition with an emerging advantage for bi-literates and bilinguals over monolinguals on some aspects of reading (e.g., Bialystok *et al.*, 2005; Bialystok *et al.*, 2003; Ehrich & Meuter, 2009; Schwartz *et al.*, 2005, 2008; Leikin *et al.*, 2010). Although this line of research can also provide interesting insights into understanding the reading acquisition of bilingual children, they remain related to but

different than the purpose of this study.

The generally acknowledged transfer, or at least significant effect of literacy skills acquired in one language to the acquisition of the other language has also been examined with children learning to read in two languages simultaneously (Cummins, 2012; D'Angiulli *et al.*, 2001; Geva, 2008; Geva & Wang, 2001; Koda 2007, 2008). Two hypotheses that explain this transfer in the acquisition of a new writing system are the aforementioned Script dependence hypothesis (Geva & Siegel, 2000) and the Linguistic and orthographic proximity hypothesis (Kahn-Horwitz *et al.* 2011).

The first hypothesis relates to the orthography of a given language and claims that specific characteristics of L1 orthographic structure affect the acquisition of the writing system of a second language (L2) – decoding and spelling – due to cross-linguistic transfer (Geva & Siegel, 2000). Evidence supporting the Script dependence hypothesis comes from numerous studies examining transfer of lower level decoding abilities between English and other languages (e.g. Hebrew-English: Geva & Wade-Woolley 1998 or Chinese-English: Gottardo, *et al.*, 2001).

The Linguistic and orthographic proximity hypothesis (Kahn-Horwitz *et al.*, 2011) examines the degree of proximity between linguistic as well as orthographic characteristics of L1 and L2 (and possibly even L3 or more languages) and posits that the degree of this proximity is expected to facilitate or alternatively to create obstacles when acquiring the target literacy. Research by Kahn-Horwitz *et al.* (2011) found that Russian-Hebrew speaking bilingual bi-literates outperformed Russian-Hebrew speaking bilingual mono-literates and Hebrew speaking monolingual mono-literates for English reading and spelling of short vowels. Since Russian and English have more in common, both orthographically and linguistically, than both Hebrew and Russian or Hebrew and English and since transfer is more frequent amongst similar languages, which are close linguistically and orthographically (Cenoz & Genesee, 1998; Cenoz & Hoffmann, 2003), the advantage experienced by the Russian-Hebrew speaking bilingual bi-literates may be explained within this paradigm. In this case, the more typologically similar language might facilitate the L2 acquisition and vice versa.

An interesting example of concurrent bi-literacy acquisition was presented in Geva *et al.* (2009). The study was concerned with the development of efficient reading in bilingual children and the extent to which the development of reading in L2 emulates the development of reading efficiency documented with children learning to read in their L1. They compared developmental trajectories associated with accuracy and speed of reading abilities of children learning to read simultaneously in English, their first language and Hebrew, their

second language. Results were mixed but interestingly enough, children could read isolated words with equal accuracy and equal speed in both languages. The authors suggested that a simple L2-proficiency-based explanation would not address appropriately the finding; in fact, L2 proficiency played no predictive role in explaining individual differences in accuracy or speed of word recognition. Therefore, it was concluded that, when faced with the requirement to read isolated words, children could not rely on contextual clues for word recognition and they need to draw on well-developed decoding skills; efficient word recognition in L1 and L2 were thus highly similar. Previous research has indeed suggested that due to its shallow orthography, children achieve high decoding accuracy earlier in Hebrew than in English, even when Hebrew is taught as an L2 (Geva & Siegel, 1991).

Amongst the many studies on early bi-literacy acquisition, research conducted by Schwartz and colleagues (Schwartz *et al.*, 2005, 2008; Leikin *et al.*, 2010) with Russian-Hebrew bilinguals is particularly related to the scope of the present study. Schwartz *et al.* (2005) examined the factors that influence the processes of learning to read and the difficulties bilinguals might encounter in learning to read in Hebrew as a second language in children with Russian as their native language. The study was conducted in Israel, a country where immigrants from the former USSR make up 20% of school students. Characteristically most of the younger bilingual children learn to read in their second language (L2) Hebrew before (if at all) they acquire the written register of their native (L1) Russian. Accordingly, these children represent a specific case of mono-literate bilingualism, that is, bilingualism in spoken language and literacy learning in only one language (L2). This case is therefore different from the majority of studies in which bilinguals learn to read in a second language after or in parallel with L1 reading acquisition. The study found clear-cut support for the Threshold Hypothesis (Cummins, 1979), according to which L2 reading ability depends heavily on the level of linguistic proficiency in this language (see 2.3.1). In other words, in order to read and comprehend written text, one must first acquire the language in its spoken modality. Participants classified as poor readers demonstrated significantly lower proficiency in a wide range of Hebrew (L2) linguistic skills compared to good readers. These differences, furthermore, were not attributable to differences in the number of years in the country. Poor readers, however, were characterized by low scores not only in linguistic tasks but also in phonological awareness in both languages.

An equally interesting though different perspective adopted to investigate on bi-literate bilingualism is Janssen *et al.* (2011). This was a first attempt to test whether bilingually raised children in the Netherlands, who do not receive language instruction in their first language but only in their second language, still show an advantage on a Dutch

phoneme-awareness task compared with monolingual Dutch-speaking children. The bilinguals had Turkish, Moroccan (Berber and Arabic), Bosnian, Dari and Somalian as L1s, were all born in the Netherlands while almost all children (80%) were exposed to Dutch as a second language well before they were 3 years old, by watching Dutch television or playing with Dutch-speaking children, including older siblings who already attended Dutch primary schools. Nonetheless, starting in preschool meant for most of them a strong increase in Dutch language input. Additionally, the authors also studied the difference in phoneme awareness of Turkish–Dutch children, a subsample of the entire bilingual group, in their native language Turkish and their second language Dutch. To obtain insight in the acquisition of Dutch vocabulary and Dutch word decoding in the experimental groups, the scores on these tests were compared also. Moreover, Turkish–Dutch children were tested on Turkish vocabulary as well, which made the comparison of their Dutch vocabulary with their Turkish vocabulary also possible. The results showed that neither in the entire group of bilingual children nor in the subsample of Turkish–Dutch children was phoneme awareness better than that of monolingual children. Note that performance on the phoneme-awareness tasks of the bilingual children was not worse either when it concerns the acquisition of phoneme awareness. Not only was their performance on phoneme awareness similar to that of bilingual children, their word-decoding performance was too. Although the Dutch vocabulary of the Turkish–Dutch subsample was poorer than that of the native Dutch speakers, their language proficiency in their adopted language was better than in their native language Turkish.

Languages that are orthographically transparent and alphabetic most easily facilitate the development of phonological awareness. This type of orthography requires less explicit reading instruction, and their transparent phoneme-letter correspondences mean that mapping rules are less complicated and comparatively easy to apply. The other consequence of direct phoneme-letter relationships is the phonological route reading strategy, which relies on the phonemic information provided by each letter. Furthermore, in cross-language reading, this type of orthography has been reported to be the most effective L1 orthographic knowledge to start learning to read in a second orthography. In contrast, an opaque orthography slows the development of phonological awareness unless explicit instruction on the phoneme-letter relationship is provided. English is an example of a language may be considered a language with reading and spelling skills that are difficult to master.

Studies on phonological awareness and reading acquisition among bilinguals have found that phonological awareness skills are transferable across languages mediated by typological distance, particularly similarities in phonology and orthography. It is easier to

acquire bi-literacy when the two languages are transcribed using the same system (such as the Roman alphabet), than when the languages are orthographically different (Durgunoglu *et al.*, 1993; D'Angiulli *et al.*, 2001).

Nevertheless, studies on phonological awareness and literacy acquisition have mainly been conducted in bilingual scenarios that involved English as one of the two languages under analysis. This considerably constrains the generalizability of the data because English orthography is exceptional in its degree of inconsistency compared to other alphabetic orthographies (Seymour *et al.*, 2003; Share, 2008); moreover, phonological awareness studies that looked at small or less frequently written L1s, like Romanian, are even rarer. The present study aims to fill the research gap by examining phonological awareness and word reading acquisition in two Latin languages that use a transparent orthography, namely L1 Romanian and L2 Italian, and in English as an opaque and typologically more distant third language.

2.1.5 Factors that predict reading skills

The main theories of learning to read have all placed phonological awareness and phonological awareness training as important factors in early reading acquisition (Hatcher *et al.*, 1994; Kartz & Frost, 1992; Ziegler & Goswami, 2005). Indeed, in the past several decades, there has been compelling evidence that phonological awareness is the primary mechanism underlying literacy development in alphabetic languages (Adams, 1990; Bryant & Bradley, 1986; Stanovich, 1986, 1992; Wagner & Torgesen, 1987). The central role of phonological awareness in literacy development lies in its support for children's word-level reading abilities. As I previously mentioned, in order to learn to read an alphabetic language, "children must at some point discover the alphabetic principle: that units of print map onto units of sound...some level of explicit phonemic awareness is required for the acquisition of spelling-to-sound knowledge that supports independent decoding" (Stanovich, 1986, p. 363). However, several other factors have been suggested as key predictors of early reading success.

Letter Knowledge

Knowledge of letter identities by names or sounds (Muter & Diethelm, 2001), has been found to be strongly correlated with early reading development (Muter *et al.*, 1998; Leppanen *et al.*, 2008; Anthony *et al.*, 2009; Duranovic *et al.*, 2012; Manolitsis *et al.*, 2009). The pivotal role of letter knowledge was reported in the reading acquisition of orthographically consistent languages such as Bosnian (Duranovic *et al.*, 2012). Duravonic *et al.* (2012)

conducted a study on 505 preschool Bosnian-speaking children, and found that letter knowledge was an important reading predictor. The study also found that letter knowledge was associated with all phonological measures.

What is more, in a study of English learners from different language backgrounds in Switzerland, across first-grade children, Muter & Diethelm (2001) found that letter knowledge was a stronger predictor of reading skill than phonological segmentation ability (phoneme identification, deletion, and sound blending), and vocabulary.

2.2 Phonological awareness

Phonological awareness (PA) refers to the ability to “recognize, identify, or manipulate any phonological unit within a word” (Ziegler & Goswami, 2005). Phonemic awareness is intended as awareness of sounds in spoken (not written) language. In this study I use the term Phonological awareness instead of Phonemic awareness since I am referring not only to single sounds but also to units larger than a single phoneme, namely to syllables. Phonological awareness skills are usually distinguished by the tasks that are used to measure them (e.g., a sound discrimination task or a sound blending task) and by the unit(s) of sound measured in the task. The units of sound typically measured in PA tasks are the syllable, onset and rime, and phoneme. As a result, ‘syllable awareness’ refers to the ability to perceive and manipulate language at the level of a syllables (McBride-Chang *et al.*, 2004). This awareness is demonstrated through the ability to segment words into syllables, identify the number of syllables in a word, take away certain syllables from a word, blend syllables into a word, or replace one of a word’s syllables with another. ‘Onset-rime awareness’ entails the ability to divide syllables further into onsets and rimes and to recognize which words alliterate or rhyme. As already mentioned, ‘phonemic awareness’ refers to “the insight that a spoken word can be viewed as consisting of successive speech sounds and the skill in manipulating these sounds” (van Bon & van Leeuwe, 2003, p.195).

2.2.1 Definition and development

The above mentioned levels have been shown to follow a clear developmental order so that children first become aware of larger units (words, syllables, rimes and onsets) and then proceed to smaller and more abstract units (phonemes) (Goodrich & Lonigan, 2014). Syllable awareness is usually found to develop before onset-rime awareness (Anthony & Francis, 2005) and rime awareness develops before onset awareness (Cisero & Royer, 1995).

However, not all studies have found syllable awareness to develop before onset-rime awareness, instead a simultaneous developmental pattern has been observed (Carroll et al., 2003). Independently of the order of these two abilities, it is well established that phonological awareness develops from larger units to smaller units and phonemic awareness is the last to develop.

It is also true that since different languages have different levels of complexity in their phonological structures (some languages have heavier consonant clusters), the pace of phonological awareness development on each level can vary across languages. The development depends on the (1) phonological and (2) orthographic elements or the writing system characteristics of the language (Anthony *et al.*, 2003; Anthony & Francis, 2005). Cisero & Royer (1995) proposed two hypotheses to explain the development of phonological awareness, namely The Developmental Independence Hypothesis and The Developmental Progression Hypothesis. The first hypothesis posits that children acquire the phonological units that they are most exposed to. For example, it was found that because pre-literate English-speaking children have high exposure to rhymes from nursery songs and poems, they first acquire rhyming awareness (Treiman & Zukowski, 1991). The second hypothesis suggests that a child's phonological awareness development always starts from the largest unit, word, to the smallest unit, phoneme. This development implies that, before a child develops syllable awareness, they develop word awareness, and before developing their phoneme awareness, they develop onset-rime or rhyming awareness.

Although they put forward two hypotheses, Cisero & Royer's (1995) study of English-Spanish bilinguals supported the Developmental Progression Hypothesis of phonological awareness, which posited that rhyme awareness emerged before phoneme awareness. The subjects of the study were English-Spanish bilingual children, some whom had received bilingual education in Spanish and English, while the remaining participants were from mainstream English classrooms. The subjects were all tested in their first grade using rhyme detection, onset detection and final phoneme detection tasks all given in both languages. The results illustrated that the participants performed best on the rhyme task, followed by the initial phoneme task, and poorest on the ending phoneme task. These findings supported the large-to-small phonological awareness development hypothesis.

Other studies have supported this hypothesis (e.g. Anthony *et al.*, 2003; Anthony & Francis, 2005; Goswami, 2006). In the above European languages tested, there seems to be developmental progression in the phonological domain from larger to smaller units (Ziegler & Goswami, 2005).

2.2.2 The Lexical Restructuring Model

According to Metsala & Walley's (1998) Lexical Restructuring Model (LRM), phonological awareness is initially developed through a mental process of restructuring vocabulary in the spoken language during early years of life. This process occurs when children subconsciously process vocabulary that they hear in the spoken language as a single lexicon and gradually as a segmented lexicon (Walley *et al.*, 2003). Some words sound similar to one another, and to distinguish them, a child must mentally restructure words' phonological structures, which allow them to be stored in their mental lexicon as two different words. For instance, 'cat' is different to 'can' in the final sound, which is /t/ versus /n/. Goodrich & Lonigan (2016) illustrated the process of restructuring as follows:

“To keep phonologically similar words distinct in the lexicon, it is necessary to be able to detect the differences between the words. To do so, children’s mental representations of words shift from holistic forms to more segmented forms” (Goodrich & Lonigan, 2016: 685).

Based on this model, certain words have a greater chance of being restructured in the child's mental lexicon (Metsala & Walley, 1998; Goodrich & Lonigan, 2016). The determinative factors are: the child's age of the acquisition of a given word (in other word, the earlier in life the higher chance of being restructured, Goodrich & Lonigan, 2016), the word's frequency of occurrence in the child's life (the higher the frequency of occurrence, the higher the chance of the word being restructured, Reddy & Koda, 2013) and the phonological neighborhood and phonotactic probability. Phonological neighborhood can be defined as a word that has neighbors or words in a given language that only differ by one phoneme. The more neighbors the word has, the higher the occurrence of restructuring, which makes it easier for children to manipulate the word (Goswami, 2006). Goswami, (2006) emphasised the importance of this factor above other factors proposed by Metsala & Waley (1998) because it represents more of the language-specific aspect of phonological awareness than the others. The nature of a word's neighbours in a language may differ depending on other aspects of phonological structure, such as proportion of open versus closed syllables or sonority profiles (Goswami, 2006).

Finally, the phonotactic probability deals with the probability of occurrence of a certain phonological structure, such as a consonant cluster in each language. Words containing frequently occurring sounds or sound combinations have a higher chance of undergoing restructuring, which means that these words are easier to work on or to manipulate (Goodrich & Lonigan, 2016).

2.2.3 Phonological awareness and reading

The relationship between PA and learning to read has been established since the 1970s (for reviews see Adams, 1990; Goswami & Bryant, 1990) while the evidence for the importance of phonological awareness comes from a number of sources. The link between PA and success in reading was the scope of investigation of various studies that have pointed towards a strong concurrent and predictive relation between the two variables (e.g., Liberman *et al.*, 1974). In a study Juel (1988) found that first graders who had difficulty with PA tasks such as blending, segmenting and manipulating sounds typically remained behind their peer in reading 4 years later. Another example of an early study that got similar results is MacLean *et al.* (1987), which found that children's knowledge of rhymes at age 3 years strongly predicted their later development of more abstract phonological knowledge and, more important, their early reading ability.

A second group of studies that pointed towards the fact that PA underlies beginning reading skill comes from training studies. An example of early study is that of Bradley & Bryant (1983) in which pre-readers were taught either to sort words by common sounds or to sort words and to spell these sounds with letters. It was found that the combination program that received both phonological awareness training and letter name training had amazing effects on children's reading acquisition; in fact, the combination group started to read far before both the control and the no treatment groups. Other researchers have found that phonological awareness training has a significant effect on early reading without the concurrent use of letter training. For example, Lundberg *et al.*, (1988) administered children in kindergartner PA training that specifically excluded letter-sound instruction. They found that their training led not only to gains in phonological awareness but also to significant effects on spelling and on reading achievement.

Other evidence moved away from the thought that phonological awareness underlies beginning reading skill and argued that phonological awareness is a result rather than a cause of learning to read. For example, Morais *et al.* (1986) found that illiterate adults were significantly inferior to a matched group of newly literate adults on a phonemic segmentation task. The finding that otherwise intelligent, illiterate adults do not develop phonological skill suggested that it is not a naturally developing ability. That newly literate adults do have this ability suggests to Morais *et al.* (1986) that the ability to reflect on spoken words comes after rather than before learning to read. Moreover, Ehri & Wilce (1986) found that children who already could read performed better than children who could not read,

and they appeared to use their knowledge of letters in words in several phoneme awareness tasks that involved sound identification tasks. It was therefore suggested that certain levels of PA, either as measured by different tasks or by different levels of linguistic complexity, precede learning to read, whereas more advanced levels may result from learning to read. Ehri (1992) has hypothesized that the relation between phonological awareness and early reading is one of reciprocal causation, where a certain amount of ability to reflect on spoken words is necessary (but probably not sufficient) to understand the alphabetic system. The above studies showed that this mutual causation suggests that the strong correlations between phonological awareness measures and measures of reading skill can take two different causal patterns.

The link between PA and reading skills in young learners was investigated even longitudinally. Wagner *et al.* (1994) and Lonigan *et al.* (2000) for example have suggested that children's phonological ability is predictive of their word-level reading ability. In particular, starting from the early preschool years until second grade, children's phonological awareness ability can be used as a useful indicator of their later decoding ability. Most importantly, the relation between phonological awareness and word-level reading becomes bidirectional after children receive reading instruction. Similar results were obtained by Hogan *et al.* (2005), who examined the relation between PA and reading in the same group of children from kindergarten to fourth grade. The results indicated that phonological awareness in kindergarten predicted second-grade real word and pseudo-word reading. The most striking finding was that phonological awareness in second grade no longer predicted fourth grade real-word reading. Instead, fourth-grade real word reading was predicted by second-grade real-word reading.

In another study, McGuinness *et al.* (1995) combined the training and the longitudinal approach and investigated whether explicit training in English phonology improves children's phonological awareness and reading outcomes. Contrary to the phonics method, which teaches children from print to sounds, the explicit training method teaches children to connect sounds to print. Participants were first graders divided into two experimental groups and one control group. The control group used a modified whole language plus phonics approach. Children's phonological awareness, real word and pseudo-word reading ability were tested on a battery of different tasks both at the beginning and the end of the school year. Results showed that both experimental groups outperformed the control group on real word and pseudo-word reading ability but unexpectedly enough, the experimental groups performed similarly to the control group on the PA tasks after the training, with all three groups performing better at the end of the school year than at the

beginning when they were first tested. The authors concluded that phonological awareness facilitates learning to read, irrespective of the reading instruction method used. Furthermore, it was suggested that children's phonological awareness appears to increase as they accumulate experience in learning to read.

To conclude, the above studies seem to point towards an initial reading development that is affected by phonological awareness. When reading is underway, this relation seems to reverse - phonological awareness is then affected by reading experience and gained competence.

2.2.4 Phonological awareness across languages

Moving forward, a different line of research specifically examines how children learning different orthographies or writing systems may develop phonological awareness differently.

It is useful mentioning at this point Treiman's (1985, 1995) Linguistic status hypothesis which predicts that children first acquire the ability to segment speech into larger unit (e.g., words) before they are able to segment speech into smaller units (e.g., syllable, intrasyllabic units, and phonemes). More specifically, syllables are structured hierarchically, such that the syllable is a larger unit than the onset-rime, which in turn is larger than individual phonemes (Treiman, 1985; Treiman *et al.*, 1995). As I previously mentioned, some research has shown that the development of phonological awareness also follows this sequence (Anthony & Lonigan, 2004; Demont & Gombert, 1996; Durgunoglu & Oney, 1999; Harris & Giannouli, 1999; Ziegler & Goswami, 2005). In other words, children generally develop syllabic awareness before they develop onset-rime awareness, and onset-rime awareness before phoneme awareness (Anthony *et al.*, 2003). And while syllable awareness is usually fully developed by kindergarten, phoneme awareness only develops after children begin to read (Treiman & Zukowski, 1996).

Building on the Linguistic status hypothesis, Cheung *et al.* (2001) investigated whether early experience with the phonology of spoken language and the orthography of the written script would contribute to children's development of phonological awareness. Participants were three groups of children from different linguistic backgrounds: English speakers, learners of an alphabetic writing system, Cantonese speakers, learners of a logographic writing system and Cantonese speakers, learners of Chinese via the aid of Pinyin. Each linguistic group was further divided into a younger pre-reading group and an older sub-reading group. The results showed that experience with an alphabetic script significantly influences children's phonological awareness. The authors concluded that

experience with both phonology and orthography of a language seems to have an impact on the development of phonological awareness. Cheung *et al.* (2001) suggested that English speakers develop more advanced phonemic awareness. The reason was attributed to the fact that English contains more consonant clusters. Learning to read or processing spoken English would require children to pay attention to small phonological units such as phonemes. Therefore, children who learn to read and speak an alphabetic language such as English might have more direct access to phonemic awareness.

In a later study, McBride-Chang *et al.* (2004) specifically investigated whether Chinese-speaking children would be more sensitive to the syllable structure since Chinese characters are represented at the syllabic level. Participants were children in kindergarten and first grade from China, Hong Kong, and Toronto. Differences in literacy experiences among the three groups of children were similar to those described in Cheung *et al.*'s (2001) study but the group from Hong Kong was learning both English and Chinese. The results showed that the children from China, who used a phonetic bridge system, developed more advanced Chinese and English phonemic awareness than their peers from Hong Kong. It was also suggested that the representation of Chinese characters at the syllable level appeared to aid Chinese-speaking children's syllable awareness. Moreover, Chinese syllable awareness predicted Chinese character recognition, whereas English phoneme awareness predicted English word recognition.

The two aforementioned studies show that children from different linguistic backgrounds vary in phonological awareness across three phonological units (i.e., syllable, onset/rime, and phoneme). Most importantly, these cross-linguistic comparisons further underline the importance of phonological awareness in the study of reading acquisition and development among bilinguals or multilinguals.

2.2.5 Phonological awareness and bilingualism

Research has repeatedly underlined that, as for other aspects of first language acquisition, phonological processing skills in an L1 can be transferred to subsequent language learning (Branum Martin *et al.* 2012; Cisero & Royer, 1995; Durgunoglu *et al.*, 1993; Melby-Lervag & Lervag (2011). For example, Cisero & Royer, (1995) found that in kindergarten and first grade, students' ability to isolate initial sounds in their L1 was a significant predictor of their ability to isolate initial sounds in an L2.; Furthermore, results from Durgunoglu *et al.*, (1993) showed how readers' performance on L2 word and pseudoword recognition tests was predicted by the levels of both L1 phonological awareness and L1 word recognition. Previous

studies have indeed demonstrated a robust and universal cross-language phonological transfer phenomenon from various first languages to L2 in bilingual populations, such as French-English (e.g., Comeau *et al.*, 1999), Italian-English (e.g., D'Angiulli *et al.*, 2001) or Korean-English (Wang *et al.*, 2006), just to name a few.

However, the relationship between phonological awareness and bilingualism is complex because the orthography of a language plays an important role in phonological awareness and therefore, in a bilingual context, orthographic influence may be the result of more than one writing system. Melby-Lervag & Lervag (2011) found that orthographic distance (alphabetic-alphabetic or alphabetic/non-alphabetic) may greatly influence the phonological awareness transfer. From a meta-analysis of 47 studies of English learner bilinguals, this study found a high transfer in the aspects of phonology and decoding, and that the transfer was higher in samples where both L1 and L2 were alphabetic than where the L2 was alphabetic and L1 was morpho-syllabic. A meta-analysis study by Branum Martin *et al.* (2012) that listed and analysed 38 phonological awareness studies that examined the role of phonological awareness across languages found that the cross-language correlation of phonological awareness tasks was influenced heavily by language used and, to some extent, by the linguistic grain size of the tasks (phoneme, syllable, or onset-rime).

In brief, PA in bilingual children has mainly been examined following two lines of research: the monolingual-bilingual comparison one and the intra-bilingual one. The first line investigates whether being bilingual accelerates phonological awareness while the second line of research assesses bilingual children's phonological awareness and reading skills in both languages in order to investigate on the eventual cross-linguistic transfer effects. In other words, the second line of research seeks to determine how skills in one language are associated with those in the other language. In the following sub-section, I will review some studies that represent these two lines of research.

Monolingualism versus Bilingualism

The vast majority of research conducted within the comparison between monolinguals' and bilinguals' PA was carried out with children speakers of L1 English. One example is Bruck & Genesee (1995), which compared the PA of two groups of children whose primary language at home was English, only that one group attended French immersion schools (bilingual group), whereas the other group attended English schools (monolingual group). Children were given a set of English PA tasks both in kindergarten (as non-readers) and in Grade 1. The results indicated that bilingual children outperformed their monolingual peers on onset-rime segmentation tasks in kindergarten, but that this effect disappeared by Grade 1.

In Grade 1 the bilingual group scored higher on syllable awareness tasks, whereas the monolingual group attained higher scores on phoneme awareness tasks. The authors attributed the heightened skills of syllable awareness to the saliency of the French syllable: once children detect the saliency of syllable in French, their syllable awareness in English will be accelerated. These results suggested that both literacy instruction and exposure to a second language can influence the pattern of children's development of phonological awareness.

Another study that pointed towards the advantages of bilingualism when it comes to PA is Campbell & Sais (1995), which investigated bilingual children's phonological awareness among other metalinguistic awareness skills in kindergarten. Both monolingual and bilingual children had again English as primary language at home but the bilingual group used English and Italian at school. Participants' English phonological awareness was measured through different tasks that included an initial phoneme odd-one-out task and a syllable deletion task with nonsense words. The results showed that the bilingual children were better on phonological awareness tasks even though they were not fluent in Italian and the school was not designed to teach Italian as a second language. The authors explained their accelerated development of phonological awareness through the exposure to the Italian language which has a more regular syllabic structure than that in English.

Both aforementioned studies (Bruck & Genesee, 1995; Campbell & Sais, 1995) reported a bilingual advantage in phonological awareness for children who spoke two distinct alphabetic languages (i.e., French vs. English and Italian vs. English). Nevertheless, the positive effect of bilingualism on the development of phonological awareness was also observed in bilingual children whose two languages were less closely related. An example is Chen *et al.* (2004), which examined bilingual and monolingual Chinese children's development of phonological awareness. Bilingual children spoke both Cantonese and Mandarin, whereas monolingual children spoke only Mandarin. Participants, that were in 1st, 2nd, and 4th grade, received a set of Mandarin phonological awareness oddity tasks, including tone, onset, and rime awareness. The stimuli were composed of real words and pseudo-words. The results revealed that in 1st grade the bilingual children scored higher than their monolingual peers on tone awareness tasks for words that share Mandarin and Cantonese syllables. However, this effect disappeared by 4th grade. The authors attributed the bilingual advantage on tone awareness to the fact that Cantonese has more tones than Mandarin. Furthermore, the bilingual children outperformed their monolingual counterparts on onset awareness tasks in 2nd grade and the authors explained that this advantage arose as the bilingual children began to gain more advanced proficiency in both

languages in second grade. Nevertheless, again, this advantage was not observed by 4th grade. In summary, what seems to have contributed to the bilingual advantage observed in this study was bilingualism and the phonological structure of Cantonese.

Contrary to the above research findings, some other studies reported neutral bilingual effects on phonological awareness (Bialystok, Majumder, & Martin, 2003).

Bialystok *et al.* (2003) conducted three studies that examined the development of phonological awareness in monolingual and bilingual children between kindergarten and Grade 2. The participants were one group of monolingual English speaking and three groups of bilingual children. The phonological awareness tasks were all in English, including a phoneme counting and a phoneme substitution task. In Study 1 and 2, the bilingual group was French-English bilinguals who attended French schools and were fluent in both French and English. In the first study, monolingual and bilingual children performed equally well on the complex task that required phoneme substitution. On the other hand, the second study replicated these results and demonstrated a significant role for the language of literacy instruction. The third study extended the research by including two groups of bilingual children and a range of phonological awareness and reading tasks. The bilingual children were Spanish-English and Chinese-English (half Cantonese speaking and half Mandarin speaking) speakers. It was found that the Spanish-English bilinguals outperformed monolingual English-speaking children on the phoneme segmentation task. In contrast, the Chinese-English bilinguals performed worse than the monolingual English group and the Spanish-English group. Other measures of phonological awareness did not differ among the three groups. Since in the first study no performance difference was found between the French-English bilingual group and the monolingual English group, the Spanish-English advantage was attributed to the similarity of Spanish and English sound structures. The authors suggested that another possibility was that Spanish has a simpler phonetic structure, which may be transferred to English when children learn to read. Unlike Spanish, the phonological structure of Chinese is more distant from English. This study suggests that learning two specific languages (Spanish and English) may be an advantage, but bilingualism itself may not necessarily result in a bilingual advantage for phonological awareness.

The intra-bilingual comparison

As previously mentioned, the intra-bilingual comparison is the second line of research conducted to assess phonological awareness in bilingual children. Phonological awareness

and reading skills in both languages are measured within the same children in order to investigate on the eventual cross-linguistic transfer effects of the two skills.

An example of this line of research is D'Angiulli *et al.*, (2001), which reported positive cross-linguistic effects between Italian and English phonological skills. The participants in this study were one group of Italian-English bilinguals and one group of English-speaking monolinguals, all born and raised in Canada, and one group of Italian-speaking monolinguals recruited from Italy and used as controls. Children's PA was assessed by a series of English and Italian word reading and spelling tests. The results showed significant inter-correlations between English and Italian phonological processing skills which pointed towards an interdependence of phonological processing skills in the two languages. Also, the results indicated that bilingual children performed significantly better than the monolingual English-speaking children on all English tests but worse than the monolingual Italian-speaking children on Italian tests. The authors concluded that exposure to a second language with more predictable grapheme-phoneme correspondences (Italian) may facilitate phonological processing skills in English.

Another study that pointed towards cross-linguistic transfer of phonological awareness and word-level reading ability in bilinguals comes from Durgunoglu *et al.*, (1993). The authors looked at English and Spanish word identification skills and Spanish phonological awareness abilities in Spanish-speaking beginning readers. Participants were reported to have limited English proficiency. Multiple regression analyses showed that Spanish PA ability and Spanish word identification skills predicted English word identification skills. This study suggests that the phonological awareness skills in children's first language can facilitate the process of learning to read in a second language, at least in the beginning stages.

Comeau *et al.* (1999) brought further evidence for positive cross-linguistic effect between two alphabetic languages: French and English. English-speaking children in French immersion classes participated in a 1-year longitudinal study and were administered measures of word decoding and of phonological awareness in French and in English as well as measures of cognitive ability, speeded naming, and pseudo-word repetition in English only. The relation of French PA to reading achievement in both languages was equivalent to that in English. Furthermore, PA in both languages was specifically associated with 1-year increments in decoding skill in French. The authors concluded that their results support the transfer of phonological awareness skills across alphabetic languages.

Another interesting study that investigated the phonological transfer cross-linguistically among bilinguals is Bialystok *et al.*, (2005), which compared four groups of

first-graders early literacy tasks. Children in three of the groups were bilingual, each group representing a different combination of language and writing system, and children in the fourth group were monolingual speakers of English. All the bilingual children used both languages daily and were learning to read in both languages. The children solved decoding and phonological awareness tasks, and the bilinguals completed all tasks in both languages. Initial differences between the groups in factors that contribute to early literacy were controlled in an analysis of covariance, and the results showed a general increment in reading ability for all the bilingual children but a larger advantage for children learning two alphabetic systems. Similarly, bilinguals transferred literacy skills across languages only when both languages were written in the same system. Therefore, the extent of the bilingual facilitation for early reading depends on the relation between the two languages and writing systems.

In conclusion, research has repeatedly found strong correlations between the phonological awareness in the two languages spoken by a bilingual, even during early stages when these skills are still developing and at least as far as alphabetic languages are concerned. With regard to studies on bi-literacy, one consistent finding in terms of the effects of reading in two languages has been the higher phonological awareness and processing ability found in bi-literate bilinguals with two alphabetic languages such as English and Spanish (Bialystok, *et al.*, 2003; Bialystok *et al.*, 2005), and in some studies, even in bi-literate bilinguals with two phonetic languages with non-roman script such as Russian and Hebrew (Leikin *et al.*, 2010). Overall, it may be said that bi-literate bilinguals who read in two alphabetic languages (e.g., Romanian and Italian) that are also two phonetic languages often demonstrate better ability in manipulating different sounds and better ability in recognizing the relationships between sounds and the written script than those who read in two languages with different writing systems.

In the present section I reviewed some of the research that overwhelmingly concluded that L1 literacy aids in L2 acquisition. In writing about the benefits of L1 literacy, Hudleson (1987) noted “*it develops in children an understanding of what reading and writing are for*” and “*native language literacy provided the children with resources to use as they moved into second language reading and writing.*” (1987, as cited in Swain *et al.*, 1990:67). Swain *et al.*, (1990) applied Hudelson’s theory to third language acquisition to see if, by extension, L2 literacy would aid in L3 literacy. Results showed that “*literacy knowledge in the heritage language, regardless of whether learners are currently making use of those literacy skills, has a strong positive impact on the learning of a third language.*” (1990:73).

They also found that “[...] *heritage language use without literacy has little effect.*” (1990:65).

In the next section I will further develop on the link between L1 literacy skills and beyond L2 acquisition, namely L3 acquisition, also by looking at the differences between the processes of second and third language acquisition.

Orthographic Processing

Also lexical processing or sight-word reading strategy, refers to conventions used in a writing system to represent the sound of a language (Treiman & Cassar, 1997). The notion has been defined as the ability to remember word spellings and regularities in letter sequences (Cunningham & Stanovic, 1990). Orthographic processing is a print-based skill, involving “*memory for specific visual/spelling patterns that identify individual words, or word parts, on the printed page*” (Barker *et al.*, 1992, 335–336). It includes two levels of processing: the lexical level – processing of actual spelling of particular words and the sub-lexical level—extracting and recognizing permissible spelling patterns across different words (Siegel *et al.*, 1995). Deacon (2012) argued that orthographic processing on a lexical level was reported to make an independent contribution to both word and non-word skills among children learning to read in English. Similarly, Commissaire *et al.* (2014) measured Canadian English-French bilingual first and second graders’ development of orthographic processing on both lexical and sub-lexical levels and concluded that bilinguals of French and English have underlying orthographic processing skills due to similarities that both languages share. Importantly enough, it was suggested that in reading across languages, transfer is more easily achieved between two orthographically similar languages. This statement also supported by previous research (Melby-Lervag & Lervag, 2011; Branum-Martin *et al.*, 2012).

Rapid Automatized Naming (RAN)

While orthographic processing deals with the ability to memorize the visual forms of speech lexically and sub-lexically, rapid automatized naming (RAN) deals with the level of fluency with which one can retrieve that memory. In other words, RAN is the ability to retrieve the pronunciations associated with symbols (letters and words) fluently (Georgiou *et al.*, 2012). In a study on Greek literacy acquisition, Georgiou *et al.*, 2012 found that RAN was correlated with reading fluency of Greek children because it involves serial processing and oral production of the names of stimuli. For transparent orthographic readers, RAN, or the speed of naming things, is more important than orthographic processing. Orthographic

processing, which tested by asking children to choose the correct-spelled word from a word pair, was reported to be less important in decoding Greek transparent orthography but important in reading the English opaque orthography because English words have common letter patterns that can be decoded as orthographic unit rather than letter-by-letter (Georgiou *et al.*, 2009). In a longitudinal study of English, Spanish, Czech, and Slovak monolingual children ($n = 675$), Caravolas *et al.* (2012) proposed RAN as one of the reading predictors in all alphabetic languages involved, along with phoneme awareness and letter sound knowledge. The authors of this study suggested that RAN is not like phoneme awareness and letter knowledge, which are skills that form alphabetic principle. Instead, RAN is a different mechanism regarding printed words and pronunciation (Caravolas *et al.*, 2012). Somebody with higher phoneme awareness and letter knowledge but lesser knowledge of RAN is able to read correctly but not fluently.

Vocabulary

The majority of studies addressing the contribution of vocabulary to word-reading skills have considered vocabulary in relation to other language-related skills, such as phonological awareness (Sénéchal *et al.*, 2006; Storch & Whitehurst, 2002; Wise *et al.*, 2007). For instance, Storch & Whitehurst (2002) found a strong effect of vocabulary on code-related skills (phonological awareness, letter and sound identification, and reading) that nevertheless diminished from preschool to Grade 4. Furthermore, direct significant paths between vocabulary and phonological processing skills were noted by Wise *et al.* (2007) among students with reading disabilities in Grades 2 and 3. Nevertheless, these findings do not necessarily indicate a direct facilitating effect of vocabulary on word identification skills during the early stages of reading acquisition which would require further investigation (Protopapas, Mouzaki, Sideridis, Kotsolakou, and Simos, 2013).

Research on phonological awareness, on the other hand, has been abundant and, as I previously mentioned, this is mostly due to its well-established relation to literacy acquisition: phonological awareness was indeed found to be a positive correlate and a strong predictor of reading achievement (e.g., Bradley & Bryant, 1983; Goswami & Bryant, 1990; Stanovich, 1992). Moreover, the relationship between reading and phonological awareness is considered to be not only causal but also reciprocal (Serrano *et al.*, 2003): in other words, literacy increases phonological awareness, but a certain level of phonological awareness is necessary for reading to be successful. This mutual relationship will be described into more detail in the following sub-section.

2.3 Third Language Acquisition

In the following section, I first introduce the notion of third language acquisition. I will then focus on the unique properties that differentiate L3 acquisition from L2 acquisition and on the complexity of the phenomenon of multilingualism. Finally, I will provide an overview of the existing findings on whether the benefits of bi-literacy versus bilingualism alone might go beyond second language acquisition.

2.3.1 Definition

Since Suzanne Romaine's astute remark that "It would certainly be odd to encounter a book with the title *Monolingualism*" (Romaine, 1995:1), several authors have pointed towards a growing recognition that multilingualism has become a norm rather than exception in the contemporary world and that a large part of the population speaks several languages on a daily basis (Wrembel & Cabrelli Amaro, 2016).

Research into the acquisition of second language acquisition (SLA) has enjoyed a well-documented tradition; however, recently a new tendency has emerged in accordance with which several scholars have started to differentiate between the acquisition of the first foreign language (L2) as opposed to other subsequent languages (L3, L4, Ln). Consequently, Third Language Acquisition (TLA) has started to be recognized as an independent field of inquiry and we can witness a dynamically growing body of related literature in the past two decades, primarily from an educational and sociolinguistic perspective (e.g. Cenoz, 2001; Cummins, 2001; De Angelis, 2007; Rothmans *et al.*, 2013). In turn, the psycholinguistic and cognitive aspects of multilingualism have started to be the focus of research relatively late (see Rothmans *et al.*, 2013 for an overview). After more than two decades of dedicated research into multilingualism, it is now generally agreed that there are linguistic and cognitive reasons to consider the acquisition of a L2 and third or further (L3/Ln) language as distinct processes (e.g., De Angelis & Dewaele, 2011; Rothmans *et al.*, 2013)

Third language acquisition (TLA) has been defined as "the acquisition of a non-native language by learners who have previously acquired or are acquiring two other languages (Cenoz, 2003). The acquisition of the first two languages can be simultaneous (as in early bilingualism) or consecutive" (Cenoz, 2003) and the study of it brings together two fields which were initially kept separate: second language acquisition and bilingualism. There have been criticisms about the use of L3 as a term to define the field of study. For example, De

Angelis (2007: 11) considers that it is not a suitable one as it places emphasis on the L3 and it seems to exclude other languages also present in the mind of the multilingual speaker. She proposes the term ‘third or additional language acquisition’, which obviously refers to all languages beyond the second (L2), although the author herself admits that it is long and impractical. More recently, Hammarberg (2010) argues against the untenable practice of labelling the multilingual speaker’s languages in a linear chronological scale and favors the practice of characterizing them according to the differential cognitive roles they play for their user. As solving these terminological and conceptual issues is beyond the scope of this review, I refer the reader to Kemp (2009) and Hammarberg (2010) for discussions. For the sake of simplicity, in this dissertation I will use the term L3 acquisition to refer to the acquisition of a non-native language by learners who have previously acquired or are acquiring two other languages.

2.3.2 L2 acquisition versus L3 acquisition

A view that has recently been proposed is that “research on multilingual behaviour can offer some valuable insights about the process of non-native language acquisition [...]” (De Angelis, 2007: 2). Additionally, from a theoretical linguistic perspective, Flynn *et al.* (2004) argue that the study of L3 acquisition can offer new insights into the process of language learning that neither investigation of the first language nor the second can provide. Therefore, limiting one’s scope of inquiry to the second language cannot provide adequate information about language processing and use from a multilingual speaker’s perspective Flynn *et al.* (2004). Prior linguistic knowledge and previous language learning experience have gained recognition as powerful factors in human cognition leading to a growing understanding of the necessity to investigate the uniqueness and complexity of language acquisition beyond the first foreign language. As a consequence, investigations into the process of multiple language acquisition as well as the mutual influence of various language systems within a multilingual person’s repertoire appear to be particularly valid and called for.

Although TLA and SLA share many characteristics, they are different processes because third language learners have more language experience at their disposal as second language learners, have access to two linguistic systems when acquiring a third language and are influenced by the general effects of bilingualism on cognition (Herdina & Jessner, 2002). Moreover, “A comparison of bilingual and trilingual processing suggests that these similarities and differences are both of a quantitative and qualitative kind, and therefore

trilingual competence is distinct from bilingual competence” (Hoffmann, 2001: 1). This instance was seconded by Jessner (2006) who put forward a related argumentation: “[...] the process and the product of having learnt a second language can potentially exert influence on the acquisition of an L3 and this involves a quality change in language learning and processing” (2006: 14). These arguments imply that the impact of the L1 on learning the first foreign language (L2) is fundamentally, i.e. qualitatively, different from the influence exerted by previously learnt languages (i.e. L1, L2 and potentially Ln) on the process of learning a subsequent language. A number of linguistic and psycholinguistic studies support these claims by providing evidence for the existence of qualitative and quantitative differences in processing the third language as compared to the first or second language (Cenoz, 2001).

Several scholars have pointed to an inherent characteristic feature of TLA that distinguishes it from SLA, namely, its increased complexity. In the study of SLA we are already faced with numerous factors stemming from sociolinguistic, psycholinguistic and educational perspectives. The acquisition of additional foreign languages further adds to this complexity, as postulated by Cenoz & Genesee (1998), Herdina & Jessner (2002), and Jessner (2006). This complex nature of third language acquisition results from diverse routes of acquisition and learning contexts, a multitude of individual factors related to multilingual learners, as well as the dynamic nature of the process of multiple acquisition.

As far as the routes of acquisition are concerned, when two languages are involved, there are only two temporal possibilities, the one of early bilingualism when the acquisition of both first language (L1) and second language (L2) is simultaneous (L1/L2) or the one of consecutive bilingualism when the first language is acquired before the second one (L1→L2). When three languages are acquired, there are four possibilities: two languages could be acquired simultaneously before the L3 is acquired (Lx / Ly →L3) in an early or consecutive bilingualism scenario; the acquisition of L1 can precede the acquisition of the successive two languages (L1 → Lx / Ly); all three languages can be acquired consecutively (L1 → L2 → L3); or the three languages could be acquired simultaneously in early trilingualism (Lx / Ly/ Lz).

Further, the context of acquisition can be naturalistic, formal or a combination of both, which when applied to the TLA perspective creates a variety of possible combinations.

In this study I will examine the previously mentioned aspects in connection to third language acquisition as relating to the first situation of routes of acquisition, that is, when the acquisition of a third language, starts chronologically after the acquisition of the other two languages, that have been acquired either simultaneously or consecutively in an early bilingualism scenario and in a combination of both naturalistic and formal contexts.

As I previously mentioned, the study of TLA brings together studies on both SLA and bilingualism. Factors traditionally associated with research in bilingualism also add to the diversity of TLA. Among these factors are the status of the different languages involved, the type of bilingualism in the L1 and L2 presented by the learners when acquiring the third language and the degree of bilingualism or bilingual proficiency (see Cenoz, 2003 for an overview).

In the following two sub-sections I will focus on the effect of bilingualism on third language acquisition. More specifically we will review the findings of studies that compared monolinguals to bilinguals or bilinguals among themselves.

2.3.3 Monolingualism versus bilingualism

Most studies on TLA were conducted in bilingual education programs. Two examples are Bild & Swain (1989) and Swain *et al.* (1990), both conducted in the Canadian context, that compared the level of French proficiency attained by learners who had English as an L1 and French as an L2 and immigrant children who could speak English and another language and were learning L3 French. Their results indicate that bilingual children obtained higher scores in the French tests than monolingual children. Another study involving bilingual immigrant learners of an L3 was carried out in Brussels by Jaspaert & Lemmens (1990). In this study, participants were Italian immigrant children who were in a bilingual program in Italian and French and were learning Dutch as a third language. When their level of proficiency in Dutch was compared to that of French-speaking monolinguals, no significant differences were observed. The authors considered the results as very positive, given that immigrant students often faced more difficulties and obtained lower scores at school than local children.

Later, four studies were conducted in bilingual schools in three bilingual communities in Spain – the Basque Country, Catalonia and Valencia – where a minority language (Basque or Catalan) is an official language alongside Spanish and is extensively used in education (Cenoz & Valencia, 1994; Lasagabaster, 2000; Sanz, 2000; Safont 2005). Findings from these studies suggested that bilingual learners outperformed monolingual learners in the acquisition of English as a third language. The first three studies looked at general oral and written proficiency in English, and the study by Safont (2005) focused on the acquisition of pragmatic competence. Another study on the effect of bilingualism on TLA, conducted with minority language speakers in Switzerland, was carried out by Brohy (2001). She analysed the acquisition of French as a third language by Romansch-German bilinguals, who were in

a bilingual programme, and German-speaking monolinguals. She reported that bilinguals obtained significantly higher scores than monolinguals in the acquisition of French as a third language. Taken together, these research studies carried out within the context of bilingual education indicate that bilinguals have advantages over monolinguals in TLA.

But TLA also takes place outside the context of bilingual education, as is frequently the case with immigration. Several studies have been carried out with immigrant bilingual learners in the Netherlands. For example, Sanders & Meijers (1995) reported no differences in the acquisition of English as a third language between immigrant Turkish-Dutch or Arabic – Dutch bilingual learners and monolingual Dutch learners. Schoonen *et al.* (2002) focused on proficiency in written English by immigrants who were bilingual in their L1 and Dutch (L2) and Dutch L1 learners of English. No significant differences were found between the two groups in this study. In another study with the same participants Van Gelderen *et al.* (2003) reported different results because bilingual speakers obtained significantly lower scores in the reading comprehension measures. Some studies conducted in Sweden have also compared immigrant bilinguals and monolinguals learning English. Balke-Aurell & Lindblad (1982) reported no differences between these groups in tests of general proficiency in English. Maagiste (1984) compared English proficiency by monolingual Swedish speakers, passive bilinguals and active bilinguals, and reported that passive bilinguals obtained the best scores. Another study conducted with immigrants was carried out in the United States. Thomas (1988) focused on the acquisition of French by monolingual English-speakers and bilingual English-Spanish speakers and found that bilingual learners obtained significantly higher scores in French than monolinguals. Bilingual learners acquiring a third language obtained good results in a study conducted by Clyne *et al.*, (2004) in Australia. In this study, L3 learners outperformed L2 learners when learning Greek or Spanish as a third language. In sum, these studies comparing immigrant learners of an L3 and non-immigrant learners of an L2 tend to confirm the advantages of bilingualism when learning an L3, but the results are not as conclusive as in the case of the bilingual programmes. However, it is important to remember the positive effects of bilingualism on TLA are also related to contextual variables (Cenoz, 2011). Socioeconomic and socio-educational status have an important influence and can explain to a certain extent the mixed results reported in studies with bilingual immigrant learners.

The development of the first language and the acquisition of literacy skills in that language have also been found to be associated with advantages in TLA in the case of immigrants (Thomas, 1988; Bild & Swain, 1989) and minority language speakers (see Sanz, 2007; Cenoz, 2009 for a review). However, as Cenoz (2011) underlines, more studies are

needed to confirm the effect of literacy, because instruction in a second language without literacy in the first does not always hinder the acquisition of a third language (Wagner, Spratt & Ezzaki 1989).

2.3.4 The intra-bilingual distinction

What is even more interesting for the purpose of this proposal is that a number of researchers have centered their attention on third language acquisition itself, focusing on the study of whether bilingual learners who differ from each other with regard to certain variables present different levels of competence in the target language.

For example, typological distance, especially when comparing L1 and L2 to L3, has been found to affect TLA. Bilinguals who speak a language typologically similar to the target language tend to achieve a significantly better acquisition of the third language than bilinguals who do not have a language typologically close to the L3 in their linguistic background (Balke Aurell & Lindblad, 1982; Swain *et al.*, 1990). However, there are also cases in which the superiority shown by bilinguals who speak a language typologically related to the target language has not always reached statistical significance (Bild & Swain, 1989).

Other researchers have looked at differences with regard to some aspects of the acquisition of the first language in bilingual immigrant subjects, and the effect of these differences on the acquisition of a third language. It has been discovered, for instance, that bilinguals who have learned their home language formally are better L3 learners than those bilingual speakers who have acquired their L1 only informally at home, as they have been found to perform significantly better on L3 tests and to be able to avoid interference and exploit positive transfer to a larger extent (Thomas, 1985, 1988).

Additionally, the level of bilingualism seems to be a variable which has an influence on the degree of proficiency in the target language. Evidence to support this affirmation can be found in the above mentioned investigations conducted in bilingual communities in Spain on the acquisition of English as a foreign language, all of which insist on the beneficial influence of balanced bilingualism on third language acquisition. They all seem to confirm, as Cenoz (2003) states, the relevance of the Cummins (1976) 'threshold hypothesis', which associates a high level of bilingual proficiency with positive cognitive effects, and the importance of the Cummins (1991) 'interdependence hypothesis', which assumes that academic proficiency can be transferred between languages, in third language acquisition too. In light of these investigations' results, different factors related to the level of

bilingualism, such as receiving school instruction in the minority language (Lasagabaster, 1998), a higher frequency of use of the minority language (Sagasta, 2001), a better competence in the minority language (Bernaus, 1996) or a higher proficiency in both the minority and the majority language (Muñoz, 2000), happen to be related to better outcomes in different dimensions of L3 English.

2.3.5 Bi-literacy in SLA and TLA

Reviewing the early linguistic and meta-linguistic development of young bilinguals, Bialystok (2002) suggested that bilingualism per se may not be the most influential factor in L2 reading acquisition; rather early (L1) literacy acquisition may be the critical factor enhancing L2 literacy development. Following up on Bialystok's hypothesis, Schwartz *et al.*, (2008) revised the results from Schwartz *et al.*, (2005) and examined two alternative explanations for the finding that early literacy in Russian (L1) facilitated decoding acquisition in Hebrew (L2) among Russian-Hebrew first graders. The first account concerned the general benefits of an early start in literacy while the second related to the specific meta-linguistic insights engendered by early exposure to a fully fledged orthography—Russian. They compared two groups who had acquired literacy prior to the onset of schooling: bi-literate bilinguals (Russian L1 literates and Hebrew L2 learners) and early-literacy monolinguals (Hebrew speaking monolinguals). The research was conducted in two stages. First, linguistic, meta-linguistic and cognitive tasks in Hebrew were administered to all children and in Russian to the bilinguals at the beginning of the first grade. Next, reading and writing skills in Hebrew were assessed at the end of the first grade. Bi-literate bilinguals showed superior levels of phonological awareness on an initial phoneme isolation task in Hebrew compared to other three groups. In addition, the bi-literate bilinguals were found to be superior to the early-literacy monolinguals on measures of word and pseudo-word accuracy, which are known to depend heavily on phonological processing efficiency, but not on fluency and spelling measures, which are more reliant on stored orthographic information. This pattern of outcomes was attributed to the facilitating effects of an orthography characterized by a fully fledged alphabet, in contrast to Hebrew's primarily consonantal orthography, as well as the complex syllabic structure of Russian.

Leikin *et al.* (2010) synthesizes the main findings from the previous two studies in the light of the hypotheses regarding literacy acquisition in bilingual children. In particular, they addressed the general question of cross-linguistic transfer of both phonemic awareness and word identification skills in light of the interdependence hypothesis

(Cummins, 1978). Moreover, they focused on some specific benefits of Russian literacy in spelling acquisition in Hebrew within the framework of the *Script-dependent hypothesis* (Geva & Siegel, 2000; Geva & Wade-Woolley, 1998). Their conclusions were that their data furnished clear-cut evidence for Cummins' (1978) Linguistic interdependence hypothesis and it also go on to suggest that the actual mechanism of transfer of early literacy skills across alphabetic orthographies is the insight into the alphabetic principle that underlies all alphabetic writing systems. Moreover, the data shed new light on the *Script-dependent hypothesis* as it clearly revealed a positive effect of L1 literacy beyond the well-known deep-shallow contrast (i.e., the *Orthographic Depth Hypothesis*, Frost, 2005). Specifically, the differences between a fully-fledged alphabet such as Russian's Cyrillic script and a primarily consonantal alphabet such as Hebrew's pointed script can facilitate the spelling of certain distinctive features in Hebrew.

The above studies by Schwartz and her colleagues provide evidence for the bi-literacy advantage over both monolingualism and monoliterate bilingualism. Moreover, results from Janssen *et al.* (2011) would also seem to suggest that bilinguals that lack L1 literacy skills do not present advantages over monolinguals, at least as phoneme-awareness is concerned.

As I previously mentioned, research found that immigrants who are literate in both the home and the national language happen to be more accurate in the L3 than those bilingual speakers who are illiterate in their heritage language (Swain *et al.*, 1990). These findings were echoed by results from other studies that showed that bi-literacy influences not just L2 acquisition but also L3 acquisition since the key to the cognitive advantage reflected in more efficient L3 acquisition is bi-literacy, rather than exclusively oral bilingualism (Rauch *et al.*, 2012; Sanz, 2007; Schwartz *et al.*, 2008).

Starting from Cenoz's (2003) assumption that bilingualism has a positive effect on metalinguistic awareness, while good metalinguistic awareness in turn has a positive impact on L3 learning, Rauch *et al.* (2012) tested the hypothesis that bi-literacy promotes metalinguistic awareness which in turn facilitates the acquisition of L3 reading skill. In their research, the assumptions were tested that literacy in both first (L1) and second (L2) language (full bi-literacy) is needed for bilingualism to be positively associated with L3 reading proficiency, and that positive effects of full bi-literacy on L3 reading proficiency are mediated through metalinguistic awareness. L1, L2 and L3 reading proficiency and metalinguistic awareness were measured in 299 German and Turkish-German secondary school students. Overall, fully bi-literate students outperformed monolingual and partially bi-literate students in L3 metalinguistic awareness. Moreover, an effect of full bi-literacy on

L3 reading proficiency persisted when SES, gender, general cognitive ability and school track were controlled for.

According to Sanz (2007) balance in oral skills have no effect, but degree of bilingual literacy is key to success in L3 acquisition. These results agree with those in Muñoz (2000), Lasagabaster (2000), and Sagasta (2003), and show that it is not overall L1 and L2 proficiency but bi-literacy that contributes to cognitive benefits resulting in enhanced ability to learn languages. From these studies it can be concluded that the key variable in successful L3 acquisition is the ability to read and write in two languages.

A similar example is Schwartz *et al.* (2008), which was conducted in Israel where Hebrew was the mainstream language used in education, and English instruction was given from the third grade. The study investigated the impact of bi-literacy in Russian and Hebrew on Russian immigrant children's literacy skill development in L3 English. Three groups of eleven-year-olds, bi-literate bilinguals in Russian and Hebrew, mono-literate bilinguals of Russian and Hebrew, literate in Hebrew, and mono-literate monolinguals literate in Hebrew were compared across five literacy skills and four metalinguistic and linguistic skills in English. The results found that the bi-literate group outperformed the other two groups in English phoneme deletion, phoneme analysis, pseudo-word decoding, and pseudo-word spelling. Bi-literacy was reported to predict English word reading accuracy even after Hebrew reading accuracy was controlled. The Russian-Hebrew bi-literate group outperformed the Russian-Hebrew

Mono-literate and Hebrew monolingual groups, not only in L3 English, but also in the Hebrew metalinguistic and literacy skills, phonemic manipulation, and pseudo-word decoding accuracy.

The present study focused on the above intra-bilingual distinctions, namely mono-literacy versus bi-literacy among bilinguals, and tested the possible benefits of the later on L2 and L3 phonological awareness and reading skills.

2.4 Migration and Education

Migration flows to developed countries have increased since the mid 1980s and so has the diversity of origins of migrants, people who are living in a country other than the one in which they were born. Language education, and in particular the learning of the language of the host country, has a major role to play in supporting the integration of young and adult migrants or that of their children into educational systems, the labour market, and society

at large. Among many others, migration has important linguistic consequences, fostering multilingualism, since an increasing number of languages come in contact and traditional monolingual institutions are challenged by the population movements (Extra & Yagmur, 2004). In the following sub-section, I will deal with bilingualism and multilingualism as one of the most relevant consequences of migration.

2.4.1 Bilingualism and multilingualism

We have seen from the previous section that, far from being exception, bilingualism (or even multilingualism) is currently the rule throughout the world and will become increasingly so in the future (Butler & Hakuta, 2006). The UNESCO Atlas of the World's Languages in Danger of Disappearing (Wurm, 2001) estimated that the ratio of number of languages to number of states indicates that most states count with more than one language which means that bilingualism is present in practically every country of the world [...]. As it results, monolingualism is rather “the exception, not the rule” (DeKeyser & Larson-Hall, 2005: 223); in fact, as Romaine (1995) pointed out, it would be weird to find a book titled Monolingualism, although for a long time it was considered the norm, especially in Europe.

While the term ‘bilingualism’ means the capacity to use ‘two languages’, the term multilingualism implies ‘multiple’ languages and it seems to be more intricate than bilingualism, as

“Multilingual acquisition and multilingualism [...] implicate all the factors and processes associated with second language acquisition and bilingualism as well as unique and potentially more complex factors and effects associated with the interactions that are possible among the multiple languages being learned and in the processes of learning them (Cenoz & Genesee, 1998: 16).

We have seen in the previous section that TLA and SLA are two very different processes and that they are rooted in diverse theoretical and practical perspectives that emphasise different aspects of using and learning languages (Aronin & Singleton, 2012). In this regard, De Angelis & Selinker (2001: 45) state that

“a multilingual is neither the sum of three or more monolinguals, nor a bilingual with an additional language. Rather, in our view a multilingual is a speaker of 3 or more languages with unique linguistic configuration often depending on his individual history, and, as such, the study of third or additional language acquisition cannot be regarded as an extension of second language acquisition or bilingualism”.

Furthermore, according to Baker (2006: 2)

“[...] it is valuable to make an initial distinction between bilingualism and multilingualism as an individual characteristic, and bilingualism and multilingualism in a social group, community, region or country”.

Multilingualism can be understood as an individual or a social phenomenon (Cenoz & Gorter, 2011). It can refer to the acquisition, knowledge, or use of several languages by individuals or by language communities in a specific geographical area. It is not a new phenomenon – on the contrary, there has always been contact between speakers of different languages related to commerce, wars, or immigration (Cenoz & Gorter, 2011), but only in recent times it transpired as a phenomenon whose nature is to be investigated afresh and on its own terms (Aronin & Hufeisen, 2009).

The treatment of immigrant languages started to change in the last decade, as the Civil Society Platform to Promote Multilingualism: Policy Recommendations for the Promotion of Multilingualism in the European Union (2011: 6) recognised the importance of the languages of immigrant groups:

“All languages that are in regular use by a community, whether territorial or Diaspora, are important and should be included in language policy; not just the official working languages of the European Union. This includes among others less-widely used languages, languages of immigrant communities, minority languages. This will help guarantee Europe’s cultural diversity as well as the basic human rights of all citizen”.

Initial beliefs regarding the negative consequences of bilingualism at individual level were invalidated by numerous studies and the old idea that bilingualism could be detrimental as it would cause diminution of intellectual capacities, have long since been replaced by the view that bilingualism does not mean loss; indeed, some have argued that increases in linguistic repertoire correlate with heightened sensitivity, enhanced cultural awareness, and even greater cognitive flexibility (Edwards, 2003). It was therefore suggested that approaches which foster multilingualism for all learners, not just for migrants, could represent a key to successful integration in schools (Edwards, 2003).

According to the Council of Europe’s Language Policy Division (2010),

“access to literacy in two languages benefits cognitive development. Thus, the language skills of children and adolescents from migrant backgrounds should be fostered by whatever means available, partly as a matter of human rights and partly in order to

increase society's linguistic and cultural capital".

Further, we will see how the above concepts are applied in education.

2.4.2 Bilingual education

Bilingual education is intended as "an education system where two languages are used as medium of instruction, of which usually, although not always, one is the first language of the students" (Siguán & Mackey, 1986: 62). A more recent definition is offered by García (2011: 5) who understands by bilingual education:

"any instance in which children's and teachers' communicative practices in school normally include the use of multiple multilingual practices that maximize learning efficacy and communication; and that, in so doing, foster and develop tolerance towards linguistic differences, as well as appreciation of languages and bilingual proficiency".

In sum, for an education program to qualify as bilingual it has to use the two languages as a medium of instruction.

It is useful at this point making a distinction between additive and subtractive bilingualism. Lambert (1974) differentiates between the two types and states that additive bilingualism refers to contexts where the individuals incorporate a new language to their linguistic repertoire, but the status of their own is not expected to be affected by that process. Additionally, Cenoz & Gorter (2011) exemplify that a case of additive multilingualism can be immersion aimed at speakers of the majority language in different parts of the world. In these programmes, a second language such as French for English L1 speakers in Canada, Catalan for Spanish L1 speakers in Catalonia or Welsh for English L1 speakers in Wales is used as a language of instruction at no cost for the first language. On the other hand, subtractive bilingualism describes situations in which the acquisition of a second language is accompanied by pressure to demote the first language and generally occurs in ethnolinguistic groups of low prestige in which the acquisition of the second language comes with the transmission of superior values towards that language and culture (Lambert, 1974). Under these circumstances, the acquisition of the second language occurs in the disadvantage of the mother tongue, as the latter one gets replaced by the one of the higher prestige. This is often the case of migrants, who feel pressured to use the majority language and feel embarrassed when using their first language. A typical example would be that of Spanish speakers in the USA when they receive education only through the medium of

English without having the opportunity to develop their home language.

The phrase ‘bilingual education’ is used to cover schools where children move quickly from minority language dominance to majority language dominance as well as for schools that help children become bilingual and biliterate (Baker, 2007). To reduce ambiguity, ‘bilingual education’ is ideally reserved for those schools and classrooms that teach some part of or all subject content through two languages. This is the ‘strong’ version of bilingual education (Baker, 2006). In contrast, there are ‘weak’ forms that allow children to use their home language for a short, temporary, transitional period.

2.4.3 Maintenance/heritage language programmes

In recent times, the most frequent grounds for the development of bilingual models was brought by immigration. Since immigration leads to language communities of varying sizes within the territory of a majority language, among the various bilingual and multilingual educational programs developed throughout time (see for e.g. Skutnabb-Kangas, 1995), numerous bilingual education programmes have been established in the service of larger immigrant communities (Gogolin, 2011). The most frequent type puts an emphasis on the classroom use of the language minority. That is, language minority children use their native, ethnic, home, or heritage language in the school as a medium of instruction and the goal is full bilingualism. Examples include education through, or more often partly through, the medium of Navajo and Spanish in the US, Catalan in Spain, Ukrainian in Canada, Gaelic in Scotland, Finnish in Sweden, and Welsh in Wales. In so-called language maintenance programmes, the aim can be to produce fluent and balanced bilingualism – or even more than that, to provide the entire curriculum in both languages. This kind of model has been established in particular for autochthonous minorities in areas with quite stable bilingual speech communities, but some attempts have also been made with respect to immigrant minority communities. Literacy in these models can be taught in parallel or consecutively.

Most evidence for the positive impact that L1 literacy has on L2 learning comes from evaluations of bilingual education programmes for heritage language children, usually conducted within additive bilingualism scenarios. In general, it has been found that children who are initially educated in their heritage language learn a second language better (and are academically more successful) than those who have no such solid foundation in their first language (Swain *et al.*, 1990).

In many countries the acquisition of a heritage language occurs in an L2 non-additive

environment, in which L1 is non-majority language that is not used in the formal educational context. Before moving to describing the linguistic environment considered in this study, I will briefly summarize findings from studies that were also conducted with L1 Romanian as a heritage language.

2.4.4 Previous research on Romanian language-minority children with an immigration background

Important evidence for the positive effects that preserving a minority first language brings to the overall personal and educational development of immigrant children come from Petrescu (2014). In her dissertation, the author investigated the conditions under which Romanian as a first language can be acquired and maintained in an English dominant setting as well as any impact that L1 Romanian has on L2 English, to which the children were formally introduced upon entry to junior kindergarten. In the longitudinal study participated three Canadian-born Romanian-speaking children that were followed from the commencement of junior kindergarten (~ 4;0) until the start of grade 1 (~ 6;0). The study, set out to determine whether, despite attending an English pre-school, these children continue to develop their home language (L1) when supportive conditions are in place or on the contrary, in the event of L1 attrition to lose specific areas of linguistic knowledge, also aimed at examining the acquisition of the children's L2 and the influence that L1 has in this process. To determine the children's language input and use patterns as well as their families' attitudes towards languages and commitment to L1 maintenance, a structured interview format with the parents was used. The children's L1 knowledge was assessed using two instruments (Romanian-adapted PPVT-4 - Peabody Picture Vocabulary Test 4, and Romanian-adapted CTOPP - Comprehensive Test of Phonological Processing), both developed by the author, as well as through narratives and monthly recordings of free conversations. The children's knowledge of English was evaluated using two standardized measures (PPVT-4 and CTOPP) as well as through story-telling tasks. In addition to investigating language development over time, crosslinguistic influence was also examined through determining whether there is a cognate advantage in the English receptive vocabulary knowledge test as well as through establishing the rate of code-switching in the narratives.

The results demonstrated that the children in the study were multicompetent users of both Romanian and English and that they continue to develop their minority language along with the majority language. However, the lack of schooling in Romanian leads to slow

progress in terms of academic Romanian vocabulary and possibly in terms of Romanian narrative skills. The author suggested that this could be rectified through formal minority language education. The findings also demonstrate that two years of schooling in English narrows and, in some respects, even erases the gap between the English-as-L2 children and their monolingual counterparts; in fact, the participants mostly showed English language skills at par with those of the monolingual children. Interestingly enough for the purpose of this study, all three children's phonological skills in L2 English were ranging between average and superior, confirming that bilingualism is no disadvantage to children who speak one language at home and another at school. Preschool phonological skills transfer from L1 to L2, just like other oral and written literacy skills in older children. The findings in the study indicated that the parents should not be afraid of encouraging their children to use their heritage language at home.

Petrescu (2014) provides unique data on bilingual children with Romanian as a first language outside the Romanian borders. However, as the author underlines, becoming successful bilinguals in contexts in which the L1 is the minority can often be challenging due to the fact that in such situations the majority language dominates communication not only provincially and nationally but also internationally. Finally,

A different approach was adopted in the Italian context by Galatà & Zmarich (2011a, 2011b, 2020), and Galatà & Zmarich and colleagues (Galatà *et al.*, 2012) who conducted a series of studies on the L1 Romanian children with a migratory background. For example, Galatà & Zmarich (2020) focused on the phonetic-phonological development of a group of pre-schoolers born from Romanian parents and attending the Italian kindergarten, in order to determine whether differences between the phonetic-phonological system of Romanian and Italian would influence the perception and the production of Italian as L2 in Romanian children. Their hypothesis was that Romanian children learning Italian as L2 by entering the kindergarten may encounter major difficulties in the production and perception of specific sounds not present in their L1 (/dz/, /ɲ/ and /ʎ/, as well as the gemination of consonants). By focussing on the consonantal system of the two languages the authors developed a Non-Word Discrimination Test (NWDT) and a Non-Word Repetition Test (NWRT). In order to collect more natural speech samples to be added to the phonetic and phonological analysis, an additional Narrative Task (NT) has been administered to the three groups of children (5;0-5;5, 5;6-5;11 and 6;6-6;11) in order to elicit their oral production. The results showed that the Romanian children performed better on discriminating non-critical consonants as compared to those that were considered critical and by looking at each age group separately, although the error rate decreased with age, this tendency was

maintained with the error rate for critical consonants almost doubling that for non-critical consonants (e.g. consonants shared between Romanian and Italian). However, comparing the Romanian children to the Italian age-matched peers, the authors noticed that also the Italian children showed some slight difficulty in the discrimination. This was explained by the fact that the consonants that were used in the study as critical for the Romanian children are somehow difficult for the Italian children as among the latest ones to be acquired by Italian children (Bortolini, 1995; Zanolini *et al.*, 2012). The major difficulty for the Romanian children was represented by those pairs of non-words involving a contrast between geminates and non-geminates. Nevertheless, there was an improvement (e.g. decreasing error rates) in the discrimination ability for all the consonants considered (both critical and non-critical ones) as the age of the children increases. The authors hypothesized that the children's maturation and higher exposure to L2 Italian led to a better discrimination.

As the authors also underline it, Galatà & Zmarich (2020) contributes to the very sparse literature on the acquisition of Italian in pre-schoolers and children learning Italian as L2. Nevertheless, although it brings important information to the present study, their Romanian-Italian participants had a different profile: they were children aged between 61 and 83 months (mean age 5;10) attending Italian kindergartens in the north-eastern part of Italy; they were all born from Romanian parents and they received Romanian language input at home in a family context through their parents and relatives while the Italian language input was mixed (a formal one, as the one provided in an educational setting (at kindergarten) taking place only as they enter the Italian school system, between 36 and 48 months of age, and of an informal one provided in the family setting, at home). Therefore, the participants in Galatà & Zmarich (2020) were in the age period (from 3 to 6 y.o.) that represents, from a neurobiological point of view, a fruitful and privileged time-window for the acquisition of languages (Ioup, 2008). The participants in my study were older and therefore, had very probably already passed this phase. Moreover, although technically speaking, the participants in Galatà & Zmarich (2020) may be considered as "early sequential bilinguals" (Bettoni, 2001; Meisel, 2004), their exposure to L2 Italian may have been inferior in terms of length to that to L1 Romanian. Moreover, since they were all attending kindergarten, most probably they were not introduced to literacy yet, nor was literacy of interest to the study. In this dissertation, literacy (in Italian only rather than in both Italian and Romanian) was specifically addressed as key independent variable.

Chapter 3 PEOPLE AND LANGUAGES

In this chapter I will first define the characteristics of the migratory process of Romanians to Italy, with a particular focus on the second generation and on courses of Romanian as a heritage language in Italy. In the second part of the chapter I will briefly analyse the phonological and orthographic structure of the three languages object of the present work, namely Romanian, Italian and English.

3.1 Romanian Migration in Italy

As I previously mentioned, L3 acquisition studies were mainly conducted in bilingual education programs (e.g. Bild & Swain, 1989; Swain *et al.*, 1990; Jaspaert & Lemmens, 1990), as well as with immigrant bilingual learners (e.g. Schoonen *et al.*, 2002; Thomas, 1988). Studies comparing immigrant learners of an L3 and non-immigrant learners of an L2 tend to confirm the advantages of bilingualism when learning an L3, but the results are not as conclusive as in the case of bilingual programmes.

The bilingual children in this study were all sons of immigrants, born and raised in Italy or immigrants themselves, arrived in Italy at a young age. Therefore, they all can be included within the category of *second generation immigrants* since this term generally defines both the children of immigrants, born and raised in the host society, and adolescents reunited after having completed a process of socialization in the country of origin (and also the children of mixed couples, adopted minors, Ambrosini & Molina, 2004). Migration processes involve a large scale of elements that influence each other, elements that concern not only the political or the socio-cultural sphere, but also the linguistic one. Although this dissertation aims to address only a purely linguistic aspect of the acquisition of Romanian as a heritage language in the Italian context, it is necessary to provide at least some background coordinates of the Romanian immigration to Italy, to frame the results of our analysis.

In this section I will briefly illustrate the current situation of immigration in Italy, with a specific eye on the Romanian people. I will then describe the second generation in Italy, here again with a particular look at the Romanian children. Finally, I will illustrate the characteristics of the LCCR project.

3.1.1 Foreign immigration in Italy

In Italy, at the end of 2019, there were residing more than 5 million foreigners, equal to 8.5 percent of resident citizens and with an increase of less than 10 thousand units compared to the previous year (Istat, 2020). To fuel the number of foreigners in Italy there are not only migrations from abroad, but also the above mentioned so-called second generations. The comparison between the data of recent years, however, highlights a slowdown in the growth of the foreign population both due to a smaller number of inflows, and as a result of a growing number of people who every year become Italian (Istat, 2020). 30 percent of foreigners residing in Italy come from a country of the European Union and among these Romanians are by far the largest community: at the beginning of 2020, the Romanian immigrants legally residing on Italian ground were more than 1 million which represents around a fifth of the total number of foreign residents. I non-EU citizens represent 70 percent of the resident foreign population, among them the Albanians make up 9.3 percent of foreigners, followed by 8.7 percent of those from Morocco, 5.4 percent from the Republic of China and 4.6 per cent from Ukraine.

Table 1. Ranking of the foreign nationalities of immigrants legally residing on Italian ground*

Country	Males	Females	Total
Romania	515 647	515 647	1 207 919
Albania	225 167	225 167	440 854
Morocco	230 488	201 970	432 458
China	152 792	152 297	305 089
Ukraine	54 112	186 316	240 428

*http://dati.istat.it/Index.aspx?DataSetCode=DCIS_POPSTRRES1#. URL last accessed on 30th September 2020

3.1.2 Romanian immigration in Italy

As Cingolani (2009) shows, Romanian immigration sees its evolution following four different stages. Until 1989 the international mobility of people was forbidden and demonized by the Romanian regime, since it was seen as an obstacle to the great plan of making Romania an industrialized and autarchic country. Immediately after the Second World War, in fact, each state of the Soviet bloc had begun to aspire to the Russian development model, and the project continued in the 1950s with the creation of the Council

for Mutual Economic Assistance (COMECON), “[finalized] to promote the simultaneous development of participating states through close economic cooperation” (Cingolani, 2009: 33). Romania became the "granary of Europe", with its supply of agricultural products, but Ceaușescu also promoted a sustained industrialization that led the country, between the 1960s and the 1970s, to incredible economic growth. As a result, all possible workforce was required within the country, both in the countryside and in the cities. Mobility itself within the country was, therefore, hindered by the government through a series of restrictive policies. The 1989 revolution put an end to the autocratic regime and gave the green light to the circulation, more or less legalized, of goods and people outside the state.

Diminescu (2003, in Cingolani 2009: 43) identifies between 1990 and 1994 the first phase of Romanian mobility, the one that mainly involves ethnic minorities (Germans, Hungarians, Jews) and their return to their respective countries. When more restrictive migration policies are applied in Germany and Israel, a second phase occurs, between 1994 and 2000, during which Romanian migrants begin to be attracted from the Mediterranean countries (Italy, Spain, Portugal and Greece), abandoning the previous destinations of northern Europe. The third phase begins in January 2002, when Romanian citizens obtain the right to travel freely, for tourist reasons, in the Schengen area (Law of 30 July 2002). This gives way to a circular migratory phenomenon, that is to stays, abroad for work periods alternating with frequent and short returns home. Over the years, the number of Romanians regularly residing in Italy rises steadily and, starting from 2007, with the entry of Romania into the European Community, the Romanian community becomes the largest among the foreign population residing in Italy.

As for the current geographical distribution of Romanian immigrants on Italian territory, we note that the main destinations are the north-central area, with an emphasis on the regions of Lazio, Lombardy, Piedmont, Veneto, Emilia-Romagna and Tuscany, which represent the Italian regions with the highest presence of large cities and numerous industrial and construction activities. With reference to the area of interest for our research, according to ISTAT estimates, as at 31 December 2019 the Piedmont region had 145.660 citizens of Romanian origin (33.9% of the total amount of immigrants in Piedmont), divided as follows by province:

Table 2. Ranking of the Piedmont's provinces ordered by number of Romanian residents*

Province in Piedmont	Romanian citizens			
	Male	Female	Total	%
Torino	43.216	54.798	98.014	67,3%
Cuneo	6.933	9.581	16.514	11,3%
Alessandria	5.918	7.285	13.203	9,1%
Asti	3.114	4.021	7.135	4,9%
Novara	1.864	2.251	4.115	2,8%
Vercelli	1.326	1.847	3.173	2,2%
Biella	828	1.388	2.216	1,5%
Verbano-Cusio-Ossola	534	756	1.290	0,9%
Total Piedmont	63.733	81.927	145.660	

*Romeni in Piemonte, in <http://www.tuttitalia.it/>. URL last accessed on 30th September 2020.

According to the estimates of a recent report by the Italian Caritas, *Romania. Immigration and work in Italy. Statistics, problems and prospects* (2008), the Romanian population in Italy contributes to 1.2% of the Italian GDP; half of Romanian workers are employed in the service sector (family assistance, hotels and restaurants, IT and business services), one third in industry and 6.6% in agriculture. As revealed by Cohal's research (2014), but also by other researches previously carried out, 80% of Romanian immigrants in Italy have completed the twelve years of compulsory education and are therefore in possession of a diploma, while 10% of them graduated.

In the first phase of Romanian immigration to Italy, that of the early 90s, Romanians see a period of good reception in the peninsula, as they are seen not only as veterans of the communist regime, but also as close to Italian culture as a Latin community surrounded by Slavic populations. The following considerable increase in the presence of Romanians in Italy changed the perception that Italians have of the Romanian community. According to a research by the Metro Media Transilvania agency and the Department for Government Strategies of Romania (Cohal, 2014: 46), 30% of Romanian immigrants claim to feel discriminated against in the workplace, despite the fact that they are represented as workers par excellence.

3.1.3 The (Italian/) Romanian Second Generation

According to recent statistics released by the Italian Minister of Education (MIUR, 2020), in the 2018/2019 school year, Italian schools welcomed a total of more than 8.580 million students, of which about 860 thousand were non-Italian citizens. Primary school remains the sector that absorbs the largest number of non-Italian students and the 2018/2019 school year recorded an increase of 5,386 students (+ 1.7%). Lombardy is reconfirmed as the region with the highest number of students, about a quarter of the total present in Italy (25.4%) while Emilia Romagna, Veneto, Lazio and Piedmont absorb between 9% and 12% of students with non-Italian citizenship. In Emilia Romagna, students with non-Italian citizenship represent 16.4% in relation to the regional school population, which is the highest value at national level. Lombardy follows with 15.5%, in third and fourth place are Tuscany (14.1%) and Umbria (13.8%) followed by Veneto (13.6%) and Piedmont (13, 5%).

The constant growth of second generations significantly characterizes the evolution of the presence of students with a migratory background. In the five-year period 2014/2015 - 2018/2019 the number of foreign students born in Italy increased by almost 23%. In the last year, the growth was almost 22 thousand units (+ 4.1%), bringing the share of those born in Italy out of the total of students of migratory origin to 64.5%. Examining the variation of students with non-Italian citizenship by place of birth (Italy or abroad), it is clear that the second generations now represent the only growing component of the school population.

The data broken down by continent show that most of the students, or 46.3%, come from a European country. Among the European countries the most represented nationality is Romanian, with nearly 158,000 students. Nearly two thirds of them were born and raised in Italy. Overall, students of Romanian and Albanian origin (116,000 units) represent almost a third of foreign students in Italy (31.9%). In the period 2008/2009 - 2018/2019 the share of students of Romanian nationality increased by 1.6 percentage points from 16.8% to 18.4%.

Moreover, the Romanian children enrolled in the 2016/2017 academic year were more than 150 thousand, which again represents the greatest amount (20%) among more than 200 nationalities of foreign students.

At the moment there is no Romanian-Italian bilingual school in Italy, while other immigrant minorities, like Chinese or Arabic Egyptian, offer at least one institution where immigrant or second generation children can study both in their heritage language and Italian.

3.1.4 LCCR courses

In 2007, following the EU's policy on multilingualism, the Romanian Language Institute, a specialized institution subordinate to the Ministry of Education, has launched the LCCR project, developed within a partnership between the Romanian Ministry of Education and other EU member states, based on the teaching of the Romanian language, culture and civilization not only in Italian schools but also in Belgium, Spain, Ireland, Portugal, England and France. The course, entirely free of charge, takes place twice a week and aims at maintaining the link with the Romanian language and culture. Moreover, attending the course facilitates the reintegration of students into the Romanian educational system in case of return to the country. In 2019, nearly 5 thousand students (around 3% of the total amount of Romanian children enrolled in the Italian school system) were attending LCCR courses.

3.2 Language Comparisons

3.2.1 Romanian and Italian

Romanian is a Romance language which makes use of a modified classical Latin alphabet made of 31 letters, 5 of which are modified from their Latin originals for the phonetic requirements of the language, *ă*, *â*, *î*, *ș*, *ț*. Of the first three modified graphemes, *a breve* is the grapheme for schwa while *a circumphlex* and *i circumphlex* represent a case of allography for the mid central vowel /i/. As for the other two modified graphemes, the *s comma bellow* is used to represent the voiceless palatal fricative /ʃ/, and the *t coma bellow* is used for the dental /ts/ - *ă* - /ə/, "cărțile" /'kærtʃile/ (*the books*); *â* (internal), *î* (initial and final) – *român* /ro'min/ (*Romanian*), *în* /in/ (*in, into*), *urî* /a uri/ (*to hate*); *ș* - /ʃ/, *Șapte* /'ʃapte/ (*seven*); *ț* - /ts/, *țigăni* /tsi'gan/ (*gipsy*).

Italian orthography uses a variant of the Latin alphabet consisting of 21 letters— 5 (a, e, i, o, u) for the 7 vocalic sounds and 16 for the consonantal sounds – plus an additive group of 5 letters (j, k, w, x, y) that appear only in loanwords (e.g. “jeans”).

Regarding the Romanian vowel inventory, it consists of seven simple vowels, i.e. /a/, /ə/, /î/, /e/, /i/, /o/, and /u/, two diphthongs ([ea] and [oa]), and two glides ([j] and [w]) (Chitoran, 2001). According to Chitoran (2001), there are two interesting aspects of the vowel inventory. One is the presence of three central vowels, high (/i/), mid (/ə/), and low (/a/). Of these, /i/ is the least common cross-linguistically. In the UCLA UPSID database (cf. Maddieson, 1984) 70 languages contain /ə/, as opposed to 32 containing /i/. A total of 12 languages contain both, which amounts to 17% of the /ə/ languages. The schwa symbol

typically used to represent the mid central vowel can be misleading in that it may suggest a reduced vowel but this is not the case. Schwa, as well as the mid central vowel, /i/, surface under stress and participates in metaphonic alternations along with the other mid vowels, /e/ and /o/. From among vowels, the first three are always produced as full vowels (never as semivowels), the other four having a double status: they can function both as full vowels and as semivowels. Also worth mentioning in connection with the Romanian monophthongs is the devoicing of the final /i/, when this follows a consonant or a consonant cluster, as in *pești* /peʃtʰi/ (the plural form of ‘fish’).

The second interesting aspect concerns the diphthongs. They are unusual in that their non-syllabic element is treated as a mid-glide (Chitoran, 2001). The presence of an initial mid glide as part of the diphthongs has triggered long debates among Romanian linguists concerning the status of glides in the language. The 22 Romanian diphthongs contain a vowel and a semivowel and the large number of Romanian diphthongs is indeed due to the combinatorial possibilities of vowels and semivowels.

On the other hand, in stressed syllables, Italian has a seven-vowel system - three front and unrounded, three back and rounded while the low vowel is neither front nor back (phonetically it is a central to front vowel, but since it does not participate in any phonological process in which front vowels are involved, it is often regarded as phonologically back), (Bertinetto & Loporcaro, 2005). Although Italian contrasts close-mid (/e, o/) and open-mid (/ɛ, ɔ/) vowels in stressed syllables, this distinction is not phonemic.

The consonant inventory of Romanian (20 consonantal sounds) is almost the same as Italian (23 consonantal sounds). Romanian, however, lacks the palatal consonants /ɲ ʎ/, which merged with /j/ by lenition, and the affricate /dʒ/ changed to /z/ by spirantization. Romanian has the fricative /ʒ/ and the glottal fricative /h/, which do not occur in Italian. In Romanian, palatalized consonants also occur and appear mainly at the end of words and mark two grammatical categories, namely plural nouns and adjectives, and second person singular verbs (Chitoran, 2001). Regarding Italian consonants, there has been a lively debate in classical phonemics (see Loporcaro, 1996) addressing the status of geminates (phonetically long, rather than rearticulated, consonants, phonologically parsed into two subsequent syllables) as either ‘mono-’ or ‘biphonemic’ units (Bertinetto & Loporcaro, 2005). Italian has 15 contrastive geminate consonants; the fricative /z/ does not occur as geminate, owing to its restricted distribution, nor do the glides /j w/ or the phonemes /ɲ, ʃ, ʎ, dz, ts/, for they tend to have geminate-like duration. Romanian language lacks geminate sounds.

Regarding the syllabic structure, Romanian has 15 possible types and it allows complex onsets and codas of 3 consonants (Sclifos, 2008). The syllables formed only by vocalic segments are seldom, containing a vowel, a diphthong or a triphthong. The majority of the syllables result from the association of consonantal and vocalic segments while the syllables formed only by vocalic segments are seldom, containing a vowel, a diphthong or a triphthong. However, the vocalic segments can form words by themselves. The majority of the syllables result from the association of consonantal and vocalic segments (Sclifos, 2008).

Though Italian has a mixed stock of syllables types, Italian's most frequent syllable form by far is the open syllable (CV) with relatively few different variations (Carlson *et al.*, 1985). Moreover, while Romanian allows more complex consonant clusters both in syllable initial and final position, Italian allows only a limited set of consonants in word-final position.

Undoubtedly, letter knowledge is considered the single best predictor of reading acquisition (Georgiou *et al.*, 2009). The relationship has been well established in both consistent and inconsistent orthographies over the last few decades (e.g., Bruck *et al.*, 1997; Gallagher *et al.*, 2000; Kirby *et al.*, 2003; Manolitsis *et al.*, 2009). The reason why it is related to reading may differ across languages (e.g., Foulin, 2005). On the one hand, in opaque orthographies as English letter knowledge may be important because it provides children with skills that are necessary for accurate word recognition like referents to associate with phonemes (e.g., Ehri, 2005), or because it reflects accuracy in the representations and discrimination of individual letters (e.g., Adams, 1990). On the other hand, in highly consistent orthographies as Italian, letter names provide the sound of the letter, which is independent of the context where the letter occurs. However, research has shown that knowledge of letter names (and thus of sounds) and phonemic assembly are requirements for successful decoding also in highly transparent orthographies like Finnish (Aro, 2006). Although both Romanian and Italian are phonemic languages, they represent shared phonemes with different graphemes, even in cognates (for example: /ts/: Romanian ț, *piață* /'pjatsa/ vs. Italian diagraph zz, *piazza* /pjatsa/, *square*; /ʃ/ + /e/, /i/: Romanian șeic /ʃe'ik/ vs. Italian diagraph sc, *scicco* /ʃe'ikko/, 'sheik'). This is relevant to our study as it could represent an interesting case of "bilingual shared homography".

Another important point to make in regard to phonological awareness and bilingualism is that the languages in which a child is bilingual has an impact on the extent of facilitation of phonological awareness in L1 for the acquisition of the L2. For example, tonal phonological awareness is relatively independent from the alphabetic phonological awareness, so knowing languages like Cantonese or Mandarin, in addition to English is less helpful than knowing a language that is genetically related to English (Bialystok *et al.*, 2003).

This is an important point since the children in the present study are speakers of Romanian, a genetically related language to English and it is expected that their knowledge of an alphabetic language with transparent letter-sound correspondence (Romanian) will facilitate the acquisition of phonological awareness in English.

To sum up, given that Romanian, as opposed to the other Romance languages, has far more consonants than vowels, more consonant clusters, and more words with consonantal endings (Posner, 1966:102), I investigated whether early Romanian – Italian bilinguals would benefit from experience with Romanian written form and not just oral form in L2 Italian phonological awareness and reading skills. Since knowledge of letter names (and thus of sounds) and phonemic assembly are requirements for successful decoding in highly transparent orthographies (Aro, 2006), we wondered whether young bilinguals would benefit from the enhanced exposure to letter names in Romanian and Italian.

3.2.2 Romanian and English

All English graphemes are present in written Romanian; nevertheless, contrary to Romanian, English orthography is regarded as a deep orthography containing many inconsistencies and complexities (Seymour *et al.*, 2003). Compared to Romanian (see 3.2.1), the English language contains 44 sound-phonemes, that can be spelt in 2501 ways employing 26 letters (Fuciji, 2007). Thus, although English has an alphabetic system of writing, its sound-phonemes and spelling are far from consistent and regular. The areas of sound and spelling inconsistencies of English can be grouped under the following headings: the same letter does not always represent the same sound; the same sound is not always represented by the same letter while some letters are not pronounced at all; sounds are pronounced in some places where there is no letter; there are variants of the plural and past tense morpheme (see for e.g. Umera-Okeke, 2008).

Romanian language differs from English both by its phonemic composition and by the possibilities of combining phonemes. English has 25 consonantal sounds (Harris, 1994), some of which are not found in Romanian, like /θ/, /ð/, /ŋ/. English has a particularly large number of vowel phonemes, (13 for the RP variety, Cruttenden, 2014) and in addition they differ considerably between dialects. For more details on the comparison between Romanian and English sound systems and on Romanian speakers' difficulties in learning English vowel and consonants see Marin (2009) and Fuciji (2007), respectively.

In Romanian, the syllable has a vowel character, ie only vowels can form syllables. However, some linguists consider that in Romanian there are syllables that have

consonants as their nucleus (Pușcariu, 1994) states that a consonant can make up the nucleus of the syllable when, in a consonantal environment, it is louder than the adjacent consonants. In English, however, in addition to vowels, the nucleus of the syllable may be the sonant [l, m, n] (*cotton* ['kɒ -t **n**], *bacon* [' bei-**kn**], *kettle* ['ke-t**l**]). Both Romanian and in English allow for initial and final tranches of 3 consonants each (Romanian *câr-co-ti*, *dra-gă*, *scli-pi-tor*, *lanț*, *con-flict*, *prompt*; engl. *give* [**g**iv], *snivel* ['**sn** i-**vl**], *spleen* [**spli**:n], *half* [ha:**f**], *meals* [mi:**lz**], *asked* [a:**skt**]). But only in English can the final tranche consist of 4-5 consonants (*exempts* [ig-'**zempts**], *glimpsed* [**glimpst**], *sixths* [**and ksθs**]). This is why, at the audition, the Romanian language does not leave the sensation of the agglomeration of consonants, on the contrary, the harmonious structure of the syllable is obvious, in which the vowels and consonants follow each other proportionally (Dezsi, 2008). The number of sounds that can appear in a certain position decreases in direct relation to the distance from the syllabic center: the farther the position, the smaller the number of occurrences. The Romanian language, having a number of only 7 vowels, has the vowel character, determined by the large number of vowel combinations (diphthongs, triphthongs, vowels in hiatus). English, although with almost twice the number of vowels, has a clear consonantal character (the tendency to combine consonants is much higher). In Romanian the phonemic oppositions are made mainly in the initial position of the syllable (*pla-jă*, *stri-ca*, *zdra-vn*, *zglo-biu*), while in English most consonantal groups are made in the final tranche, especially those consisting of 3 and 4 consonants (*dizened* ['dai-**znd**], *prisms* [' pri-**zms**], *sculpts* [sk^Λ**lpts**]) (Sclifos, 2008). There are 4 types of common syllables for both languages: open - CV, closed - VC, completely open - V, completely closed - CVC. These, in turn, give rise to 15 variants of syllabic structure in Romanian and 19 variants - in English (to the 15 variants certified in Romanian, in English another 4 are added: CVCCCC, CVCCCC, CCVCCCC, CCCVCCC, Sclifos, 2008). In Romanian, the ratio between open and closed syllables is 3: 1, and between covered and uncovered syllables is 6: 1. Thus, one of the specific features of the Romanian language, in terms of syllabic structure, is the attraction of the consonant with ascending muscle tension by the next syllable. So for the Romanian language the syllable-type is the open one (CV), the final of which is a vowel, and the previous consonant has ascending muscular tension. In English, the ratio between open and closed syllables is 1: 1, and between covered and uncovered syllables is 3: 1. Thus, in English, the syllable-type is the completely closed one (CVC).

Syllable segmentation is another aspect of the issue at hand. Although Jones (1997: 56) mentions that the delimitation of syllables must be an exclusive concern of scientists Kuryłowicz (1962: 267) states that the beginning and the end of the syllable, respectively of

the word, are perceptible realities, but the limits of the syllables are only "scientific abstractions". However, syllabification is of particular importance from a practical point of view, because the correct segmentation of syllables is necessary in the process of literacy, ie the acquisition of new words. This is an important step in school instruction, especially in learning a foreign language. It is also required in spelling when passing words from one line to another.

In Romanian it is easy to delimit the syllable, because its acoustic and graphic image coincide, while in English we clearly distinguish the graphic syllable from the acoustic one. In addition, there is an interpenetration of the phases in which the syllable is uttered, so it is difficult to determine where one syllable ends and where the next begins. The delimitation of syllables presupposes an innate sense of the mother tongue and an obvious linguistic culture. In Romanian, the dictionary, especially *DOOM*², recommends segmenting words into syllables based on pronunciation, segmenting according to the morphological structure of the word having a cultural character (*de-za-cord / dez-a-cord; pos-te-mi-nes -ci-an / post-e-mi-nes-ci-an; tran -for-ma / trans-for-ma*). In English, the delimitation of syllables, in writing, is done only according to the morphological structure of the word (dictionaries recommend, as far as possible, to avoid the delimitation of syllables in written form). Given the specifics of the syllabic structure in English, where the articulatory phases of the syllable intertwine, the correct syllabification of words is difficult even for a native English speaker.

However, a general and obligatory rule of segmenting words into syllables, in both languages, is the prohibition to leave at the end or at the beginning of a line a sequence without a vowel. The grouping of sounds into syllables is done according to the psychic, innate tendency of the speakers. Therefore, the phonological syllable varies from one language to another, depending on the delimitation rules in that language. However, the system of rules for word segmentation in words has a conventional character.

From a practical point of view, the knowledge of the syllabic structure contributes to the facilitation of the syllabus, to the avoidance of mistakes in passing words from one line to another and to the qualitative learning of a foreign language, where the type of syllable determines the utterance of words. For example, in English, a short, accented vowel, followed by a consonant (V'C), always forms a closed syllable. The delimitation of the syllable takes place after the consonant: *letter* ['l ε t ə], *money* [m ʌ n-i], *copy* [' k ɔ p-i], *family* ['fæm-ili], *sorry* [' s ɔ r-i]. Native speakers of the Romanian language tend to pronounce these words in two distinct syllables (*money* [m ʌ -ni]), following the most

frequent Romanian CV-CV model. In English, they cannot be pronounced after the CV-CV model due to the presence of a short vowel and a closed syllable.

3.2.3 Italian and English

When comparing Italian to English at the segmental level, it can be easily noticed that English more vowels in its inventory (13), while Italian has only seven (7). The fewer vowels in the Italian system condition the Italian speakers' production and perception of English vowels, and lead to frequent hypo-differentiations of vowel contrasts. In addition, in English vowels may span from full to reduced, in both quality and duration, and even disappear, depending on the degree of stress they receive in the utterance; in Italian, vowel quality tends to remain quite stable, regardless of the degree of stress on the vowel or any other phonological condition of the utterance. Thus, in English, phonological rules operating at the level of suprasegmentals (i.e., syllable structures, rhythmic tendencies, stress assignment rules, and intonation) trigger vowel reduction processes and create distinctions between vowels in 'strong' and 'weak' syllables. In Italian, these rules do not operate: syllables tend to have the same 'weight', and vowels are always fully pronounced.

Each of the five graphemes for vowels in the Italian alphabet has only one rendition in Italian speech as contrasted with the several that can be found in English. Regarding consonants, Italian and English phonological systems share most of them. Italian and English vary in other characteristics that may affect phonological awareness differentially after reading instruction has been initiated. Though Italian has a mixed stock of syllables types, it has fewer than half as many different types as English (Carlson *et al.*, 1985). At the syllabic level, English has mainly CVC- type syllable structures, and allows complex consonant clusters both in syllable initial and final position; Italian has mainly CV-type syllable structures, with a distribution of long vowels in open syllables and short vowels in closed syllables; it does not allow complex consonant groups in syllable-initial or final position, and allows only a limited set of consonants in word-final position (Busà, 1995; Busà, 2008).

Chapter 4 THE STUDY

4.1 Research Questions and Expected Outcomes

The present study sought to examine bi-literacy effects on phonological awareness and reading abilities in Romanian - Italian bilingual children, learners of Romanian as a first and heritage language, Italian as a second and societal language and English as third and foreign language. In order to explore the independent contribution of L1 Romanian literacy to L1/ L2/ L3 phonological awareness and L2/ L3 reading skills, I distinguished two groups of bilinguals: the bi-literate group with oral and literacy skills in Romanian and Italian, and the mono-literate group with literacy skills in Italian only. A third group of Italian mono-literate monolingual children was also recruited¹.

Specifically, the following research questions were addressed:

1. Do bilingual bi-literates perform differently on L1 phonological awareness tasks compared to bilinguals with literacy skills in L2 only?
2. Do bilingual bi-literates perform differently on L2 phonological awareness and reading tasks compared to bilinguals with literacy skills in L2 only and monolingual speakers?
3. Do bilingual bi-literates perform differently on L3 reading tasks compared to bilinguals with literacy skills in L2 only and monolingual speakers?
4. What is the contribution of bi-literacy versus bilingualism alone to L2 and L3 Italian phonological awareness and reading skills?

Anticipated Outcomes

1. With regard to the first research question, due to a reciprocal relation between phonological awareness and literacy skills as suggested by previous research (Shwartz et al, 2005), I hypothesized that bilingual children with literacy skills in both languages would

¹ I am fully aware of the fact that the bi-literate bilingual group in fact be considered a trilingual tri-literate group (with literacy skills in L1 Romanian, L2 Italian and L3 English), the mono-literate bilingual group a trilingual bi-literate group (with literacy skills in L2 Italian and L3 English) and the mono-literate monolingual group a bi-literate bilingual group (with literacy skills in L1 Italian and L3 English). Nevertheless, I opted for the above nomenclature to group my participants since Romanian and Italian in this study were learnt as first and/ or second languages (also) in a naturalistic context while English was acquired as a foreign language in an exclusively formal context.

have a better understanding of the sound structure of their L1 language. Therefore, I hypothesized that bilingual children who were introduced to Romanian literacy would have higher levels of phonological awareness skills than bilingual children lacked Romanian reading ability.

2. The rationale for the anticipated outcome of the second research question was similar to that of the first research question. L1 reading experience was predicted to play a role in enhancing children's L2 phonological awareness and reading skills (Bialystok, 2002). Moreover, if my first hypothesis turned true, and bi-literate bilinguals showed higher phonological awareness skills in L1 Romanian compared to their mono-literate peers, then such advantage was likely to be transferred to L2 phonological awareness and reading skills (Cummins, 1979; 2000; Koda, 2008), especially since transfer is more frequent amongst similar languages, which are linguistically and orthographically close, like Romanian and Italian (Cenoz & Genesee, 1998; Cenoz & Hoffmann, 2003). Moreover, I predicted that both bi-literate and mono-literate bilinguals would perform better than monolinguals at least on some aspects of reading (Bialystok *et al.*, 2003; Bialystok *et al.*, 2005).

3. Similarly, with respect to the third research question, I expected bi-literate bilinguals to outperform the mono-literate bilinguals as it was shown in previous research (Schwartz *et al.* 2008; Sanz, 2000; Rauch *et al.* 2012). Furthermore, I also predicted that since Basque or Catalan/ Spanish bilingual children outperformed monolingual learners in the acquisition of English as a third language (Cenoz & Valencia, 1994; Lasagabaster, 2000; Sanz, 2000; Safont 2005), the mono-literate group of bilinguals would also outperform the monolingual group.

4. Regarding the fourth research question, based on previous research (Schwartz *et al.*, 2008) and on the sometimes confusing results from research on the bilingual advantages on L3 acquisition (Bialystok, 2002), I hypothesized that bi-literacy would have a great contribution to L2 Italian and L3 English phonological awareness and reading skills. Bilingualism on the other hand will fail to show a high contribution.

4.2 Participants and Sampling

A sample of eighty-one (81) 3th and 4th- grade children (8 -10 y.o.) were selected at the end of the school year from 7 elementary schools (15 classrooms) that hosted LCCR courses and were located in similar medium-sized cities in northern Italy. In the first stage of the selection written consent from parents was obtained, followed by a Language background questionnaire that gathered information on both children (SES, demographic information, linguistic background, ratings of language dominance in different social contexts, information on the level of the child's HL literacy knowledge and HL literacy acquisition context) and parents (SES, demographic information, linguistic background, ratings of language(s) proficiency).

Next, on the basis of the information provided by parents, I selected 61 bilingual children who met the exclusionary criterion of having Romanian as first and dominant language in the home. Next, the bilingual children were further divided into two groups: mono-literate bilinguals, that were not attending any Romanian language classes nor had literacy knowledge in Romanian (according to the information provided by parents in the questionnaire) and a group of bi-literate bilinguals that were enrolled in one of the LCCR courses. Finally, a group of Italian-speaking monolingual children, matched on demographic and socio-economic characteristics were selected from the same schools as the bilingual groups.

The resulting groups were as it follows: bi-literate bilinguals (BB, n=40,); mono-literate bilinguals with literacy skills in Italian only (BM, n=21); Italian monolingual mono-literates, (MM, n=20). All participants were declared free of learning disabilities, and severe hearing, visual and neurological impairments. It can be easily noticed that the number of bi-literate bilingual children is bigger than the mono-literate counterparts. This is due to the fact that, in the selected schools, the majority of the Romanian children were attending LCCR courses. I preferred not to recruit additional Romanian-Italian mono-literate children from other schools in order to maintain the three groups comparable (same environment, same teachers, same peers, etc.).

4.3 Measures

4.3.1 Overview

A battery of tests was administered to each child. In addition to a non-verbal intelligence test and three vocabulary tests, one for each language, subsequently used as indicators of proficiency in each language, there were two blocks of tasks, one for the phonological awareness tasks and another one for the reading tests.

Phonological awareness task

A large variety of instruments have been used to measure L1 phonological awareness but despite the diversity of the measures, phonological awareness tasks frequently share three characteristics as noted by McBride-Chang (1995). First, the participant is asked to listen to one or more aurally presented words or non-words. Next an operation of some sort on the stimuli or set of stimuli is required. Finally, a response is made, which by the very nature of phonological awareness is verbal, although sometimes young children may point to the answer.

A possible grouping of the frequently employed in research phonological awareness task into four categories has been proposed by Kivistö-de Souza (2015): those which involve some kind of manipulation of the stimuli, those involving the comparison of the stimulus with other stimuli, those which require a more objective approach, and those that involve speech perception or production.

The manipulation category involves the most frequently used tasks in L1 phonological awareness, namely those that require segmenting, blending, adding, deleting, substituting or exchanging. *Phoneme segmentation* is one of the most frequently used measures of phonemic awareness (Lance *et al.*, 1997; McBride-Chang, 1995; Van Bon & Van Leeuwe, 2003; Verhoeven, 2007). In a phoneme segmentation task the participant is presented with a word and asked to segment it into its phoneme constituents. The answers are most often given orally, but also written answers (circling, multiple choice) have been employed (Lehtonen & Treiman, 2007). *Blending* is the opposite of segmentation and it can be employed at the phonemic level (Goodman *et al.*, 2010; Goodrich & Lonigan, 2014; Lance *et al.*, 1997; Verhoeven, 2007), syllable level (Carroll *et al.*, 2003) and word level (Goodrich & Lonigan, 2014). In it, the participant is presented with sounds (phones, syllables or words) in isolation and asked to merge them in order to form a word. Tasks involving the

comparison of several stimuli can be divided into matching and discriminating. Discrimination tasks present several answering options and the task is to identify from them the ‘odd one out’, namely the one that does not share the phone (Chien *et al.*, 2008) or rime (Defior *et al.*, 2012; Gottardo *et al.*, 2006) with the others.

Reading ability tasks

Word reading efficiency refers to fluent and accurate reading of words; it is usually assessed under time pressure, and is an important contributor to reading comprehension skill (e.g., Perfetti, 2007). In alphabetic orthographies, efficient word reading arises most reliably from children’s primary ability to decode printed words, that is, the ability to associate letters (graphemes) more or less sequentially with their corresponding sounds (phonemes), and to blend the sounds into accurate word pronunciations. Share’s (1995) Self-teaching hypothesis emphasizes decoding as the learning mechanism that underlies early alphabetic reading, and proposes that, as children successfully apply the phonological (i.e., grapho-phonemic) recoding procedure to newly encountered words, they build up word-specific orthographic representations. Repeated decoding of specific words incrementally refine and strengthen their orthographic representations, and consequently facilitate efficient word recognition (e.g., Cunningham *et al.*, 2002; Ehri, 2005, 2015). Thus, the decoding process is understood to be the ‘sine qua non’ driver of robust orthographic representations and of efficient word reading skills (Share, 1995).

Pseudo-word reading is another widely used measure of decoding ability. Written pseudo-words are word-like in their graphotactic and phonotactic structures; however, having neither lexical identity nor meaning, they present as novel items that can only be read by the phonological recoding process. Within the above mentioned Self-teaching hypothesis framework, and other compatible theories of reading development (e.g., Ehri, 2005; Perfetti & Hart, 2002), pseudo-word reading tasks are used to assess children’s decoding and orthographic learning skills (e.g., de Jong & Messbauer, 2011; Share, 2004). Moreover, they are widely used to diagnose the nonword reading deficit (i.e., a phonological processing deficit) in dyslexia (e.g., Herrmann *et al.*, 2006; Rack *et al.*, 1992). Comparisons of word versus pseudo-word performance on tasks of reading aloud typically show an advantage in favour of word reading accuracy and/or speed, the lexicality effect. In development, the emergence of the word reading advantage is thought to indicate that word spellings have been lexicalized to some extent, that is, stored in memory in connection to an existing lexical representation (e.g., Ehri, 2015).

4.3.2 Instruments

- *Background Information*

Language Background Questionnaire

A language background questionnaire (in Romanian, see Appendix 2) was given to parents. The survey contained questions regarding both the child (age, gender, length of Italian literacy, in months, mother's and father's education, SES) and the parents' (occupations, highest educational levels, and the child's language and literacy background). Parents were asked to indicate for each parent separately the highest level of education that they had obtained which was then converted into the dependent variables *Mother's and Father's education* (in years). Parents were also asked to specify their current occupation, again for each parent separately, which was used together with the educational level to determine the SES for each child's family following Hollingshead's (1975) Four Factor Index of Social Status. According to this measure, education and occupation are two important factors that contribute to an individual's overall social status score. Educational level is scored on a 7-point scale, with 7 being a graduate degree. Occupational level is scored on a 9-point scale, with 9 referring to "higher executives, proprietors of large businesses, and major professionals" (Hollingshead, 1975, p. 5), e.g., engineers, lawyers, physicians, and teachers at the university level. An individual's social score is the sum of the score for education multiplied by 3 and the score for occupation multiplied by five 5. To estimate a social status score for each child's family (a nuclear family), parents' social status scores were averaged.

- *Non-verbal intelligence.*

Raven's Colored Progressive Matrices (CPM; 6; Italian adaptation by Belacchi *et al.*, 2008). It consists of 36 increasingly complex coloured matrices, and each matrix has a piece missing: the respondent is asked to choose the best fit for the missing piece from among six options. Max score is 36.

- *Romanian Tests*

Romanian Proficiency (HLProf): Since there are no standardized tests for Romanian-speaking children that could assess their language performance in Romanian we used a modified version of the PPVT-4 adapted to Romanian from Petrescu & Helms-Park (2018). The final version contained 175 pictorial stimuli of increasing difficulty. The task is

terminated when the respondent makes six mistakes in eight consecutive responses. The final score is the total number of correctly chosen drawings.

Romanian Phonological Skills tests (see Appendix 3): *The Italian Phonological Skills tests were adapted by the author to the Romanian language by considering two important factors: (1) the language-specific phonological structure complexity, and (2) the language phonological structure frequency. Since there is no established word frequency list for the Romanian lexicon, the Italian stimuli were translated into Romanian so that they would belong to approximately the same frequency band as their Italian equivalent. The stimuli were adapted as accurately as possible, with the help of a dictionary (Lazarescu, 2013) as well as a native speaker of Romanian, whose judgments were confirmed by a second native Romanian speaker. There were minimal differences in judgments, and where these differences existed, they were resolved with discussion. The adapted version of the four tests closely matches the Italian version by maintaining the same organizational structure.*

1. Phoneme segmentation (RPhS): break twenty 1,2,3,4 syllable words into separate phonemes; e.g. “măr”, /'mər /, apple (3), “pisic”, /pi'sik/ cat (5), “albastru”, /al'bastru /, blue (8); max. score= 20.

2. Phoneme blending (RPhB): merge twenty orally presented phonemes (max. 10 phonemes) into words, e.g. “sânge”/s/, /i /, /n/, /dʒ/, /e/ into /'sindʒe/, blood; max score=20.

3. Onset-Rime Oddity (RORo): listen to a three-word set and choose which of the three words had a different initial set sound or onset., e.g. “bani” / 'bani / money; “bar” /bar/” bar, “scară” /'skarə/ ladder; the test included also distractor words, with the same rime but different onsets, e.g., soare – sarma – doare; max. score= 20.

4. Syllable blending (RSyB): identify the word that derives from the fusion of orally presented (2/3/4) syllables, for example of the word [de.dʒet], finger; max. score= 20.

Romanian reading tests (see Appendix 3)

1. Word Reading (RWR): *This test was designed to assess bi-literates' accuracy of high frequency words in Romanian. The children were asked to read out loud as fast as they*

could a list of 20 common words (e.g., “rău”, /rəu/, *bad*). The list of words was approved by children’s LCCR course teachers. Words could begin with consonant clusters, like CCV, (e.g., “stupi”, /stupi/, *hives*), could include final consonant clusters (e.g. “amuzant”, /amu’zant/, *funny*), or contain a simple CV pattern (e.g. “ghem”, /gem/, *ball*). The maximum score on this task was 20.

2. Pseudo-word reading (PWR): On this task, the children were asked to read twenty 1/2/3 syllable pseudowords which were structured to comply with orthographic conventions in Romanian, and included many common Romanian orthographic and phonetic patterns such as consonant clusters (e.g., *sporee*, *zmelă*), diphthongs (e.g., *lăicou*), and *glides* (e.g., *oaspure*).

- Italian Tests

Italian Proficiency Test (ItProf): Peabody Picture Vocabulary Test-Revised (PPVT-R; Dunn &Dunn, 1981; Italian adaptation by Stella *et al.*, 2000). The test consists of a series of 175 pictorial stimuli of increasing difficulty, each comprising 4 black-and-white drawings. Children are asked to indicate which of the four drawings best represents the word the experimenter speaks aloud when presenting each stimulus. The task is terminated when the respondent makes six mistakes in eight consecutive responses. The final score is the total number of correctly chosen drawings.

Italian Phonological Skills tests (see Appendix 4): *Adapted and extended versions of the DUR and MUSFU sections of PRCR2 (Cornoldi et al., 2009).*

1. Phoneme segmentation (IPhS): Children were asked to break 1,2,3 and 4 syllable words into separate phonemes. The test included 20 1/2/3/4 syllable words, e.g. “do”, /'dɔ/, *do* (2), “due”, /'due/, *two* (3), “ieri”, /'jeri/, *yesterday* (4), “papavero”, /pa'pavero/, *poppy* (8); max. score= 20.
2. Phoneme blending (IPhB): Children were asked to merge orally presented phonemes (maximum 10) into words, e.g. *conto* /k/, /o/, /n/, /t/, /o/ into /'konto/; max score=20.

3. Onset-Rime Oddity (IORo): Children were asked to listen to a three-word set and to choose which of the three words had a different initial set sound or onset, e.g. “braccio” /ˈbratʃtʃio/ arm; “bus” /bus/” bus, “branco” /ˈbranko/ herd; the test included also distractor words, with the same rime but different onsets, e.g., **costo –posto – cuore**; max. score= 20.
4. Syllable blending (ISyB): Children were asked to identify the word that derives from the fusion of orally presented (2/3/4) syllables, for example of the word [so.le], *sun*; max. score= 20.

Italian reading tests (see Appendix 4)

1. Word reading (IWR): Children were shown a list of 20 words and were asked to read them aloud. The words were selected from D’Angiulli *et al.* (2001); max. score= 20.
2. Pseudoword reading (IPWR): Children were asked to read pseudo-words that respected both orthographic and phonotactic conventions in Italian (Bertinetto & Loporcaro, 2005). Many of the pseudowords were taken from Sartori *et al.* (1995) and D’Angiulli *et al.* (2001).; e.g. *igli, pando, tazio, scimiaro, rascenvo, sirbolone*; max score= 20.

◦ *English Tests*

The English tests were designed by the author for the purpose of this study following the example in Schwartz *et al.* (2005). It was decided not to use standardized English tests as Peabody Picture Vocabulary Test (PPVT-) or the Comprehensive Test of Phonological Processing (CTOPP) – (Wagner, Torgesen, & Rashotte, 1999) since they were designed for L1 speakers of English and are not always suitable for foreign learners of English. In fact, the (PPVT-) was shown not to be a reliable tool for measuring children’s vocabulary knowledge of English as a second language (Goriot *et al.*, 2018). The finding was that the PPVT-4 may be inappropriate for use with L2 learners with limited L2 proficiency.

English Proficiency Test (EngProf): A receptive vocabulary knowledge was designed for the purpose of this study. Children were asked to indicate which of four pictures matched a spoken word. The words were drawn children’s textbooks used in class; children’s

teachers confirmed that all words had been already taught during regular classes. There were 20 sets in total, max score = 20.

English Phonological Skills tests (see Appendix 5)

1. Phoneme Segmentation (EPhS). Children were asked to break words into separate phonemes. The test included 20 simple monosyllable (CVC and CCVC) high frequency words drawn from their English textbooks (e.g., *dog*, *cat*, *spot*); max score = 20.
2. Phoneme Blending (EPhB). Children were asked to merge orally presented phonemes into words. The words were 20 simple monosyllable (CVC and CCVC) high frequency words drawn from their English textbooks (e.g., *hug*, *plum*); max score = 20.
3. Onset-Rime Oddity (EORo): Children were asked to listen to a three-word set and to choose which of the three words had a different initial set sound or onset, e.g. “clap” /klæp/; “clock” /klɒk/; “crack” /kræk/; the test included also distractor words, with the same rime but different onsets, e.g., **p**each – **b**each- **p**ool; max. score= 20.
4. Syllable blending (ESyM): Children were asked to identify the word that derives from the fusion of orally presented (2/3/4) syllables, for example of the word [bə'nɑ:nə], *banana*; max. score= 20.

English Reading Skills tests (see Appendix 5)

1. Word Reading (EWR): This test was designed to assess accuracy of high frequency words in English. The children were asked to read out loud as fast as they can a list of 20 high frequency words (e.g., nine) drawn from their English textbooks. Five words were beginning from consonant clusters, CCV, (e.g., frog); five included final consonant clusters (e.g. hand) and 10 words were objects beginning from a simple CV pattern (e.g. ten). The maximum score on this task was 20.
2. Pseudo-word reading (EPWR): On this task, the children were asked to read 20 monosyllable pseudowords which were structured to comply with orthographic conventions in English, and included many common English orthographic patterns such as consonant clusters (e.g., *mirst*, *strem*), diphthongs (e.g., *glay*), digraphs (e.g., *shoon*, *cheed*), and glides (e.g., *weg*).

1.4 Procedure

Both monolingual and bilingual children were recruited through either direct or e-mail contact with the selected schools that hosted LCCR courses. Recruitment for the sample was done by distributing questionnaires (see 3.2.2 and Appendix 2) and consent forms (see Appendix 1) that included the private privacy consent (196/2003 law) to all parents in all of the 15 classes. The classroom teachers and the researcher gave the documents directly to the parents during the collection time after school. After four weeks, 85 questionnaires and parental consents were returned. One of the consent forms were not signed, and one questionnaire was returned blank. One consent form was signed, but the child never participated due to long-term absence from school. The final sample included 81 children.

Children were tested on several occasions. All children first completed the Raven's Coloured Progressive Matrices test. The testing time was roughly 45 minutes per child. Then, on two different occasions, the bilingual children were administered the Italian and the Romanian version of the proficiency tests, alternating the order of the languages tested. The test was administered at school by the same researcher, who gave the instructions in Romanian for the Romanian test and in Italian for the Italian one. Also, to avoid priming, the testing in the two languages took place at a minimum of four-week intervals. On both testing times the monolingual children were administered the Italian proficiency test. The testing of each child on each language proficiency was around 30 minutes. The bilingual children completed the Italian and the Romanian Phonological skills tests on two different occasions, alternating the order of the languages tested. The monolingual children were tested on the days that the bilingual children were given the Italian tests. The same design was followed for the Italian reading task.

Testing on the English tasks took place on two different occasions. First, the English vocabulary test was performed (testing time 15 minutes), followed by the phonological awareness tasks (testing time around 40 minutes) on monolingual and mono-literate bilinguals. The following days, the bi-literate bilinguals were measured on the same tasks. On a different occasion, children from all three groups performed the two English reading tests.

Chapter 5 RESULTS

This study investigates the effect of bi-literacy versus bilingualism alone on the L1/ L2/ L3 phonological awareness and L2/ L3 reading ability among Romanian – Italian children with Romanian as a first and heritage language, Italian as a second and societal language and English as third and foreign language. In order to explore the independent contribution of L1 Romanian literacy to the above measurements, two groups of bilinguals were distinguished: the bi-literate group with oral and literacy skills in Romanian and Italian, and the mono-literate group with literacy skills in Italian only. The study also looked at a group of Italian-speaking monolinguals used as controls. A language background assessments was given to the parents, and a series of tests was given to a total of 81 Grade 3 and 4 children selected from various primary schools in Northern Italy. The details of the methods used are discussed in Chapter 4.

The specific goal of the present study was to investigate the answers to the following research questions:

1. Do bilingual bi-literates perform differently on L1 phonological awareness tasks compared to bilinguals with literacy skills in L2 only?
2. Do bilingual bi-literates perform differently on L2 phonological awareness and reading tasks compared to bilinguals with literacy skills in L2 only and monolingual speakers?
3. Do bilingual bi-literates perform differently on L3 reading tasks compared to bilinguals with literacy skills in L2 only and monolingual speakers?
4. What is the contribution of bi-literacy versus bilingualism alone to L2 and L3 Italian phonological awareness and reading skills?

All statistical analyses were conducted using *SPSS Statistics* (Version 18.0, 2009). Preliminary data analyses included descriptive analyses and data screening for normality of the distribution of data for each dependent variable by group. The Shapiro-Wilk test was conducted on each dependent variable by group to detect possible departures from normality.

In order to answer the first research question, that aimed at finding differences between the two bilingual groups performance was examined with 3 different *t*-tests on scores from

the Romanian phonological awareness measurements (Romanian Phoneme Segmentation Task, Romanian Phoneme Blending Task, Romanian Onset-Rime Awareness task and Romanian Syllable Blending Task). In order to address research questions 2 and 3, univariate analyses of variance tests (ANOVAs) were used to examine the nature of any group differences on the array of Italian performance variables (i.e., the Italian Phoneme Segmentation task, the Italian Phoneme Blending Task, the Italian Onset-Rime Awareness task, the Italian Syllable Blending Task, the Italian Word Reading Task and the Italian Pseudo-word reading task) and on the array of English performance variables (i.e., the English Phoneme Segmentation task, the English Phoneme Blending task, the English Onset-Rime Awareness task, the English Syllable Blending Task, the English Word Reading Task and the English Pseudo-word Reading Task). Post hoc tests were conducted using the Tukey HSD procedure if the assumption of equal variance was met.

In order to answer research question number 4, I conducted four hierarchical multiple regression analyses, two for each language, and I assessed the contribution of bi-literacy separate from that of bilingualism on four new composite scores, namely Italian Phonological Awareness, Italian Reading Skills, and English Phonological Awareness and English Reading Skills respectively.

Results are presented in five sections. The first section illustrates on the background information: age, gender, length of Italian literacy (in months), length of Romanian literacy (in months), mother and father education, SES and the non-verbal intelligence test results. In the second section, I demonstrate the results of comparisons between the two bilingual groups on Romanian phonological awareness (RQ1) while in section three I present the comparisons among the three groups on L2 Italian phonological awareness and reading skills (RQ2). In section four I demonstrate the performance on L3 English phonological awareness and reading skills (RQ3). Section five is dedicated to the contribution of bi-literacy versus bilingualism alone to L2 Italian and L3 English phonological awareness and reading skills (RQ4).

Part 1

Section 1

From the Language Background Questionnaire, it emerged that all bilinguals' parents were Romanian citizens, had Romanian as first language and completed their education in Romania while all monolinguals' parents were Italian citizens, had Italian as first language and completed their education in Italy. Parents were asked to indicate for each parent separately the highest level of education that they had obtained which was then converted into the dependent variables *Mother's and Father's education* (in years). Parents were also asked to specify their current occupation, again for each parent separately, which was then used together with the educational level to determine the SES for each child's family following Hollingshead's (1975) Four Factor Index of Social Status. According to this measure, education and occupation are two important factors that contribute to an individual's overall social status score. Educational level is scored on a 7-point scale, with 7 being a graduate degree. Occupational level is scored on a 9-point scale, with 9 referring to "higher executives, proprietors of large businesses, and major professionals" (Hollingshead, 1975, p. 5), e.g., engineers, lawyers, physicians, and teachers at the university level. An individual's social score is the sum of the score for education multiplied by 3 and the score for occupation multiplied by five 5. To estimate a social status score for each child's family (a nuclear family), parents' social status scores were averaged.

Table 3 presents the background information data and the non-verbal intelligence raw scores for the three groups. It can be seen that the groups did not differ significantly in age, $F(2,78) = .281, p = .756$. A chi-square analysis indicated that the three groups were also comparable in gender distribution, $\chi^2(2) = 0.09, p = .116$, and with respect to length of Italian literacy, $F(2,78) = .34, p = .87$. Groups were also comparable with respect to parents' educational level, for the mothers - $F(2, 78) = .18, p = .78$ and for the fathers - $F(2, 78) = .68, p = .89$. This could be explained by the overall trend of Romanian workers to be on average more educated than the immigrant community considered as a whole; indeed, without substantial gender differences, it was observed that almost 70 % of the employed Romanian immigrants in Italy have achieved high qualifications, declaring that they have at least a high school diploma (Fondazione Leone Moressa, 2015). Moreover, a one-way ANOVA revealed no significant differences among the three groups with respect to the family's SES, $F(2, 78) = .639, p = .422$. Finally, no significant group differences for performance on the non-verbal intelligence test, $F(2, 78) = 3.916, p = .092$.

Table 3. Means and standard deviations on background information and cognitive measures.

	BB (<i>n</i> = 40)	BM (<i>n</i> = 21)	MM (<i>n</i> = 20)	<i>F</i>//χ^2
Age (months)	98.3 (3.1)	98.5 (5.8)	98.2 (4.7)	,43
Gender (boys: girls)	8:10	12:10	10:10	,09
Italian literacy (months)	28 (2.4)	28.2 (3.2)	27.6 (4.3)	,34
Mother's education	11.9 (1.8)	11.4 (1.6)	12.5 (2.1)	,18
Father's education	11.5 (1.1)	9.8 (0.9)	11.8 (1.3)	,68
SES	51.8 (10.2)	50.3 (12.8)	54.4 (11.2)	,639
Non-verbal intelligence	24.3 (2.6)	23.4 (3.6)	23.3 (3.4)	3,91

Table 4 compares group performance on the Italian proficiency test and bilingual performance on the Romanian proficiency test. Results from a one-way ANOVA test failed to show a statistically significant difference among groups for the Italian proficiency ($F(2,78) = 3,703, p = .076$). On the other hand, results from a *t*-test indicated that the two bilingual groups' level of Romanian proficiency was statistically different, $t(1) = 10,06, p < .01$. Therefore, while the three groups had a similar Italian proficiency, measured as Vocabulary Size, the bi-literate group revealed a higher Romanian proficiency compared to the mono-literate group.

Table 4. Means, standard deviations, and group comparisons on the proficiency tests in the study. * $p < .05$

	BB (<i>n</i> = 40)	BM (<i>n</i> = 21)	MM (<i>n</i> = 20)	<i>F</i>/<i>t</i>
ItProf	136,1 (6,5)	134,8 (5,4)	138,45 (7,2)	3,703
HLProf	129,16 (5,3)	112,05 (4,4)	-	10,06*
<i>t</i>	4,56	11,08*		

As proficiency in the two languages within the same bilingual group is concerned, two additional *t*-tests indicated that, while there was no significant difference between proficiency in Romanian and Italian for the bi-literate group, $t(1) = 4,56, p = .89$, the mono-literates exhibited a significantly higher proficiency in Italian compared to Romanian, $t(1) = 11,08, p < .05$.

Section 2

RQ1

The descriptive statistics for the Romanian phonological awareness tasks can be found in Table 5 (p.99).

Given that Romanian proficiency (HLProf) was significantly different between the two groups, and since, while the bi-literates performed in a similar way on proficiency tests in Romanian and Italian, the mono-literates' performance was significantly different, I first conducted partial correlational controlling for the non-verbal intelligence factor (Raven) to determine whether significant correlations would occur between HLProf and PA scores once the intelligence factor is controlled for. As it can be seen in Table 6, after the intelligence factor is controlled for, no significant relationships were encountered. I could conclude that in this study there was no significant role of Romanian proficiency oral language skill to phonological awareness skills in Romanian for the bi-literate group. By contrast, regarding the mono-literate group, strong and positive correlations were found between proficiency in Romanian and scores on Phoneme segmentation and Onset-rime awareness.

Table 6. Romanian proficiency and Romanian PA correlations with controlled Non-Verbal Intelligence

<i>Controlling Variable</i>	HLProf	RPhS	RPhB	RORo	RSyB
RAVEN					
BB HLProf	$r = 1000$ - $n = 40$	$r = .354$ $p = .54$ $n = 40$	$r = .342$ $p = .42$ $n = 40$	$r = .81$ $p = .14$ $n = 40$	$r = .65$ $p = .55$ $n = 40$
BM HLProf	$r = 1000$ - $n = 21$	$r = .56$ $p = .04^*$ $n = 21$	$r = .24$ $p = .63$ $n = 21$	$r = .41$ $p = .013^*$ $n = 21$	$r = .27$ $p = .68$ $n = 21$

For the purpose of consistency across the tasks, I converted raw scores to ratios. Results (% correct) on Romanian language tests are summarized in Table 7.

In order to answer my first research question, which regarded whether bilingual bi-literates perform differently on L1 phonological awareness tasks compared to bilinguals with literacy skills in L2 only, I conducted a series of comparisons on the two bilingual groups' scores (%correct) on the Romanian phonological awareness tasks. These data show that on

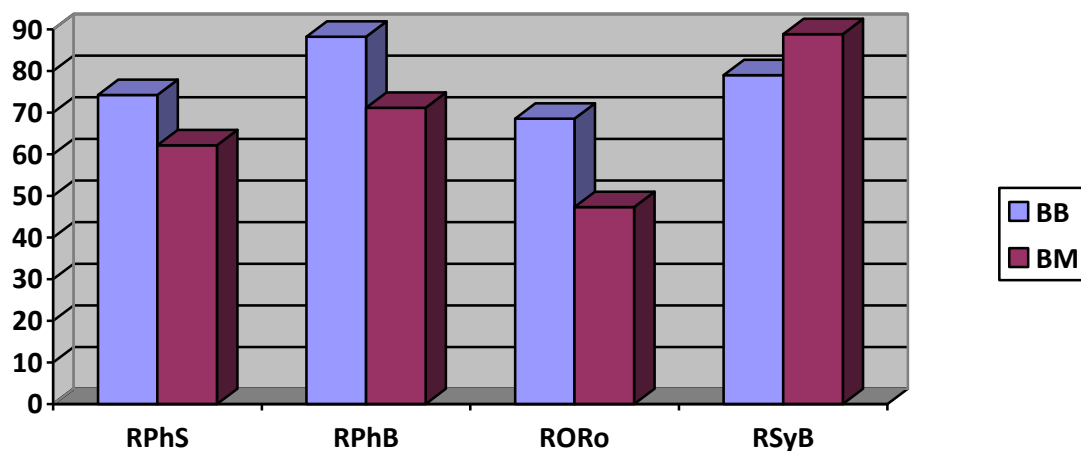
phonological awareness measures in Romanian, the two bilingual groups performed very differently, in fact the bi-literate bilinguals were reliably superior on all four tasks.

Table 7 also reports on bi-literates' performance on the Romanian reading task. A comparison between the correct percentiles of the two tasks revealed that the performance on the real words was significantly higher than on the pseudo-words, $p = .14$. A visual representation of the above comparison can be found in Figure 1.

Table 7. Means and standard deviations (%correct) and comparisons between two bilingual groups on Romanian PA tests. Means and standard deviations (% correct) on Romanian reading tasks (bi-literate group) * $p < .05$

	BB ($n = 40$) <i>Biling. Bilit.</i>	BM ($n = 21$) <i>Biling. Monolit.</i>	t
RPhS	74.18 (15.5)	62.16 (11.6)	12,97*
RPhB	88.23 (14.1)	71.14 (2.4)	41,77*
RORo	68.54 (2.1)	47.32 (1.9)	59,99*
RSyB	78.97 (1.8)	66.84 (1.6)	33,96*
RWR	65.5 (19.3)	-	-
RPWR	54.4 (16.4)	-	-

Figure 1. Mean accuracy on Romanian PA tasks (% correct)



Section 3

RQ2

The descriptive statistics for the Italian phonological awareness tasks and Italian reading tasks can be found in Table 8 (p. 99).

In order to answer my second research question, which regarded whether bilingual bi-literacy (compared to bilingual mono-literacy and monolingual mono-literacy) enhances L2 phonological awareness, I compared all groups' performance on the Italian phonological tests and Italian reading tasks. I first conducted a univariate analysis of variance on participants' performance on the four Italian PA tasks.

As Table 9 shows (% correct answers), the three groups behaved in a significant different way when compared on the Phoneme segmentation task, $F(2,78) = 2,97, p = .037$. Tukey post hoc test however showed that BB's scores were significantly higher than those of the BM group ($p < .001$) but not significantly different than those of the MM group ($p = .997$). In addition, the MM group performed better than the BM group, $p = .012$. On the other hand, no differences were found among the three groups' performance on the Italian Phoneme blending test, as determined by a one-way ANOVA, $F(2,78) = .777, p = .071$.

From Table 9 it is also apparent that children performed differently on both syllable and onset-rime testing. In fact, results from two one-way ANOVAs suggested group differences on onset-rime oddity, $F(2,78) = 59,99, p = .001$ and on syllable blending, $F(2,78) = 33,96, p = .001$.

Table 9. Means, standard deviations and comparisons among three groups on Italian PA tests. * $p < .05$

	BB ($n = 40$) <i>Biling. Bilit.</i>	BM ($n = 21$) <i>Biling. Monolit.</i>	MM ($n = 20$) <i>Monoling. Monolit.</i>	F
IPhS	79.18 (15.5)	60.16 (16.6)	76.1 (11.9)	12,97*
IPhB	88.23 (17.1)	86.14 (20.4)	89.4 (13.7)	,777
IORo	78.54 (2.1)	57.32 (1.9)	66.85 (1.3)	59,99*
ISyB	88.97 (1.8)	72.84 (1.6)	75.05 (2.1)	33,96*

	RPhS		RPhB		RORo		RSyB		RWR		RPWR	
Group	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>
BB	14,83	3,1	17,74	2,82	13,7	0,4	15,79	0,36	13,1	3,86	10,88	3,28
BM	12,43	2,32	14,22	0,48	9,46	0,4	13,36	0,32	-		-	

Table 5. Descriptive Statistics for the Romanian Phonological Awareness and Reading Ability Tasks by Group

	IPhS		IPhB		IORo		ISyB		IWR		IPWR	
Group	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>
MM	15,22	2,3	17,88	2,74	13,37	0,32	15	0,42	17,86	2,96	12,44	2,23
BB	15,83	3,1	17,74	3,42	15,7	0,42	17,79	0,36	17,72	2,68	15,68	2,42
BM	12	3,32	16,62	4	11,46	0,38	14,56	0,32	16,88	2,64	11,94	1,32

Table 8. Descriptive Statistics for the Italian Phonological Awareness and Reading Ability Tasks by Group

	EPhS		EPhB		EORo		ESyB		EWR		EPWR	
Group	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>
MM	7,82	0,4	10,6	2,4	7,44	1,86	8,76	2,76	15,38	3,66	5	2,26
BB	11,89	2,26	12,58	2,42	9,66	2,42	10,28	2	17,26	2,64	8,04	4,34
BM	8,43	1,72	10,62	2	8,68	2,38	8,46	3,22	15,64	2,92	4,86	2,72

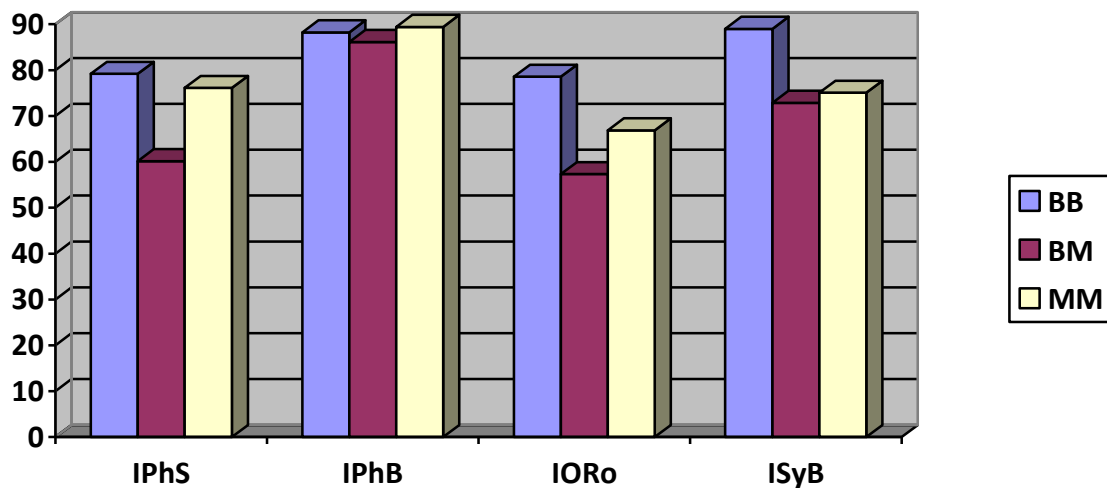
Table 11. Descriptive Statistics for the English Phonological Awareness and Reading Ability Tasks by Group

A group of Tukey post hoc tests carried out on the IORo scores indicated that the best performance was obtained by the BB group which was significantly higher than the other two groups' performance ($p < .05$ for all three comparisons). Moreover, MM's scores were significantly higher than those of the BM group ($p < .05$). A second group of post hoc tests was conducted in order to individuate group differences on the Syllable blending (ISyB) task. Results determined that BB behaved statistically significantly better than both the MM ($p = .001$) and the BM ($p < .001$). No statistically significant differences were found between MM and the BM group ($p = .079$).

In conclusion, the bi-literate group outperformed the mono-literate group but not the monolingual group and the MM group performed better than the BM group on the phoneme segmentation task. No group differences were found on the phoneme blending task. Regarding the onset-rime task, the bi-literate group outperformed the other two groups while the mono-literate group performed worse than the monolingual group. Finally, the bi-literate group outperformed both the monolingual and the mono-literate groups, that performed similarly on the syllable blending task.

Figure 2 shows a visual representation of the above comparison.

Figure 2. Mean accuracy on Italian PA tasks (% correct)



My second research question also regarded whether bilingual bi-literacy (compared to bilingual mono-literacy and monolingual mono-literacy) enhances L2 reading skills. Table 10 reports results from two ANOVA tests that compared group performances on Italian Word reading and Pseudo-word reading. It can be easily seen that while there were no

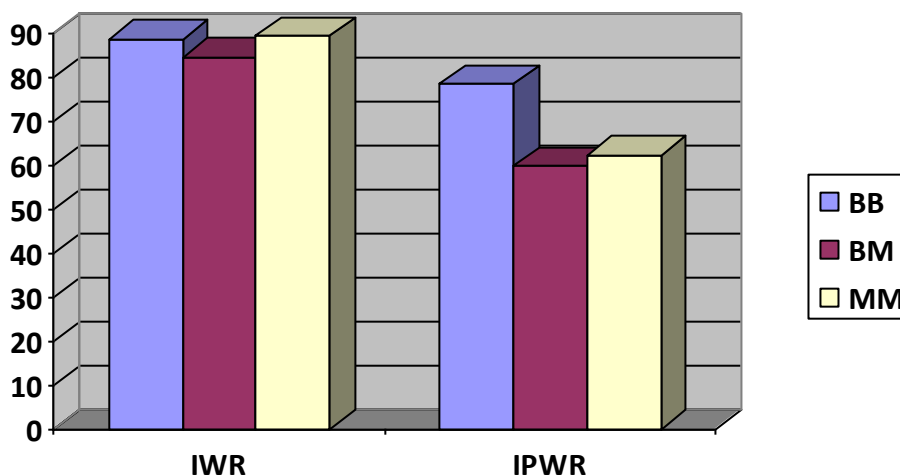
significant differences on performance on the WR task, ($F(2,78) = .867, p = .94$), the groups scored in a statistically different way on the PWR task ($F(2,78) = 12.637, p < .001$).

Table 10. Means, standard deviations and comparisons between groups for Italian reading tests. * $p < .05$

	BB ($n = 40$) <i>Biling Bilit</i>	BM ($n = 21$) <i>Biling. Monolit.</i>	MM ($n = 20$) <i>Monoling. Monolit</i>	<i>F</i>
IWR	88.6 (13.4)	84.4 (13.2)	89.3 (14.8)	.867
IPWR	78.4 (12.1)	59.7 (6.6)	62.2 (11.7)	12,743*

Further Tukey post hoc tests on PWR scores revealed that the BB group behaved significantly better than the MM group ($p = .036$) and the BM group ($p = .043$). On the other hand, the BM group failed to outperform the MM group ($p = .58$). To sum up, while no differences were found among all three groups' performance on the Real word test, group comparisons on the Italian pseudo-word reading tasks showed that the bi-literate bilingual group outperformed the other two groups. Moreover, the bilingual mono-literates performed in a similar way as the monolinguals. A visual representation of the above comparison is represented in Figure 3.

Figure 3. Mean accuracy on Italian reading tasks (% correct)



Section 4

RQ3

The descriptive statistics for the English phonological awareness tasks and English reading tasks can be found in Table 11 (p. 99).

Results (% correct) on English language tests are summarized in Table 12.

Table 12. Means, standard deviations and comparisons among three groups on English PA, reading and vocabulary tests. * $p < .05$

	BB ($n = 40$)	BM ($n = 21$)	MM ($n = 20$)	<i>F</i>
	<i>Biling. Bilit.</i>	<i>Biling. Monolit.</i>	<i>Monoling. Monolit</i>	
EPhS	59.45 (11.3)	42.16 (8.6)	39.1 (9.5)	8,77*
EPhB	62.9 (12.1)	53.12 (10.1)	50.3 (12)	6,67*
EORo	48.3 (12.1)	43.4 (11.9)	37.2 (9.3)	9,89*
ESyB	51.4 (10.2)	42.3 (16.1)	43.8 (13.8)	23,96*
EWR	86.3 (13.2)	78.2 (14.6)	76.9 (18.3)	12,467*
EPWR	40.2 (21.7)	24.3 (13.6)	25.2 (11.3)	54,89*
EProf	78.5 (23.5)	71.68 (16.6)	73.12 (14.5)	7,76*

In order to answer my third research question, which regarded whether bilingual bi-literates perform differently on L3 English phonological awareness and reading ability tasks compared to bilingual mono-literates and monolinguals, I conducted a series of comparisons on the three groups' scores on the two sets of L3 English tests.

As far as L3 English proficiency is concerned, a one-way ANOVA indicated that there is a significant difference on vocabulary scores, $F(2,78) = 7,76$, $p = .036$. This was conformed through further Tukey post hoc testing: in fact, the bi-literate group's scores were significantly higher than those of the other two groups (both p values $< .01$); the difference between monolinguals and mono-literates on L3 proficiency test failed to reach significance, $p = .89$.

Given the above results on the EProf performance, next I conducted further correlational analyses to determine whether there is a relationship between L3 English proficiency and English PA and reading test scores.

Table 13. English proficiency and English PA and reading test scores correlations with controlled Non-Verbal Intelligence

<i>Controlling Variable</i> RAVEN	EProf	EPhS	EPhB	EORo	ESyB	EWR	EPWR
BB EProf	<i>r= 1000</i> - <i>n=40</i>	<i>r=.213</i> <i>p= .74</i> <i>n=40</i>	<i>r= .514</i> <i>p=.076</i> <i>n=40</i>	<i>r=.265</i> <i>p=.067</i> <i>n=40</i>	<i>r=.165</i> <i>p=.055</i> <i>n=40</i>	<i>r=.289</i> <i>p=.078</i> <i>n=40</i>	<i>r=.356</i> <i>p=.0.94</i> <i>n=40</i>
BM EProf	<i>r= 1000</i> - <i>n=21</i>	<i>r=.126</i> <i>p= .34</i> <i>n=21</i>	<i>r= .22</i> <i>p=.16</i> <i>n=21</i>	<i>r=.54</i> <i>p=.078</i> <i>n=21</i>	<i>r=.65</i> <i>p=.48</i> <i>n=21</i>	<i>r=.43</i> <i>p=.018*</i> <i>n=21</i>	<i>r=.68</i> <i>p=.23</i> <i>n=21</i>
BM EProf	<i>r= 1000</i> - <i>n=20</i>	<i>r=.45</i> <i>p= .087</i> <i>n=20</i>	<i>r= .56</i> <i>p=.32</i> <i>n=20</i>	<i>r=.71</i> <i>p=.063</i> <i>n=20</i>	<i>r=.53</i> <i>p=.032*</i> <i>n=20</i>	<i>r=.66</i> <i>p=.0.21*</i> <i>n=20</i>	<i>r=.64</i> <i>p=.36</i> <i>n=20</i>

Results presented in Table 13 show that regarding the the bi-literate bilingual group, no correlations were found. Moreover, the English proficiency test scores of mono-literate bilinguals were positively and significantly, although weakly correlated with scores on the reading of real words ($r= .43, p < .05$). As for the monolingual group, positive, significant and moderate correlations were found between L3 English proficiency and scores on the syllable blending task ($r= .53, p < .05$) and on the reading of real words task ($r= .66, p < .05$)

From Table 12 it can be easily seen that, on English PA skills, there is a significant difference among the three groups' performance on the phoneme segmentation task, $F(2,78) = 8,77, p = .02$. The data also show that the three groups performed significantly different also on the phoneme blending task, $F(2,78) = 6,67, p = .04$, the onset-rime task, $F(2,78) = 9,89, p < .01$ and the syllable blending task, $F(2,78) = 23,96, p < .01$.

Further post hoc analyses allowed me to determine where the above group differences were placed. Tukey tests indicated that on the phoneme segmentation task, the bi-literate bilingual group outperformed both the other groups ($p < .01$ in both cases), while the mono-literates outperformed the monolinguals ($p = .043$). Moreover, the bi-literate bilinguals outperformed the mono-literate bilinguals and the monolinguals also on the phoneme blending test ($p < .01$), while the monolinguals again performed better than the mono-

literate bilinguals ($p = .039$). Regarding the onset-rime oddity test, the highest score was obtained by bilingual bi-literates that outperformed their bilingual mono-literate ($p < .01$) and monolingual ($p < 0.1$) peers. In turn, the mono-literate group behaved significantly better than the monolingual group ($p = .032$). Finally, bi-literates' performance on the syllable blending task was significantly different than that of mono-literates, ($p = .016$) and monolinguals ($p < .01$), while the mono-literate group did not outperform the monolinguals, $p = .061$.

To sum up, there was a difference among the three groups' performance on the L3 English phonological awareness tests. More specifically, the bi-literates outperformed the other two groups on all tasks. The mono-literate group behaved better than the monolingual group on the two phoneme tests and on the onset-rime oddity test, and as well as them on the syllable blending test. A visual representation of the three groups' performance on English PA tasks can be found in Figure 4.

Figure 4. Mean accuracy on English PA tasks (% correct)

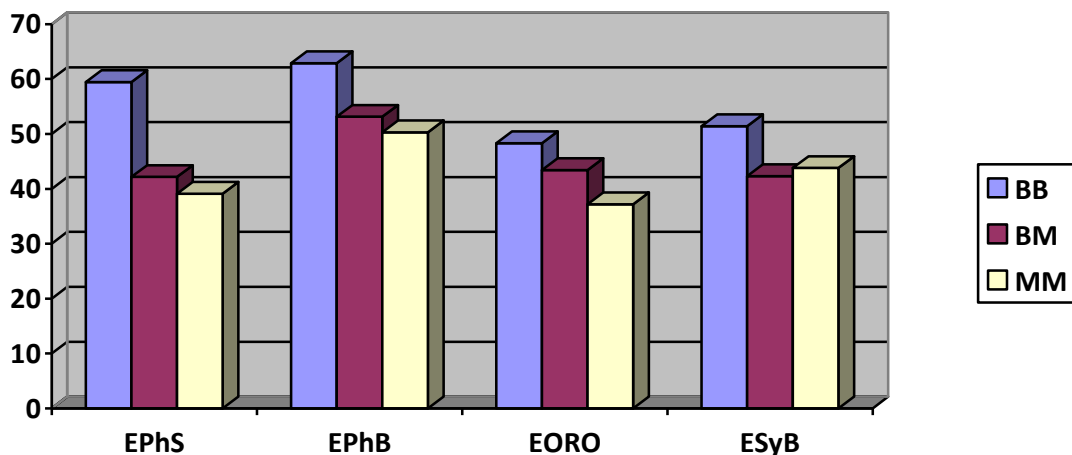
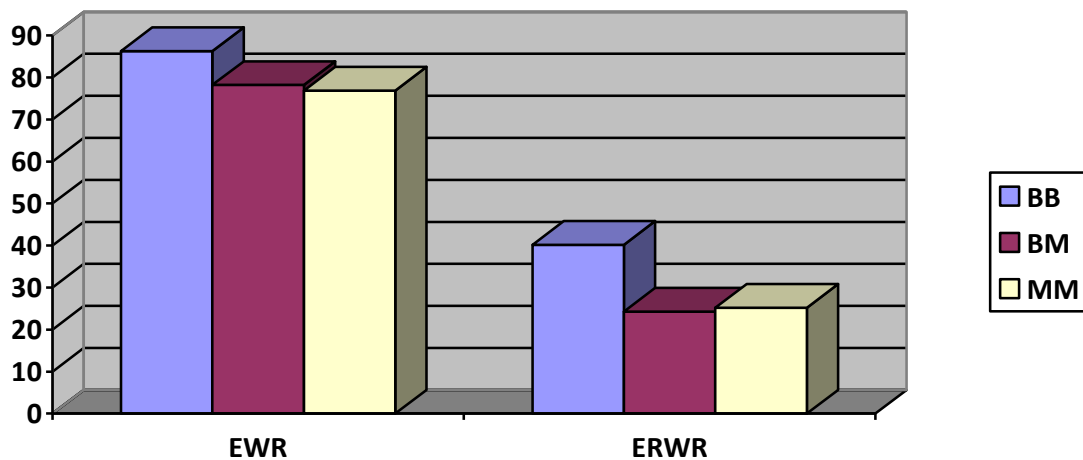


Table 12 also reports on the three groups performance on the English reading tests. From two initial analyses of variance, it emerged that bi-literates' performance on the two reading tasks followed a similar trend: on the real word reading task all three groups scored high and in a significant different way, $F(2,78) = 12,467$, $p = .016$, while scores on the pseudo-word readings revealed lower scores and again different percentage of correct answers, $F(2,78) = 54,89$, $p < .001$. Further post hoc tests confirmed that the bi-literate group outperformed the other two groups on the real-word task (both p values $< .05$) while no difference was found between the monolinguals' and mono-literates' performance; in a similar vein, bi-literates outperformed the mono-literates and monolinguals ($p < .01$) also on the pseudo-word reading while these last two groups showed similar behaviour ($p = .78$).

In conclusion, on the two L3 English reading task, group comparisons revealed that bi-literate bilinguals outperformed the other two groups on the word reading task while mono-literates and monolinguals performed in a similar way. A similar trend was observed for the non-word reading, with the bi-literate group performing significantly better than the other two groups ($p < .05$) whose performance was comparable ($p = 1.16$). Nevertheless, general performance on real-word reading was far higher than performance on the non-words. Figure 5 shows a visual representation of the above comparison

Figure 5. Mean accuracy on English reading tasks (% correct)



Section 5

RQ4

Previously reported results would seem to confirm that there is a positive effect of L1 Romanian literacy, compared to L1 Romanian oral knowledge, on L2 Italian phonological awareness and reading skills. In order to estimate the contribution of bi-literacy to the Italian skills, I conducted two hierarchical multiple regression analyses. Therefore, I constructed 2 new composite measures based on principal component analyses. The first composite score, *Italian PA skills*, was created by extracting the first principal component from the set of the four Italian phonological awareness measures, phoneme segmentation, phoneme blending, onset-rime oddity, syllable blending. This first component accounted for a majority of the variance in this set (66%), with substantial weights for each of the four Italian PA variables (.670, .530, and .441). The second composite, *Italian reading skills* was created by coalescing scores on the two Italian reading measurements: word reading, and pseudo-word reading. Here, the first principal component accounted for a most of the

variance (42%), with a similar weight for each of the individual variables (.750, .760). In order to have a clearer understanding of the contribution of bi-literacy on the *Italian PA skills* and *Italian reading skills* composites, the unique contributions of both bilingualism and bi-literacy needs to be addressed after controlling for the non-verbal intelligence (Raven's test). I used contrast-coding, that is, I coded categorical information on group identity to create the two variables *bilingualism* and *bi-literacy* (see Table 14).

Table 14. Contribution of bi-literacy and bilingualism to composite Italian PA skills. *p < .05

	R2 Change	F Change
<i>Step 1</i>		
Raven	.38	50.52*
<i>Step 2</i>		
Bi-literacy	.18	35.40*
Bilingualism	.6	9.71*
<i>Step 3</i>		
Bi-literacy	.6	10.78*
Bilingualism	.2	2.68

When entered at Step 2 after non-verbal intelligence, bi-literacy accounted for a substantial 18 % of the variance in Italian PA skills. Even when entered at Step 3 after non-verbal intelligence and bilingualism, the contribution of bi-literacy to Italian PA skills, although smaller, remained significant (6%). By contrast, the contribution of bilingualism (Step 2) to Italian PA skills was significant but relatively small (6%). Moreover, after entering bi-literacy at Step 3, bilingualism no longer contributed to Italian PA. These outcomes indicate that bi-literacy is the most important factor.

Likewise, as shown in Table 15, after controlling for non-verbal intelligence, the contribution of bilingualism (Step 2) to Italian reading skills was significant but relatively small (4%). Moreover, after entering bi-literacy, bilingualism in Step 3 no longer contributed to reading in Italian. At the same time, the contribution of bi-literacy was substantial (17%) even after controlling for non-verbal intelligence and bilingualism.

Table 15. Contribution of bi-literacy and bilingualism to composite Italian reading skills. *p < .05

	R2 Change	F Change
<i>Step 1</i>		
Raven	.26	44.6*
<i>Step 2</i>		
Bi-literacy	.14	29.35*
Bilingualism	.04	7.61*
<i>Step 3</i>		
Bi-literacy	.17	9.63*
Bilingualism	.00	0.34

Research question number 4 regarded also the contribution of bi-literacy *per se* to L3 acquisition. In order to investigate the effect of bilingual bi-literacy versus bilingual mono-literacy on the English phonological awareness, I created a composite score, the *English PA skills*, by extracting the first principal component from the set of the four English phonological awareness measures, phoneme segmentation, phoneme blending, onset-rime oddity, syllable blending. This first component accounted for a majority of the variance in this set (76%), with substantial weights for each of the four English PA variables (.770, .630, and .568). Furthermore, I also seek to determine the amount of contribution bi-literacy compared to bilingualism has on the L3 English reading scores, once the English proficiency is levelled out. The second composite score, *English reading skills*, was therefore created by coalescing scores on the two English reading measurements: pseudo-word reading and word reading. Here, the first principal component accounted for a most of the variance (72%), with a similar weight for each of the individual variables (.755, .460).

Results of the multiple regression analyses are presented in Tables 16 and 17.

We can observe from Table 16 that bilingualism, as a separate factor, although contributed significantly to reading accuracy in English, its contribution was rather limited, 4%, once the English proficiency was controlled for. However, even after controlling for English proficiency, when entered at Step 2 and Step 3, bi-literacy accounted for a substantial 18% and 16% of the variance in English PA skills, while bilingualism at Step 3 no longer contributed significantly.

Likewise, as shown in Table 17, after controlling for English proficiency, the contribution of bilingualism (Step 2) to English reading skills was significant but relatively small (3%). Moreover, after entering bi-literacy in Step 2, bilingualism no longer contributed to reading in English. At the same time, the contribution of bi-literacy remained substantial (16%).

Table 16. Contribution of bi-literacy and bilingualism to composite English PA skills. * $p < .05$

	R2 Change	F Change
<i>Step 1</i>		
English proficiency	.16	19.8*
<i>Step 2</i>		
Bilingualism	.04	4.63*
Bi-literacy	.18	23.60*
<i>Step 3</i>		
Bi-literacy	.16	22.61*
Bilingualism	.02	0.64

Table 17. Contribution of *bi-literacy and bilingualism to composite English reading skills*. *p < .05

	R ² Change	F Change
<i>Step 1</i>		
English proficiency	.19	23.3*
<i>Step 2</i>		
Bilingualism	.03	3.87*
Bi-literacy	.19	24.71*
<i>Step 3</i>		
Bi-literacy	.16	23.60*
Bilingualism	.00	0.54

Chapter 6 DISCUSSION

The present study aimed to examine bi-literacy effects on Romanian -Italian bilingual children's phonological awareness (PA) in Romanian (L1), Italian (L2) and English (L3) and on Italian and English reading ability. I compared the performance of two subgroups of third- and fourth-grade Romanian-Italian bilingual children who had achieved or not literacy skills in Romanian as a heritage language (HL) on a range of tests designed to assess children's PA and reading skills. In addition, the two bilingual subgroups were compared with a group of Italian monolingual children matched on a similar socio- demographic profile. Four major findings emerged from this study:

1. First, bi-literates have an advantage over mono-literates on all L1 phonological awareness tasks.
 2. Second, the superiority of the bi-literates in L2 Italian was noted in some of the phonological awareness tasks (phoneme segmentation, onset-rime oddity, syllable blending over mono-literate bilinguals, and onset-time oddity and syllable blending over monolinguals) and on the reading of pseudo-words. On the contrary, monolinguals have more advantages over mono-literates when it comes to L2 phoneme segmentation and onset-rime awareness.
 3. Third, the results support the prediction that L1 literacy skills have a positive impact on L3 phonological awareness and reading skills. This conclusion derives from the clear superiority of the bi-literate bilinguals over mono-literates and monolinguals on all four phonological awareness tasks - phonemic segmentation, phonemic blending, onset-rime awareness and syllable blending – and on reading ability measured either as real-word reading and as non-word decoding. On the other hand, mere oral skills in L1 provided mono-literates with less advantages over monolinguals on L3 skills, namely on the first three tasks only.
 4. Literacy acquisition in L3 cannot be considered simply a variation on L2 acquisition, and the development of language and literacy skills in L3 represents a distinct research domain (Cenoz & Genesee, 1998, Cenoz, 2003). As we have seen, participants' acquisition patterns, both as phonological awareness and reading skills, were different in Italian (L2) compared to English (L3), at least according to what we could see from performance of these specific tests and at an initial stage of acquisition of English as a foreign language.
- I will discuss each of these four important findings separately.

1. Research Question 1 asked whether bi-literates perform differently on L1 phonological awareness tasks compared to bilinguals with literacy skills in L2 only. I originally hypothesized that bilingual children with literacy skills in both languages would have a better understanding of the sound structure of their L1 language. Therefore, I suggested that bilingual children who were introduced to Romanian literacy would have higher phonological awareness skills than bilingual children who lacked Romanian reading ability. My original hypothesis is in line with the findings: the bi-literate groups outperformed the mono-literate group on all the phonological awareness tasks in the study (phoneme segmentation, phoneme blending, onset-rime oddity and syllable blending).

Although heritage language was defined as a particular phenomenon within bilingualism (Polinsky, 2018), there are relatively few studies in the area of phonological abilities for heritage speakers, and even fewer that have bilingual children speakers of Romanian at the centre of the study (for an outstanding exception see Petrescu, 2014). The lack of research on phonological skills among Romanian children, makes it difficult to interpret the results I obtained from the performance on the Romanian tests. However, both groups in the present study exhibit mixed behavior on the four subtests that make up the construct of phonological awareness: phoneme segmentation, phoneme blending, onset-rime awareness and syllable blending. It could be hypothesised that the mixed behaviour on the subtests denote the complementarity of the three phonological awareness sub-levels – the phoneme, the onset-rime and the syllable. Because language is a hierarchy of sounds, measuring phonological awareness means measuring one's ability to disentangle this hierarchy of sound into levels (e.g. syllable, onset-rime, phonemes) and measuring how well they are able to manipulate units on each level.

Each language has its own phonological and supra-segmental characteristics. For languages with simple consonant-vowel construction, onsets, rimes, and phonemes are equivalent because each onset and each rime in a single syllable is also a single phoneme (Goswami, 2008). In Romanian phonology complex consonant clusters are allowed, both in syllable initial and syllable final positions. For example, all consonants and glides can constitute single onsets without restrictions, with the exception of [w]. Two-consonant onsets consist of: sibilant+C, obstruent+liquid, nasal+liquid, C+[j] while three-consonant onsets are restricted to the sibilant-obstruent-liquid combination. Bi-literate bilinguals' better performance could be explained by the fact that bi-literates might have developed a more advanced phonemic awareness due to a higher familiarity with the complex consonant clusters of Romanian. Learning to read, on top of processing spoken Romanian, would require children to pay additional attention to small phonological units such as phonemes

and to the way these can group into clusters, either syllable initially and in syllable final position. Similar results that outlined the importance of the presence of consonant clusters within a language to the PA in that same language is Cheung et. al (2001). In this study, the authors suggested that English speakers develop an advanced phonemic awareness because English contains many consonant clusters.

Moreover, the importance of letter knowledge to reading acquisitions and has been well established in both consistent and inconsistent orthographies over the last few decades (e.g., Bruck *et al.*, 1997; Gallagher *et al.*, 2000; Kirby *et al.*, 2003; Manolitsis *et al.*, 2009). On the one hand, in opaque orthographies as English letter knowledge may be important because it provides children with skills that are necessary for accurate word recognition like referents to associate with phonemes (e.g., Ehri, 2005), or because it reflects accuracy in the representations and discrimination of individual letters (e.g., Adams, 1990). On the other hand, in highly consistent orthographies, letter names provide the sound of the letter, which is independent of the context where the letter occurs, and re-inforces the awareness of that particular sound the letter represents. Research has shown that knowledge of letter names (and thus of sounds) and phonemic assembly are requirements for successful decoding also in highly transparent orthographies (Aro, 2004).

Thus, bi-literacy provided the group with literacy skills in both Italian and Romanian with a larger orthographic repertoire. Recall that Romanian has five additional letters compared to Italian, three of which correspond to two vocal sounds that are not present in Italian - *a breve* is the grapheme for schwa; *a circumphlex* and *i circumphlex* represent a case of allography for the mid central vowel /i/ - while the other two are used to represent two sounds that in Italian are represented with different graphemes - the *s comma bellow* for the voiceless palatal fricative /ʃ/, and the *t coma bellow* for the dental /ts/. If knowledge of both letter names and sounds, and phonemic assembly are requirements for successful decoding (Aro, 2006) it could be the case that, although Italian and Romanian are close languages with highly transparent orthographies, literacy skills in Italian only do not provide the mono-literate bilingual group with the right (or enough) tools to perform on Romanian phonological awareness tasks as well as the bi-literate group.

With regards to the bilingual children's phonological awareness in two languages, there is no consensus in the field whether phonological awareness in the L1 and L2 is a unitary construct or two related skills (Gottardo *et al.*, 2011). The literature provides evidence that phonological awareness is a metalinguistic skill that transfers across languages (Swanson et al, 2008; see Geva & Wang, 2001 for a review) but it also cautions that

phonological awareness skills in the L1 and L2 are not always completely overlapping (Branum-Martin *et al.*, 2006; Gottardo & Mueller, 2009).

Models of cross-linguistic transfer, as CAH (Contrastive Analysis Hypothesis, Fries 1945; Lado 1957) have treated transfer mostly depending on the L1-L2 distance, and acknowledged that both interference and facilitation may occur in language learning depending on similarities and differences between languages (see Genesee, *et al.*, 2006; Koda, 2008). In a sense, learners tend to make errors or encounter difficulties (interference) when learning structures in a second language that differ from or are unfamiliar to them in their first language. Since Romanian, compared to Italian, has more consonants than vowels, more consonant clusters, and more words with consonantal endings (Posner, 1966:102) it could be the case that the bilingual group that was literate in Italian only encountered difficulties when dealing with phonological awareness testing in Romanian.

Indeed, the test items / the words I used to test the phonological awareness in Romanian present certain characteristics that could have been challenging for the mono-literate bilingual children for several reasons. First, they contained those phonemes that lack in Italian (/ə/, /ɨ/, /ʒ/, /h/) placed either word initially (e. g. încet, /ɨn.ˈtʃet/, *slowly*; jucărie, /ʒu.kə.ˈrie/, *toy*), medially (plâns, /plɨns/, *(the) crying*; pahar, /pahar/, *glass*) or word finally (șah, /ʃah/, *chess*), or even more than one Romanian specific phoneme per word (horă, /ˈho.rə/, *hora, a typical Romanian dance*). Moreover, some words contained the typically Romanian diphthongs ([ea] and [oa], ceapă, /ˈtʃea.pə/, *onion*; oaste, /ˈoas.te/, *army*), and two glides ([j] and [w], e.g. aur, /ˈa.wur/, *gold*; știucă, /ˈʃtju.kə/, *pike*) that could have been challenging for the mono-literate children especially regarding the syllable awareness. The Romanian test items also included examples of words containing the devoicing of the final /i/, when this follows a consonant or a consonant cluster. The children that lacked Romanian literacy skills may have encountered difficulties with this kind of words, both on the phoneme segmentation (e.g. zbori, /zborʲ/, *(you) fly*) and on the syllable blending (e.g. școlari, /ʃko.ˈlarʲ/). Previous research underlined that children find it particularly difficult to make phonemic judgments (i.e., become phonemically aware) because often speech sounds referred to by letters are very abstract and hardly perceivable in spoken language (cf. Nagy & Scott, 2000). This awareness could be raised with the unique contribution of literacy.

The CAH model and all the other models that I mentioned at the beginning of this study (see 2.3.1) considers transfer as from a first to a second language. Recall that bilingual participants in this study have Romanian as first and dominant language at home and that they started schooling in Italian, their societal language. Only the bi-literate group acquired

Romanian literacy through Romanian-as-a-heritage-language classes. Therefore, we cannot consider the mono-literate group's transfer of phonological awareness acquired through literacy skills acquired in Italian into Romanian as exactly an L1-L2 transfer. In other words, I cannot clearly analyse these findings within the transfer of skills paradigms since I cannot determine whether it is the case that transfer from the L2 into the L1 is more difficult and less likely to occur than the L1-L2 transfer or, at least as literacy acquisition is concerned, Italian should be considered as the first and Romanian as the second language.

There is one additional distinction that needs to be made and that might reveal itself crucial for the interpretation of the above findings, namely that the bi-literate children were learning Romanian (both in the written and in the oral form) *also* formally, while the mono-literate group acquired Romanian only at home, within the home environment. Therefore, children from this later group could be considered *heritage language speakers* while children from the first group are *heritage language learners* (Kisselev *et al.*, 2020). It is well-acknowledged that formal instruction enhances language awareness and draws attention to language in general and language specific characteristics (for a review see Carter, 2003). Moreover, when it comes to HL learning, extensive linguistic research combined with insights from the currently available pedagogically oriented studies have repeatedly underlined the importance of form-focused instruction in order to develop heritage learners' attention to grammatical form, foster heritage learners' understanding of grammatical concepts, and to increase the learners' metalinguistic awareness (Kisselev *et al.*, 2020). Therefore, it could be suggested that Romanian-Italian bi-literate bilinguals' advantage over the Romanian-Italian bilingual mono-literate peers in terms of Romanian phonological awareness could be due to the acquisition of literacy skills in Romanian and the beneficial contribution of formal learning of Romanian. Sound awareness in Romanian acquired only in an oral form and in a naturalistic environment exclusively might just not be sufficient when it comes to performing on tasks as phoneme, onset-rime and syllable awareness.

Another aspect that we need to consider in interpreting the results on L1 Romanian PA testing is the two groups' performance on the other testing variables that could have influenced their performance on the PA tasks. To recap, the two groups were found to be comparable on the SES variables. SES seems to have a differential effect on distinct outcomes for children, generally exhibiting a stronger effect on children's school and cognitive achievement than on their social and emotional development (Brooks-Gunn & Duncan, 1997). Similarly, maternal education correlates with SES as a whole ($r = .69$ in Bradley *et al.*, 1989), and maternal and paternal education are also highly correlated

(Kalmijn, 1991). Given that the two bilingual groups in this study were comparable on SES, maternal and paternal education and non-verbal intelligence I can conclude that different performance on the PA tasks cannot be attributed to these variables.

On the contrary, Romanian proficiency measured as vocabulary knowledge, was found to differ between bi-literates and mono-literates. According to the Lexical Restructuring Model (LRM, Metsala & Walley's 1998), phonological awareness is initially developed through a mental process of restructuring vocabulary in the spoken language during early years of life. According to LRM, as children's vocabularies increase, children develop a more refined lexical representation of the sounds comprising those words, and in turn children become more sensitive to the detection of specific phonemes. LRM identifies several lexical characteristics of words that influence lexical restructuring: age of acquisition, word frequency, neighbourhood density, and phonotactic probability. A connection between vocabulary and phonological awareness was suggested and sustained by some research (e.g., McDowell *et al.*, 2006) while other studies failed to show such connection especially in a longitudinal design (Storch & Whitehurst, 2002). In this study, no relationship was found between L1 vocabulary and performance on Romanian phonological awareness tests for the bi-literate bilinguals, while mono-literate bilinguals' proficiency in Romanian was significantly and highly correlated with two of the four PA test results, namely with Phoneme segmentation and Onset-rime oddity. This would seem to suggest that, given their poorer vocabulary in Romanian, mono-literates with literacy skills in Italian only have not developed a refined lexical representation of the Romanian sounds comprising those words, and, as a consequence, are not sensitive to the detection of specific Romanian phonemes yet. On the other hand, bi-literates' L1 proficiency was not correlated with performance on any of the four PA tasks, and this could be explained by the unique contribution of literacy in Romanian.

Moreover, although different correlational patterns were found between proficiency in Romanian and performance on the Romanian tests, the two groups' performance on Romanian phonological skills could also be interpreted by looking at proficiency in each of the two languages within each group. We have seen that the bi-literate group exhibited a similar proficiency in Romanian and Italian while the mono-literate group's performance on Italian was significantly better than performance in Romanian. It was previously underlined that there is a place for individual variation in L1 and L2 development of ethnic minority children, with the notion of interdependence playing a potentially critical role (Verhoeven, 2007). Moreover, Cummins (1984, 1991) hypothesized the role of interdependence to be as follows:

“To the extent that instruction in a certain language is effective in promoting proficiency in that language, transfer of this proficiency to another language will occur, provided there is adequate exposure to that other language (either in the school or environment) and adequate motivation to learn that language.”

In other words, language transfer can occur not only from L1 to L2 but also from L2 to L1. I have previously suggested that literacy skills in Italian only seem not to provide the mono-literate bilingual group with the right (or enough) tools to perform on Romanian phonological awareness tasks as well as the bi-literate group. This idea could be furthered to include the recognition of the specific role that HL literacy acquisition can play not only in HL language proficiency but, implicitly, on those variables that proficiency influences, as phonological awareness. Carlisle *et al.*, (1999) showed levels of L1 and L2 vocabulary and degree of bilingualism to relate significantly to the phonological awareness of bilingual children with below-average reading skills.

In conclusion, these first findings underscore the advantages of Romanian L1 literacy on Romanian phonological skills and also re-affirm the reciprocal relationship between literacy acquisition and the development of explicit phonological awareness (Bentin & Leshem, 1993; Garton & Pratt, 1989; Morais *et al.*, 1987). It is now well-established that the “meta-linguistic” insight into the phonemic structure of speech together with the understanding that letters represent these same units is primarily the outcome of alphabetic literacy learning and not an integral part of cognitive or linguistic maturation (Morais *et al.*, 1987; Share, 1995). Data from this study also reinforce Petrescu’s (2014) observation that, given that regarding Romanian-Canadian bilingual children, the lack of formal schooling in Romanian could have impeded the growth of some linguistic aspects, this could be rectified through formal minority language education (Petrescu, 2014).

2. Research Questions 2 asked whether bi-literacy has a positive effect on both L2 phonological awareness and reading ability. My investigation evaluated the independent contribution of L1 literacy by distinguishing two groups of bilinguals drawn from similar socio-cultural and linguistic backgrounds; bi-literate and mono-literate Romanian immigrants learning to read and write Italian in regular Italian-speaking third- and fourth-grade classrooms in Italy. I focused on early literacy development and those metalinguistic skills most closely related to literacy, namely phonological awareness, as well as the word and non-word decoding ability. My choice stood in the fact that although a wide range of meta-linguistic tasks have been used in the literature, explicit awareness of the phonological

structure of spoken words has repeatedly demonstrated the strongest association with early reading skills (Bowey, 2005; Ehri *et al.*, 2001; Share & Stanovich, 1995; Ziegler & Goswami, 2005). In discussing the nature of bilinguals' phonological awareness, it is important to emphasize the reciprocal relationship between literacy acquisition and the development of explicit awareness of phonemes (Bentin & Leshem, 1993; Garton & Pratt, 1989; Morais *et al.*, 1987). Consequently, in explaining the early phonological advantage observed among some young bilingual children, it would seem essential to evaluate the impact of the early L1 literacy skills as a unique contributor to bilinguals' meta-linguistic development. This was a concern of my study.

Since L1 reading experience was predicted to play a role in enhancing children's L2 phonological awareness and reading skills (Bialystok, 2002) and, given that my first hypothesis turned true, and bi-literate bilinguals showed higher phonological awareness skills in L1 Romanian compared to their mono-literate bilingual peers, I expected such advantage to likely be transferred to L2 phonological awareness and reading skills (Cummins, 1979; 2000; Koda, 2008), especially since transfer is more frequent amongst similar languages, which are close linguistically and orthographically, like Romanian and Italian (Cenoz & Genesee, 1998; Cenoz & Hoffmann, 2003). Moreover, I predicted that both bi-literate and mono-literate bilinguals would perform better than monolinguals at least on some aspects of reading (Bialystok *et al.*, 2003; Bialystok *et al.*, 2005).

With regards to formal literacy skills *per se* among bilinguals, a number of studies have directly examined the issue of reading skills of bilinguals and, in particular, the cross-linguistic transfer of both reading and phonological skills. Much of this work has been conducted within the Linguistic interdependence hypothesis (Cummins, 1978) (for e.g., Durgunoglu, 1998; González, 1986; Verhoeven, 1994). According to Cummins (1978), Cognitive Academic Language Proficiency (CALP) is transferred from one language to another such that reading instruction in one language leads to a deeper CALP, which is strongly related to literacy in a second language. Cummins (1978), furthermore, claims that the transferability across languages of many of the skills involved in reading is high. For example, González (1986) demonstrated a considerably stronger relationship between English and Spanish reading skills than between English reading skills and English oral communicative skills in a study with Spanish-speaking immigrant students in the United States. Two groups of Grade 6 students attending a bilingual program were compared on English and Spanish measures; 34 students who were born and schooled for at least two years in Mexico prior to immigrating to the United States and 38 students who were born in Mexico but immigrated to the United States before beginning school. It was found that the

Mexican-schooled group performed significantly better on both Spanish and English decoding and reading comprehension tasks than the group schooled entirely in the United States. In the full sample, Spanish and English reading scores showed a strong inter-correlation. González concluded that the academic foundation developed by the Mexican-schooled students transferred to the acquisition of English academic skills, giving these students an advantage over their US-schooled peers. These data are consistent with my second hypothesis that L1 literacy is a key factor in bilinguals' L2 literacy development. Furthermore, in another study of 46 first graders in two bilingual education classes in the United States, Durgunoğlu (1998) reported that Spanish phonological awareness explained 47% of the variance in English phonological awareness. Furthermore, Spanish phonological awareness and letter identification accounted for no less than 84% of the variance in English spelling performance. The author concluded that the rationale of L1 literacy facilitating L2 literacy development is the one most strongly supported by his data.

Although, these data would appear to provide strong support for the Linguistic interdependence hypothesis (Cummins, 1978), it could be argued that cross-linguistic transfer of word identification skills could be explained by noting the considerable overlap between the specific (Roman) orthographies of English and Spanish, which not only share the same Roman letters but also, in the majority of cases, the same letter-sound correspondences. Therefore, I hypothesised that a comparison between two languages like Romanian and Italian, both with Roman orthographies but with some distinct graphemes and letter-sound representation would provide further evidence for the cross-linguistic transfer of phonological and reading skills among young bilingual children.

Moreover, it is also worth remarking, that most of the studies dealing with transfer of meta-linguistic and word recognition skills across two languages have included English as one of the two languages being compared. This considerably constrains the generalizability of the findings because English orthography is exceptional in its degree of inconsistency compared to other alphabetic orthographies (Daniels & Bright, 1996; Seymour, Aro & Erskine, 2003). Indeed, it is becoming widely recognized that English poses extraordinary difficulties for the young child learning to read and write and these difficulties appear to be directly rooted in the complexity of the orthography rather than test incommensurability or in broader differences in either socio-cultural factors or educational practices (Ellis & Hooper, 2001; Spencer & Hanley, 2003). To illustrate, Geva & Siegel (2000) compared a large sample of Canadian children with L1 English who were learning Hebrew for 2–3 periods a day at an English-Hebrew bilingual school. Despite limited oral L2 Hebrew proficiency, these children's oral word reading accuracy in Hebrew in Grade 1 far outstripped

their own native English ability. Even in Grade 5 word recognition accuracy in L2 Hebrew was superior to Grade 1 English. These dramatic differences between English and other more transparent orthographies are apparently not only quantitative but also qualitative, with developmental “footprints” extending over the entire reading life-span (see Frost, 2005; Ziegler & Goswami, 2005). It follows that the case for transfer of reading and reading-related skills across languages in general, and not just between English and a more regular script would be considerably strengthened by a comparison between languages with two non-completely overlapping orthographies both of which exhibit the consistent grapheme-phoneme relationships that typify most of the world’s alphabetic writing systems (Daniels & Bright, 1996).

The findings reviewed above suggest that L1 literacy experience is an essential consideration in the investigation of bilinguals’ literacy development yet, to my knowledge, only few studies performed a direct comparison between mono-literate versus bi-literate bilinguals (see studies conducted by Schwartz and colleagues: Schwartz *et al.*, 2005, 2008; Kahn-Horwitz *et al.*, 2011; or Janssen *et al.*, 2011). In this study literacy in both L1 and L2 spoken by a bilingual child was specifically pinpointed as comparing variable between the two groups of young Romanian – Italian bilinguals.

Regarding phonological awareness and reading ability in L2 Italian, the results in this study showed that the bi-literate bilingual group outperformed the mono-literate group on three out of four PA task, namely phoneme segmentation, onset-rime awareness and syllable blending, and on the non-word reading task. As it seems, having literacy skills not only in Italian (L2) but also in Romanian (L1) provided the bi-literate participants with further advantages when it comes to sound awareness at phoneme, onset-rime and syllable level. I have previously underlined the importance of letter knowledge in learning to read as it reinforces sound awareness (Adams, 1990; Aro, 2006; Enri, 2005), therefore, having literacy skills in Romanian and not only in Italian could reveal itself doubly advantageous. Firstly, because since the two orthographies are almost overlapping, learning to read in Romanian on top of learning to read in Italian provides bi-literate children with the double of letter-sound correspondence practice. Learning to read implies learning how one’s language is encoded by one’s writing system (Perfetti & Zhang, 1995) and this depends on the nature of the writing system (Perfetti *et al.*, 2002; Perfetti *et al.*, 2007). Romanian and Italian are both alphabetic languages, and therefore they both encode sounds at a phonemic level in a highly consistent and transparent way. By acquiring Romanian literacy also, the Romanian bi-literate bilinguals’ amount of practice of such encoding system work was bigger than the amount that the mono-literate group received by learning to read in a

language only. Secondly, the Romanian and Italian orthographies are not perfectly overlapped since Romanian's extended alphabet includes five more letters, two of which are used to represent two consonantal sounds that in Italian are represented using different graphemes, namely the *s comma bellow* for the voiceless palatal fricative /ʃ/, and the *t coma bellow* for the dental /ts/. If knowledge of both letter names and sounds, and phonemic assembly are requirements for successful decoding (Aro, 2006) it could be the case that, although Italian and Romanian are close languages with highly transparent orthographies, literacy skills gained also in Romanian provided the bi-literate group with more tools both in terms of both sound awareness and decoding skills in L2 Italian.

Amongst the many previous studies on potential transferrable skills, those with a focus on phonological and orthographic relationships among languages have reported greater advantage in phonological awareness and processing for bi-literate readers over monolingual readers (Bialystok *et al.*, 2005; Bialystok *et al.*, 2003; Schwartz *et al.*, 2005, 2008). For example, both Bialystok *et al.*, (2005) and Bialystok *et al.*, (2003) suggest that reading in two alphabetic languages often enhances higher ability in manipulating different sounds and higher ability in recognizing letter and sound relationships. In our case too, the additional knowledge of the extended Romanian alphabet and of Romanian specific phonemes that lack in Italian would seem to have a positive impact on the ability to manipulate L2 Italian phonemes. Moreover, this pattern of findings could also be attributed to the fact that Romanian allows more complex consonant clusters both in syllable initial and final position while Italian allows only a limited set of consonants in word-final position. Therefore, being familiar to more complex sound and letter pairing not only orally but also in the written form of an L1 could turn out to be advantageous when it comes to phoneme blending in L2 word initial and final position. These results can also be interpreted from Verhoeven's perspective: the author reported that young children with stronger proficiency in both languages were found to demonstrate stronger phonological awareness skills, most significantly for the most challenging phonemic awareness tasks, such as phonemic segmentation (Verhoeven, 2007). In this study, although bi-literate children's Italian proficiency was not significantly different, when it comes to proficiency in the heritage language, the bi-literate group clearly outperformed the mono-literate group.

As far as syllable testing is concerned, the results have suggested that the bi-literate group outperformed the monolinguals and the mono-literate bilinguals on syllable blending tasks. Here again, the L1 Romanian literacy skills seem to add up to young bilinguals' notion of syllable that Italian literacy acquisition brings. The central role of syllable awareness is well documented in bi-literacy acquisition of alpha-syllabic writing systems (see for e.g.

Reddy & Koda, 2013). This was explained by the Psycholinguistic Grain Size theory (Ziegler & Goswami, 2005), that posits that children initially develop sensitivity to larger phonological units in speech and gradually fine tune the sensitivity to distinguish smaller units. Furthermore, since spoken sounds are mapped onto graphemes differentially in diverse writing systems, the grain size optimal for achieving the required mappings varies from one system to another. Although both phonemes and syllables are encoded in alpha-syllabic writing systems, syllable information is visually more salient, rendering syllable-level awareness more important in alpha-syllabic reading (Kim & Petscher, 2011). In this study, Romanian – Italian bi-literates' advantage on syllable testing could be explained by the fact that these children could have developed a higher syllable sensitivity due to the higher Romanian syllable complexity. Moreover, as suggested by Barac *et al.* (2014), specific language pairs and language specific characteristics have been found to shape metalinguistic skills in bilingual children differently. Interestingly, Loizou & Stuart (2003) proposed that bilingualism is facilitative of the development of phonological awareness skills as a function of the relative phonological complexity of the child's first and second language and typically a bilingual advantage is documented when the second language is phonologically simpler than the first. The study selected four groups of monolingual and bilingual English and Greek five-year-olds: two bilingual (English(L1)-Greek(L2), Greek(L1)-English(L2)) and two monolingual (English, Greek) groups each performed six phonological tasks. The English native-speaking bilinguals and monolinguals were already being taught to read in school, whereas the two L1 Greek groups (monolinguals and bilinguals) were not. Results showed that the bilingual English-Greek children significantly outperformed their monolingual (English, Greek) and Greek-English bilingual peers on all levels of phonological awareness. However, the Greek(L1)-English(L2) bilingual group who were not learning to read did not show this advantage when compared to both their bilingual English-Greek and monolingual Greek and English peers. Loizou & Stuart (2003) concluded that a bilingual enhancement effect seems to occur only when bilingual children are exposed to a L2 that is phonologically simpler than their L1 (the case of English versus Greek). For present purposes, however, these data also support my contention that learning to read may be the critical ingredient in enhancing bilinguals' phonological awareness.

This study's results could also be explained by the extra training on syllables that bi-literate bilinguals were receiving during LCCR courses compared to the monolingual and the mono-literate group that received training on syllables only during Italian language classes. In fact, following traditional Romanian literacy instruction that stresses phonological awareness as a critical precursor of Grade 1 literacy skills and, and provides

continuous phonological awareness training throughout primary school (Norel, 2010), the LCCR courses curricula also include exhaustive “reading and writing exercises to understand the correspondence between letter and sound in Romanian (groups of letters - the corresponding sound; group of sounds - the corresponding letter) and comparison with the phonetic system of the country of residence; correct writing exercises (writing with capital letters, main spelling and punctuation marks, usual spellings and exercises to compare the sounds of the Romanian language (similarities and differences) with those of the [host] language and to observe the particularities of each language also through active listening exercises” (M.E.C.T. nr. 1303/13.06.2007). I assume that this thorough understanding of oral language structure and an explicit distinction between the letters representing consonants and the letters representing vowels integrates with the acquisition of Italian orthography to create a complex system of the letter-sound associations.

Moreover, bi-literate bilinguals outperformed the other groups on the Italian pseudo-word reading task while the bilingual mono-literates performed in a similar way as the monolinguals. This could be conducted to the phonological processing efficiency (Adams, 1990) on which pseudo-word accuracy measures are heavily reliant compared to word reading measures which tend to be more dependent on stored orthographic information. The data could shed new light on Cummins’ (1978) linguistic interdependence hypothesis. It could be hypothesised that Romanian literacy adds-up to PA and reading skills gained from learning to read in Italian only. Our regression analyses showed that bi-literacy was a powerful contributor to both Italian phonological awareness and reading ability. While bilingualism per se did not contribute reliably to Italian phonological nor reading skills, bi-literacy did. Even after controlling for non-verbal intelligence, bi-literacy explained a substantial 18 % of the variance in Italian PA skills. Even when entered after non-verbal intelligence and bilingualism, the contribution of bi-literacy to Italian PA skills, although smaller, remained significant (6%). By contrast, the contribution of bilingualism (Step 2) to Italian PA skills was significant but relatively small (6%). Similarly, after controlling for non-verbal intelligence, the contribution of bilingualism to Italian reading skills was significant but relatively small (4%) while the contribution of bi-literacy was substantial (17%) even after controlling for non-verbal intelligence and bilingualism.

The second prediction of this research question was that both bi-literate and mono-literate bilinguals would performe better than monolinguals at least on some aspects of reading. My hypothesis was wrong as the mono-literate bilinguals’ performance on Italian phonological awareness testing was as good as monolinguals’ on two PA tasks and worse on the remaing two PA tests. No differences were found on the Italian reading measures. It

could be suggested that Romanian – Italian bilingualism per se, without any Romanian (L1) literacy experience, has no impact on early L2 PA and literacy acquisition. On the contrary, although mono-literates' and monolinguals' performance comparison reached statistical significance for the onset-rime task only, by looking at the raw scores it can be easily observed that mono-literates' performance was the poorest. Similar, even if not the same finding comes from Janssen et al (2011), which investigated PA in Dutch and immigrant L1 – Dutch bilingual children that received literacy in L2 Dutch only. The study found no advantages of bilinguals over monolinguals. In the current study, the results suggest that in order to gain leverage from bilingualism, this has to be completed by bi-literacy.

With regard to the broader educational and cultural context of our study, it should be remarked that the present study was not undertaken in an “additive” bilingual context – one in which there are real opportunities for ongoing daily development and enrichment of L1 academic knowledge (Verhoeven, 1991). Cummins (2000) maintains that successful transfer of L1 literacy skills and strategies is possible only in an additive context where literacy development in both languages is encouraged. In general, it has been found that children who are initially educated in their heritage language learn a second language better (and are academically more successful) than those who have no such solid foundation in their first language (Swain *et al.*, 1990).

In many countries the acquisition of a heritage language occurs in an L2 non-additive environment, in which L1 is non-majority language that is not used in the formal educational context. In the present study, Romanian-speaking bi-literate bilinguals were educated in an L2 Italian context receiving their Romanian literacy lessons only twice a week during the LCCR courses that taught Romanian as a heritage language in Italy. Thus, the present data showed positive evidence for L1 literacy benefits for L2 development even in an L2 immersion context where no general encouragement or incentive is offered to maintain native language and literacy in the daily school environment. This finding converges with results recently reported by Bialystok *et al.*, (2005). They also found that weekly instruction in Spanish (L1) literacy was sufficient to provide Spanish-speaking first grade bilinguals with an advantage over English-speaking monolinguals on an English non-word decoding measure.

Previous research conducted by Galatà & Zmarich (2020) focused on the phonetic-phonological development of a group of pre-schoolers born from Romanian parents and attending the Italian kindergarten, in order to determine whether differences between the phonetic-phonological system of Romanian and Italian would influence the perception and the production of Italian as L2 in Romanian children. Their hypothesis was

that Romanian children learning Italian as L2 by entering the kindergarten may encounter major difficulties in the perception and production of specific sounds not present in Romanian (/dz/, /ɲ/ and /ʎ/, as well as the gemination of consonants). Their results showed that the Romanian children performed better on discriminating non-critical consonants as compared to those that were considered critical and by looking at each age group separately, although the error rate decreased with age, this tendency was maintained with the error rate for critical consonants almost doubling that for non-critical consonants (e.g. consonants shared between Romanian and Italian). The major difficulty for the Romanian children was represented by those pairs of non-words involving a contrast between geminates and non-geminates. Nevertheless, there was an improvement (e.g. decreasing error rates) in the discrimination ability for all the consonants considered (both critical and non-critical ones) as the age of the children increases. The authors hypothesized that the children's maturation and higher exposure to L2 Italian led to a better discrimination.

Opposite to Galatà & Zmarich (2020), my results showed that the bi-literate bilingual group outperformed both the mono-literate bilingual and the monolingual Italian groups on either Italian PA and Italian reading skills. The Italian test items implied in this study also included the consonants that were considered critical in Galatà & Zmarich (2020), both amongst the PA test items – *zia*, (/ˈdzi.a/, *aunt*; *zampa*, (/ˈdzam.pa/, *paw*; *fogliame*, /foʎˈʎame/, *foliage*; *tagliare*, /taʎˈʎare/, (*to*) *cut*; *gnocco*, /ˈɲokko/, *dumpling*; *gnorri*, /ˈɲorri/, (*play*) *dumb* in the expression “fare lo gnorri”; *cappotto*, /kapˈpotto/, *coat*; *sabbia*, /ˈsabbja/, *sand*; - and the reading ability test, both in words – *verza*, /ˈverdza/, *cabbage*; *aglio*, /ˈaʎʎo/, *garlic*; *diagnostico*, /diagnˈɲostiko/, *diagnostic*; *commercio*, /komˈmɛrʃo/, *trade* - and in pseudo-words – *zumbare*, /dzumbare/; *igli* /iʎi/; *foregna*, /foreɲa/; *mittotere*, /mitˈtotere/.

In Galatà & Zmarich (2020), results showed that there was an improvement (e.g. decreasing error rates) in the discrimination ability for all the consonants considered (both critical and non-critical ones) as the age of the L1 Romanian children increases, and the authors hypothesized that the children's maturation and higher exposure to L2 Italian led to a better discrimination. One important distinction needs to be made though, namely that their L1 Romanian participants had a different profile: they were children aged between 61 and 83 months (mean age 5;10) attending Italian kindergartens in the north-eastern part of Italy. Therefore, the participants in Galatà & Zmarich (2020) were in the age period (from 3 to 6 y.o.) that represents, from a neurobiological point of view, a fruitful and privileged time-window for the acquisition of languages (Ioup, 2008) while the participants in my study were older and therefore, had very probably already passed this phase.

Moreover, performance on Italian proficiency test was comparable across all three groups and therefore bi-literates' superiority on the other two groups cannot be attributed to a higher Italian proficiency. In a similar vein, nor can mono-literate bilinguals' failure to outperform the monolinguals be conducted to a lower Italian proficiency since children in these two groups showed no statistically significant difference in term of Italian vocabulary knowledge.

To conclude, the above results confirmed that while bilingualism *per se* has a modest impact on early L2 literacy acquisition, L1 Romanian literacy developed within HL courses provided benefits for decoding acquisition in L2 Italian. These findings, moreover, do not appear to be the simple by-product of background differences in age, gender, general intellectual ability, or parental education. Therefore, my findings support Bialystok's (2002) assertion that bilingualism *per se* may not be the most influential factor in the development of bilingual children's phonological skills and their L2 literacy acquisition.

Finally, in line with previous research (e.g., Schwartz *et al.*, 2005) my work brings further evidence to the importance of distinguishing two varieties of bilingualism, namely the bi-literate bilingualism and the mono-literate bilingualism as this distinction permits to illuminate the unique contribution of L1 literacy to L2 literacy acquisition in yearly bilinguals.

3. My third research question regarded whether bi-literate bilinguals perform differently on L3 phonological awareness and reading tasks compared to bilinguals with literacy skills in L2 Italian only and Italian monolingual speakers. I expected bi-literate bilinguals to outperform the mono-literate bilinguals as it was shown in previous research (Schwartz *et al.* 2007; Sanz, 2000; Rauch *et al.* 2012). Furthermore, I also predicted that, since in previous studies Basque or Catalan/ Spanish bilingual children outperformed monolingual learners in the acquisition of English as a third language (Cenoz & Valencia, 1994; Lasagabaster, 2000; Sanz, 2000; Safont 2005), the mono-literate group of bilinguals would also outperform the monolingual group.

My hypotheses were partially correct: the three groups did perform differently on the L3 English phonological awareness tests, with the bi-literates outperforming the other two groups on all tasks. Moreover, the mono-literate group behaved better than the monolingual group on the two phonemic awareness tests and on the onset-rime oddity testing. As for the L3 English reading tasks, group comparisons revealed a similar trend, namely bi-literate bilinguals outperformed the other two groups both on the real word reading and on the pseudo-word reading, while mono-literates and monolinguals performed in a similar way.

Nevertheless, general performance on real-word reading was far higher than performance on the non-words among all three groups.

As far as L3 English proficiency is concerned, the bi-literate group's scores on the English vocabulary test were higher than those of the other two groups while the difference between monolinguals and mono-literates on L3 proficiency test failed to reach significance. Nevertheless, bi-literate bilinguals' proficiency in L3 English was not significantly correlated with any of the phonological awareness nor reading ability test scores. This implies that their high scores on L3 English tests is not due to their higher proficiency. On the other hand, the English proficiency test scores of mono-literate bilinguals were positively and significantly, although weakly correlated with scores on the reading of real words. As for the monolingual group, positive, significant and moderate correlations were found between L3 English proficiency and scores on the syllable blending task and on the reading of real words task. This is particularly interesting since, recall that the mono-literate bilingual group did not outperform the monolingual group on the syllable blending task nor on the reading of English reading of real words. This could suggest that both groups rely on their English proficiency when dealing with recognizing words after putting syllables back into words and also when reading English real words. In fact, as long as group performance on L3 English proficiency is equivalent, so is their performance on both syllable blending and real word reading. It could be concluded that on those tasks that involve a certain degree of lexical processing, bilinguals that lack L1 Romanian literacy skills have no leverage over monolingual peers with the same Italian literacy skills. Bi-literate bilinguals, on the other hand, succeed in outperforming the other two groups even on those tasks that may activate L3 English lexicon.

We have seen how a different scenario was obtained for the remaining English PA tasks, namely phoneme segmentation, phoneme blending and onset-rime oddity as well as on the reading of English pseudo-words: while the highest scores were again obtained by the bi-literate children on all tasks, the mono-literate bilinguals managed to outperform the monolingual children. Moreover, English proficiency was not significantly correlated with any of these measurements, in any of the three groups. These results indicate that as far as phonemic and onset-rime awareness of English as a third language are concerned, when comparing bi-literate and mono-literate bilinguals, literacy gained in both languages spoken by a bilingual seems to make a difference. Moreover, the advantages of mere oral bilingualism over monolingualism are visible when comparing performance of bilingual children with L2 Italian literacy skills with Italian monolingual peers' performance on phonemic and onset-rime awareness of L3 English.

Additionally, the level of bilingualism seems to be a variable which has an influence on the degree of proficiency in the target language. Evidence to support this affirmation can be found in the above mentioned investigations conducted in bilingual communities in Spain on the acquisition of English as a foreign language, all of which insist on the beneficial influence of balanced bilingualism on third language acquisition. They all seem to confirm, as Cenoz (2003) states, the relevance of the Cummins (1976) ‘threshold hypothesis’, which associates a high level of bilingual proficiency with positive cognitive effects, and the importance of the Cummins (1991) ‘interdependence hypothesis’, which assumes that academic proficiency can be transferred between languages, in third language acquisition too. In light of these investigations’ results, different factors related to the level of bilingualism, such as receiving school instruction in the minority language (Lasagabaster, 1998), a higher frequency of use of the minority language (Sagasta, 2001), a better competence in the minority language (Bernaus, 1996) or a higher proficiency in both the minority and the majority language (Muñoz, 2000), happen to be related to better outcomes in different dimensions of L3 English.

The contribution of L1 Romanian literacy to phonological awareness and decoding in English (L3) emerged also from the multiple regression analysis. While bilingualism per se did not contribute reliably to English literacy skills development, bi-literacy did. Even after controlling for English proficiency, bi-literacy explained 16% of the variance in English phonological awareness and reading ability. These results converge with similar results reported in Schwartz *et al.* (2005) for first grade Russian-Hebrew bilinguals. In that study as well, bilingualism per se, without any L1 literacy experience, was found to have only a minor impact on early L2 literacy acquisition.

Bi-literates’ advantage in reading L3 English could also be conducted to the “bilingual shared homography” I was mentioning at the beginning of this work. Although both Romanian and Italian are phonemic languages, they represent shared phonemes with different graphemes, even in cognates (for example: /ts/: Romanian “ț”, *piață* /’pjatsa/ vs. “zz” Italian *piazza* /pjatsa/, square; /ʃ/ + /e/, /i/: Romanian “ș”, *șeic* /ʃe’ik/ vs “sc” Italian *sceicco* /ʃe’ikko/, ‘sheik’). This could be relevant to the present study as it could be suggested that since bi-literates are accustomed to represent the same sound in different ways (in Romanian and Italian) they are also more keen on learning further examples of homography and homophony that subsequent languages, like L3 English might present.

My results are also in line with previous findings from the study that Rauch *et al.*, (2012) conducted with Turkish – German bilinguals. They compared bi-literate and partly bi-literate German-Turkish with mono-literate monolingual German secondary students

regarding MA and L3 English proficiency. The participants were tested for reading skills in German, Turkish, and English, and their levels of bi-literacy were measured through Turkish and German reading scores. They were also given a metalinguistic awareness task in the form of a Language Aptitude Test (LAT), which required them to build words in two unknown languages, Swedish and Dutch, after certain rules were introduced in English. The study reported that bi-literate students outperformed both partly bi-literate and monolingual peers in both the metalinguistic awareness task and L3 English reading.

At the same time, this study's results are in line with the Linguistic and orthographic proximity hypothesis that claims that the similarities and differences between first and additional languages and scripts are expected to help or hinder the acquisition of target literacy. This hypothesis is rooted in Lado's (1957) Contrastive Analysis Hypothesis together with the later suggested Script-dependence hypothesis (Geva, 2014; Geva & Siegel, 2000). The Linguistic and orthographic proximity hypothesis compares L1, L2 and possibly even L3 or more languages and scripts to literacy acquisition in the target language (Kahn-Horwitz *et al.*, 2011). The degree of this proximity is expected to facilitate or alternatively to create obstacles when acquiring the target literacy. This hypothesis was recently supported in a study comparing fifth grade children who were literate in Russian (L1) and Hebrew (L2) versus their peers, who spoke Russian (L1) but were only literate in Hebrew (L2) and Hebrew speaking monolingual peers. These three groups were compared in their acquisition of EFL orthographic conventions. The results found that the children who were literate in Russian, outperformed their Russian (L1) and Hebrew (L2) mono-literate peers in their decoding and spelling of English short vowels. The authors concluded by posing the question whether their findings concerning a possible tri-literacy advantage (bi-literacy in both L1 and L2 plus emerging literacy in L3), is attributable to access to two orthographic systems when acquiring L3 literacy or whether such gains are due to the fact that the two orthographies in question were typologically related (Russian and English) versus rather distant scripts (Hebrew and English). They concluded that the specific advantage of emerging Russian–Hebrew speaking tri-literates on short vowel decoding and spelling is a result of the similar way the Russian and English scripts graphically represent vowels and not due to a tri-literacy experience per se. In order to further investigate the proposed language and orthographic proximity hypothesis, they suggested that additional research within a tri-literal context would be needed to examine the languages that are linguistically and orthographically distant.

The findings of the present study are also in line with Swain *et al.*, (1990) who applied Hudelson's (1987) theory to third language acquisition to see if, by extension, L2 literacy would aid in L3 literacy. Their results showed that "*literacy knowledge in the heritage language, regardless of whether learners are currently making use of those literacy skills, has a strong positive impact on the learning of a third language.*" (1990:73). Moreover, they also found that "*heritage language use without literacy has little effect.*" (1990:65).

The current study adds another piece to the tri-literacy puzzle by bringing evidence of early bi-literacy gains on L3 English acquisition in terms of phonological awareness and reading abilities investigating on L1 and L2 that are linguistically and orthographically close.

4. Last but not least, this study has shown that L2 and L3 acquisition processes are different especially when it come to the effects that the presence or the lack of L1 literacy skills can have on the phonological awareness and on the reading skills of subsequent languages.

Authors have already suggested that literacy acquisition in L3 cannot be considered a simple variation of L2 acquisition, and the development of language and literacy skills in L3 represents a distinct research domain (Cenoz & Genesee, 1998, Cenoz, 2003). Authors have also often underlined that TLA shares many of the characteristics of SLA, but there are also important differences because third language learners already have at least two languages in their linguistic repertoire (Cenoz, 2003). Third language learners can use this broader linguistic repertoire when learning a third language, as for example relating new structures to the two languages they already know, not just to one of them, as in the case of monolinguals (Cenoz, 2013). Learners who have gone through the process of learning a second language are also more experienced language learners and it is likely that they have developed certain skills and strategies for achieving the language-learning task. When facing the task of learning a third language, these skills and strategies can be reactivated and adapted to the new challenge.

As we have seen in this study, all three groups' behaviour, both as phonological awareness and reading skills, was different in Italian (L2) compared to English (L3), at least according to what we could see from performance of these specific tests and at an initial stage of acquisition of English as a foreign language. Recall that this study places itself within an L3 acquisition scenario in which the two bilingual grupos acquired the first two languages simultaneously and before the L3 was acquired ($L_x / L_y \rightarrow L_3$) in an early or consecutive bilingualism scenario. Moreover, L2 Italian was learned as a second language while L3 Italian was learned as a foreign language at school. As for the monolingual children, they all had Italian as first language and they were learning English as a foreign language.

This work offers additional interesting insights into the differences between bilingual children's PA and reading performance on Italian as an L2 and English as an L3. Indeed, it clearly emerged that bilingual performance on L2 Italian tasks was different than performance on the tasks in L3 English, both in a between and in a within groups analysis.

We have seen that the Romanian – Italian bi-literate bilingual group behaved better than Romanian – Italian bilinguals with literacy skills in Italian only, and than the Italian monolingual children, on almost all tasks that involved PA and reading testing, both in Italian and English. As far as PA testing in Italian is concerned, they outperformed the mono-literate group but not the monolingual group on the phoneme segmentation task and both mono-literate groups on the onset-rime task and the syllable blending task. Regarding PA testing in English, the bi-literates outperformed the other two groups on all tasks. Regarding reading testing in Italian, group comparisons on the pseudo-words showed that the bi-literate bilingual group outperformed the other two groups; a similar trend was observed for the English non-word reading, with the bi-literate group performing significantly better than the other two groups. We have also seen that proficiency in Italian was comparable across groups while bi-literates' proficiency in English has higher. However, bi-literate English proficiency was not significantly correlated with any of the phonological awareness (nor reading ability) test scores. It could be concluded that the positive effects that literacy skills in L1 exert on L2 performance are even more visible in L3 testing. I suggest that learning to read and write and not just speak a home language provides young heritage speakers with enhanced experience and linguistic leverage that is more evident in L3 than in L2 learning.

Moving to mono-literate children's performance compared to that of their monolingual peers, on Italian PA testing the two groups performed in a similar way on the phoneme blending and syllable blending tasks while the monolingual group performed better than the bilingual bi-literate group on the phoneme segmentation task and on the onset-rime task. Regarding the comparison of the two groups' performance on reading of Italian words and pseudo-words, it yielded similar results. Testing of the phonological awareness of English as a foreign language revealed a different scenario: the mono-literate group behaved better than the monolingual group on the two phoneme tests and on the onset-rime oddity test, and as well as them on the syllable blending test. No group differences were found on the two L3 English reading tasks. In sum, having just oral skills in the home language seems not to bring young Romanian – Italian bilinguals any advantage in terms of phonological awareness in Italian. On the contrary, since their performance failed to equal that of their Italian monolingual peers on two out of the four PA tests, mere oral

bilingualism would appear to be detrimental. On the other hand, bilingualism, even just in its oral form, seems to provide enough tools for better L3 acquisition when compared to monolingualism. In fact, the Romanian – Italian mono-literate bilinguals outperformed the Italian monolinguals on three out of the four English PA tests. It could be put forward that experience with two previous languages, even in their oral forms only, results in higher performance on L3 but not on L2 learning, at least as phonological testing is concerned.

This is perfectly in line with the idea that TLA is a distinct area of inquiry than SLA. L2 research showed that a learner's prior linguistic experience (from the L1) can influence L2 development, and that the entire L1 grammar may form the initial state of L2 acquisition (e.g. Schwartz & Sprouse, 1996). This is readily acknowledged in L3 research, as is the additional layer of complexity of two potential sources of cross-linguistic influence, the L1 and the L2. The results from this study seem to suggest that the joint contribution of L1 and L2 phoneme inventory does enhance bi-literates' awareness of L3 sounds while mere oral bilingualism is not enough when it comes to outperform monolinguals on L2 Pa Testing.

It could be concluded that TLA and SLA are different processes because, as it was previously underlined, third language learners have more language experience at their disposal by having access to two linguistic systems when acquiring a third language and are influenced by the general effects of bilingualism on cognition (Herdina & Jessner, 2002). Moreover, as Hoffmann (2001) underlined, "A comparison of bilingual and trilingual processing suggests that these similarities and differences are both of a quantitative and qualitative kind, and therefore trilingual competence is distinct from bilingual competence" (Hoffmann, 2001: 1).

Chapter 7 CONCLUSIONS

7.1 Limitations and further research

Linguistic research over the last two decades has uncovered a significant number of properties that, taken together, allow us to identify heritage language as a particular phenomenon within bilingualism. The recognition of HL speakers as a special speaker group has inspired a ream of new empirical, experimental, and theoretical studies (see Montrul 2016; Scontras *et al.* 2015, for overviews). To date, the bulk of this research has focused on comparisons between adult heritage speakers and adult L1 speakers of the baseline, i.e., the language constitutes the main input to heritage learners. Although this research has uncovered a number of structural properties characteristic of HL, the origins of these recurrent properties remain underexplored. In order to fully understand adult HL, it is imperative to consider the language of “future heritage speakers”: childhood bilinguals who are still receiving daily input in the home language but who operate under similar sociolinguistic conditions to those reported for adult heritage speakers (Polinsky, 2016). These conditions include residence outside the country where the heritage language is dominant, lack of formal education in the HL, a rapid switch to the dominant language of their society, and decreasing input from the home language as they spend more time in school (He, 2012).

This study has contributed to the advances of the understanding of the linguistic development in minority-language bilinguals, more specifically of the influence that bi-literacy exerts on the phonological awareness and decoding ability of second and third language. Nevertheless, it has a number of limitations.

One of the limitations pertains to the number of participants which makes the generalization of the findings problematic. This is something to bear in mind with all types of research but is particularly pertinent to the present research study since it employs only a small number of participants. Thus, in order to extrapolate the findings to other Romanian-Italian bilingual children, more research on this topic with larger sizes is necessary. In addition, a larger sample would facilitate more statistically significant results. Nonetheless, the design of this study has the potential to provide rich insights into first and subsequent language development and maintenance of a small set of bilingual Romanian – Italian children in Italy.

Another limitation is the lack of norms for Romanian child language acquisition which makes it difficult to draw any definitive conclusion with regard to the children's heritage language development. Thus, there is an obvious need for similar studies with Romanian monolinguals and with bilingual Romanian-Italian from as many cultural and linguistic communities as possible. Ideally, the children's performance on the tasks in this study could be compared with the performance of a homogenous group of Romanian monolingual children and with other Romanian-Italian bilingual children. Only by conducting such a study, can we hope to have a clear understanding of a "normal" minority language development in Romanian, to be able to compare with Italian monolingual children and to understand how bilinguals fall between the two cases.

Furthermore, the Romanian proficiency test (Romanian-adapted PPVT-4) adapted from Petrescu (2014) and the Romanian phonological awareness tests (which I adapted from the Italian adaptation by Stella *et al.*, 2000 of the PPVT-R; Dunn & Dunn, 1981) had some limitations in addition to their strengths. First, given that there are no established frequency lists for Romanian, the test items may not have been in the same frequency range as their translated equivalents which might have been a source of variability in the children's performance. To address the limitation, the stimuli were adapted as accurately as possible, with the help of a dictionary (Lazarescu, 2013) as well as a native speaker of Romanian, whose judgments were confirmed by a second native Romanian speaker. Second, the lack of Romanian norms for both tests makes it impossible to compare the children's performance with that of other Romanian monolingual children. Once norms are established, it should be possible to interpret the results in reference to the normal range.

A further limitation is the fact that this study represents an example of a one-point-in-time data collection. Future research should consider assessing the participants' phonological awareness and literacy skill more than once as the children progress from being illiterate and reliant upon on their spoken language when identifying and manipulating sounds to being fluent readers with varied degrees of written and spoken language skills.

Moreover, as Gottardo *et al.* (2011) argued, composite phonological awareness tests, in which all phonological awareness subcomponents are merged in one tap, tend to produce a gross result. Gottardo *et al.* (2011) also suggested systematically examining all subcomponents of phonological awareness in each language. Moreover, they implied that it is necessary to make each subcomponent equivalent in each language. For example, Spanish rhyming and English onset-rime awareness tasks are not the same, because Spanish

rhyiming tasks involve two-syllable words in which the second one is identical to the first (Gottardo *et al.*, 2011).

Finally, research has underlined the significant role of working memory, sometimes referred to as phonological memory or phonological short-term memory, in word reading skill through lexical knowledge (Jones *et al.*, 2008) and in non-verbal intelligence (Mungkethlang, 2016). My study lacks in measurement of working memory and, therefore the role of working memory in the Romanian-Italian bilingual context should be taken into account in future studies.

The next sub-section is the concluding one and I will highlight the study's contributions while presenting some directions for future research and suggesting some recommendations for creating optimal conditions for bilingual children's language development that can further results fruitful in subsequent language acquisition.

7.2 Implications

Romanian – Italian bilingual children in Italy receive main and mandatory education in Italian while Romanian is taught in some schools as a heritage language through LCCR courses. Therefore, the current study was not conducted in an “additive” bilingual context – one in which there are real opportunities for ongoing daily development and enrichment of L1 academic knowledge. Nevertheless, Romanian-Italian bi-literate bilinguals have still shown advantages on both Italian (L2) and English (L3) phonological awareness and reading skills compared to their Romanian – Italian bilingual mono-literate and Italian monolingual peers. According to Jessner (2010), metalinguistic awareness can be increased through explicitly teaching the similarities between languages. Moreover, Hornberger (2006) suggested that the bi-literate use of indigenous children's own language or of a heritage language as a medium of instruction alongside the dominant language mediates the dialogism, meaning-making, access to wider discourse, and taking of an active stance. Allowing bilingual children to read for the first time in their heritage language, for example Romanian, instead of in their L2 Italian only, would help them to maximally recognise the heritage language's phonological characteristics, especially when this heritage language is phonologically more complex than Italian, as it is the case of Romanian. The habit of comparing rules and properties across the two languages could help the bilinguals to develop a higher metalinguistic awareness (Jessner, 2010).

Moreover, since this study's finding suggested that literacy in the heritage language results in enhanced phonological awareness and reading ability also in English learned as a third and foreign language, bilingual speakers of heritage languages could further benefit from literacy acquisition in their heritage language. English teaching in most of the public primary schools in Italy relies on the lexical route for teaching English pronunciation and therefore children need to remember large vocabularies to read in English. Teaching other reading strategies, such as to use frequent consonant clusters for onsets or to identify words with similar rime sounds, could help students to decode English words also independently from lexical knowledge. By combining well developed phoneme and syllable awareness with other strategies, bilingual children with Italian as an L2 learners of English would be able to read English more efficiently.

Reference List

- Abu-Rabia, S. and Siegel, L., S. (2003) Reading skills in three orthographies: The case of trilingual Arabic-Hebrew-English--speaking Arab children. *Reading & Writing: An Interdisciplinary Journal*. 16 611-634.
- Adams, M. J. (1990). *Beginning to read: Thinking and learning about print*. Cambridge, MA: MIT Press.
- Adesope, O., Lavin, T., Thompson, T., & Ungerleider, C. (2010). A systematic review and meta analysis of the cognitive correlates of bilingualism. *Review of Educational Research*, 80(2), 207–245. doi:10.3102/0034654310368803.
- Ambrosini, M., & Molina, S., (2004). *Seconde generazioni: un'introduzione al futuro dell'immigrazione in Italia*. Torino, Fondazione Giovanni Agnelli.
- Andreou, G. (2007) Phonological awareness in bilingual and trilingual schoolchildren. *The Linguistic Journal*. 3 (3), 8-15
- Anthony, J., L. & Lonigan, C.J. (2004). The nature of phonological awareness: Converging evidence from four studies of preschool and early grade school children. *Journal of Educational Psychology*. 96 (1), pp.43-55.
- Anthony, J., L., Lonigan, C.J., Driscoll, K., Phillips, B.M. & Burgess, S.R., (2003). Phonological Sensitivity: A quasi-parallel progression of word structure units and cognitive operations. *Reading Research Quarterly*. 38, 470-487.
- Anthony, J., L. & Francis, D., J. (2005) *Development of Phonological Awareness*. American Psychological Society. 14, 255-259.
- Anthony, J., L., Solari, E., J., Williams, J., M., Schoger, K., D., Zhang, Z., Branum-Martin, L. & Francis, D., J. (2009) *Development of Bilingual Phonological Awareness in Spanish-Speaking English Language Learners: The Roles of Vocabulary, Letter Knowledge, and Prior Phonological Awareness*. *Scientific Studies of Reading*. 13 (6), 535-564.
- Aro, M., (2004). *Learning to read: the effect of orthography*. PhD Thesis, Jyväskylä studies in education, psychology and social research, University of Jyväskylä.
- Aronin, L., & Hufeisen, B. (Eds.). (2009). *The Exploration of multilingualism: development of research on L3, multilingualism, and multiple language acquisition*. Amsterdam; Philadelphia: John Benjamins Pub. Co.
- Baker, C. (2006). *Foundations of bilingual education and bilingualism (4th ed.)*. Clevedon: Multilingual Matters.
- Baker, C. (2007). *Becoming bilingual through bilingual education*. In P. Auer & L. Wei (Eds.), *Handbook of Multilingualism and Multilingual Communication* (pp. 131–154). Berlin: Mouton de Gruyter.
- Balke-Aurell, G. & T. Linblad (1982). *Immigrant children and their languages*. Department of Education Research, University of Gothenburg
- Barac, R., & Bialystok, E. (2011) Cognitive development of bilingual children. *Language Teaching*. 44 (1), 36-54.
- Barac, R., & Bialystok, E. (2012) Bilingual Effects on Cognitive and Linguistic Development: Role of Language, Cultural Background and Education. *Child Development*. 83 (2), 413-422.
- Barac, R., Bialystok, E., Castro, D. C., & Sanchez, M. (2014). The cognitive development of young dual language learners: A critical review. *Early Childhood Research Quarterly*, 29(4), 699–714.
- Barker, T A., Torgesen, J, K. & Wagner. R. K. (1992). The role of orthographic processing skills on five different reading tasks. *Reading Research Quarterly*. 27, 334-345.
- Bardel, C. & Falk, Y. (2007) The role of the second language in third language acquisition: the case of Germanic syntax. *Second Language Research*, 23, 459–484.

- Basetti, B. (2007) Bilingualism, biliteracy, and metalinguistic awareness: word awareness in English and Japanese users of Chinese as a Second Language. *Birkbeck Studies in Applied Linguistics*. 2 1-21
- Bailey, N., Madden, C., & Krashen, S. D. (1974). Is there a “natural sequence” in adult second language learning? *Language Learning*, 24(2), 235–243.
- Belacchi, C., Scalisi, T. G., Cannoni, E., & Cornoldi, C. (2008). *CPM - Coloured Progressive Matrices (Italian Edition)*. Firenze: Giunti Psychometrics.
- Bentin, S., & Leshem, H. (1993). On the interaction between phonological awareness and reading acquisition: It's a two-way street. *Annals of Dyslexia*, 43, 125–14
- Bertinetto, P. M., & Loporcaro, M. (2005). The sound pattern of Standard Italian, as compared with the varieties spoken in Florence, Milan and Rome. *Journal of the International Phonetic Association*, 35(02), 131-151.
- Berthoud-Papandropoulou I. (1978) An Experimental Study of Children's Ideas About Language. In: Sinclair A., Jarvella R.J., Levelt W.J.M. (eds) *The Child's Conception of Language*. Springer Series in Language and Communication, vol 2. Springer, Berlin, Heidelberg. https://doi.org/10.1007/978-3-642-67155-5_4.
- Bettoni, C. (2001). *Imparare un'altra lingua*. Bari: Laterza.
- Bialystok, Ellen (1994a). *Analysis and control* in the development of second language proficiency. *Studies in Second Language Acquisition* 16.2: 157-168.
- Bialystok, Ellen (1994b). Representation and ways of knowing: three issues in second language acquisition. Ellis, Nick, ed. *Implicit and Explicit Learning of Languages*. London: Academic Press, 549-569.
- Bialystok, E. (2001). *Bilingualism in Development*. Cambridge: Cambridge University Press.
- Bialystok, E. (2002). Acquisition of Literacy in Bilingual Children: A Framework for Research. *Language Learning*, 52, 159–199.
- Bialystok, E., Craik, F., & Luk, G. (2008). Cognitive control and lexical access in younger and older bilinguals. *Journal of experimental psychology. Learning, memory, and cognition*, 34(4), 859–873.
- Bialystok, E., Luk, G. and Kwan, E. (2005) Bilingualism, biliteracy, and learning to read: interactions among languages and writing system. *Scientific Studies of Reading*. 9 (1), 43-61.
- Bialystok, E., Majumder, S. and Martin, M.M. (2003) Developing phonological awareness: Is there a bilingual advantage? *Applied Psycholinguistics*. 24 27-44.
- Borleffs E., Maassen B. A. M., Lyytinen H., Zwarts F. (2017). Measuring orthographic transparency and morphological-syllabic complexity in alphabetic orthographies: a narrative review. *Read. Writ.* 30 1617–1638. [10.1007/s11145-017-9741-5](https://doi.org/10.1007/s11145-017-9741-5).
- Bortolini, U. (1995). *PFLI Prove per la valutazione fonologica del linguaggio infantile*. Venezia: Edit Master
- Bowey, J. A. (2005). Predicting individual differences in learning to read. In M. J. Snowling & C. Hulme (Eds.), *The science of reading: A handbook* (pp. 155–172). Malden, MA: Blackwell Publishing.
- Bryant, P. and Bradley, L. (1985) *Children's Reading Problems*. 1st ed. Oxford, United Kingdom: Basil Blackwell.
- Bradley, R. H., Caldwell, B. M., Rock, S. L., Ramey, C. T., & *et al.* (1989). Home environment and cognitive development in the first 3 years of life: A collaborative study involving six sites and three ethnic groups in North America. *Developmental Psychology*, 25(2), 217–235. [doi:10.1037/0012-1649.25.2.217](https://doi.org/10.1037/0012-1649.25.2.217)
- Branum-Martin, L., Mehta, P. D., Fletcher, J. M., Carlson, C. D., Ortiz, A., Carlo, M. S., & Francis, D. J. (2006). Bilingual phonological awareness: Multilevel construct validation among Spanish-speaking kindergartners in transitional bilingual education classrooms. *Journal of Educational Psychology*, 98, 170–181.

- Branum-Martin, L., Tao, S., Garnaat, S., Bunta, F., & Francis, D. J. (2012). Meta-analysis of bilingual phonological awareness: Language, age, and psycholinguistic grain size. *Journal of Educational Psychology*, 104, 932–944.
- Brohy, C. (2001). Generic and/or specific advantages of bilingualism in a dynamic plurilingual situation: The case of French as official L3 in the school of Samedan (Switzerland). *International Journal of Bilingual Education and Bilingualism* 4, 38–49.
- Bruck, M., Genesee, F., & Caravolas, M. (1997). A cross-linguistic study of early literacy acquisition. In B. A. Blachman (Ed.), *Foundations of reading acquisition and dyslexia: Implications for early intervention*, 145-162. Mahwah, NJ: Erlbaum.
- Bruck, M., Genesee, F., & Caravolas, M. (1997). *A cross-linguistic study of early literacy acquisition*. In B. A. Blachman (Ed.), *Foundations of reading acquisition and dyslexia: Implications for early intervention* (p. 145–162). Lawrence Erlbaum Associates Publishers.
- Brooks-Gunn, J., & Duncan, G. J. (1997). The Effects of Poverty on Children. *The Future of Children*, 7(2), 55.
- Bryant, P. & Bradley, L. (1985) *Children's Reading Problems*. 1st ed. Oxford, United Kingdom: Basil Blackwell.
- Butler, Y. G., & Hakuta, K. (2006). Bilingualism and Second Language Acquisition. In T.K. Bhatia & W. C. Ritchie (Eds.), *The Handbook of Bilingualism* (pp. 114–144). Blackwell Publishing.
- Cabrelli Amaro, J., Iverson, M. (2018). Third language acquisition. In *Handbook of Spanish Linguistics*. Cambridge: Cambridge University Press.
- Cabrelli Amaro, J., & Wrembel, M. (2016). Investigating the acquisition of phonology in a third language – a state of the science and an outlook for the future. *International Journal of Multilingualism*, 13(4), 395–409. doi:10.1080/14790718.2016.1217601
- Calvi, M. V. (2016), Spagnolo e italiano nelle seconde generazioni di migranti ispanofoni in Italia. *Quaderns d'Italia* 21, 2016: 45-62.
- Commissaire, E., Duncan, L.G. & Casalis, S. (2011), Cross-language transfer of orthographic processing skills: a study of French children who learn English at school. *Journal of Research in Reading*, 34: 59-76. <https://doi.org/10.1111/j.1467-9817.2010.01473.x>.
- Campbell, R. and Sais, E. (1995) Accelerated metalinguistic (phonological) awareness in bilingual children. *British Journal of Developmental Psychology*. 13 61-68
- Caravolas, M. (2006). Refining the psycholinguistic grain size theory: Effects of phonotactic structure and task demands on the size of the phonological units accessed by young children. *Developmental Science*, 9, 445–447.
- Caravolas, M., Lervåg, A., Mousikou, P., Efrim, C., Litavský, M., Onochi-Quintanilla, E., *et al.* (2012). Common patterns of prediction of literacy development indifferent alphabetic orthographies. *Psychological Science*, 23, 678e686. <http://dx.doi.org/10.1177/0956797611434536>
- Carlisle, J. F., Beeman, M. M., Davis, L. H., & Spharim, G. (1999). Relationship of metalinguistic capabilities and reading achievement for children who are becoming bilingual. *Applied Psycholinguistics*, 20, 459–478.
- Carlson, R., Elenius, K., Granstrom, B. & Hunnicutt, S. (1985). Phonetic and orthographic properties of the basic vocabulary of five European languages. *Speech Transmission Laboratory of Stockholm - Quarterly Progress and Status Report*, 1, 63- 94.
- Carlson, S. M., & Meltzoff, A. N. (2008). Bilingual experience and executive functioning in young children. *Developmental Science*, 11(2), 282–298.
- Carroll, J., Snowling, M., Hulme, C., & Stevenson, J. (2003). The development of phonological awareness in preschool children. *Developmental Psychology*, 39, 913-923

- Carter, R., (2003). Language awareness, *ELT Journal*, Volume 57, Issue 1, 64–65.
- Cenoz, J. (2001). The effect of linguistic distance, L2 status and age on cross-linguistic influence in third language acquisition. In J. Cenoz, B. Hufeisen & U. Jessner (Eds.), *Cross-Linguistic Influence in Third Language Acquisition: Psycholinguistic Perspectives* (pp. 8-20). Clevedon: Multilingual Matters.
- Cenoz, J. (2003). The additive effect of bilingualism on third language acquisition: a review. *International Journal of Bilingualism*, 7, 71–89.
- Cenoz, J. (2009). *Towards multilingual education: Basque educational research from an international perspective*. Clevedon: Multilingual Matters.
- Cenoz, J. (2013). The influence of bilingualism on third language acquisition: focus on multilingualism. *Language Teaching*. 46 (1), 71-86.
- Cenoz, J., & Valencia, J. F. (1994). Additive trilingualism: Evidence from the Basque Country. *Applied Psycholinguistics*, 15(02), 195.
- Cenoz, J., & Genesee, F. (1998). Psycholinguistic perspectives on multilingualism and multilingual education. In J. Cenoz & F. Genesee (Eds.), *Beyond Bilingualism: Multilingualism and Multilingual Education* (pp. 16–32). Clevedon: Multilingual Matters.
- Cenoz, J., & Gorter, D. (2011). A Holistic Approach to Multilingual Education: Introduction. *The Modern Language Journal*, 95(3), 339–343.
- Cenoz, J., & Hoffmann, C. (2003). Acquiring a third language: what role does bilingualism play? (Introduction). *International Journal of Bilingualism*, 7, 1–8.
- Cisero, C. A., & Royer, J. M. (1995). The development and cross-language transfer of phonological awareness. *Contemporary Educational Psychology*, 20(3), 275–303. doi:10.1006/ceps.1995.1018
- Chall, J. (1996). American Reading Achievement: Should We Worry? *Research in the Teaching of English*, 30(3), 303-310. Retrieved November 30, 2020, from <http://www.jstor.org/stable/40171366>
- Cheung, H., Chen, H., Lai, C., Wong, O., & Hills, M. (2001). The development of phonological awareness: effects of spoken language experience and orthography. *Cognition*, 81(3), 227-241.
- Chien, C., Kao, L., & Wei, L. (2008). The role of phonological awareness in development of young Chinese EFL learners. *Language Awareness*, 17, 271-288.
- Chitoran, I. (2001). *The Phonology of Romanian: A Constraint-Based*. Berlin, New York: Mouton de Gruyter.
- Cingolani, P., (2009). *Romeni d'Italia. Migrazioni, vita quotidiana e legami transnazionali*. Bologna, Il Mulino.
- Clyne, M., C. R. Hunt & Y. Isaakidis (2004). Learning a community language as a third language. *The International Journal of Multilingualism*, 1, 33–52.
- Cohal A. V., (2014). *Mutamenti nel romeno di immigrati in Italia*, Franco Angeli, Milano 2014.
- Comeau, L., Cormier, P., Grandmaison, E. and Lacroix, D. (1999) A longitudinal study of phonological processing skills in children learning to read in a second language. *Journal of Educational Psychology*. 91 (1), 29-43.
- Cornoldi, C., Miato, L., Molin, A., & Poli, S. (2009). *PRCR2 – Prove di prerequisite per la diagnosi delle difficoltà di lettura e scrittura*. Firenze: Organizzazioni Speciali.
- Council of Europe (2010). *Language Policy Division*. Retrieved from http://www.coe.int/t/dg4/linguistic/default_EN.asp?
- Cruttenden, A., (2014). *Gimson's Pronunciation of English*, 8th Edition. London. Routledge
- Cummins, J. (1978). Bilingualism and the development of meta-linguistic awareness. *Journal of Cross-Cultural Psychology*, 9, 131–149.
- Cummins, J. (1979). Linguistic interdependence and the educational development of bilingual children. *Review of educational research*, 49(2), 222–251.

- Cummins, J. (1980) The cross-lingual dimensions of language proficiency: Implications for bilingual education and the optimal age issue. *TESOL Quarterly*, 4 (2), 175-187.
- Cummins, J. (1981). The role of primary language development in promoting educational success for language minority students. In *Schooling and Language Minority Students: A Theoretical Framework* (pp. 3–49). Sacramento, CA: California Department of Education.
- Cummins, J. (1984). *Bilingualism and Special Education: Issues in Assessment and Pedagogy*. Clevedon: Multilingual Matters.
- Cummins, J. (1991). Interdependence of first- and second-language proficiency in bilingual children. In Bialystok, E. (ed), *Language Processing in Bilingual Children*. Cambridge: Cambridge University Press, 70-89. 21
- Cummins, J. (2012). The intersection of cognitive and sociocultural factors in the development of reading comprehension among immigrant students. *Reading and Writing*, 25(8):1973–1990. doi: 10.1007/s11145-010-9290-7.
- Cummins, J. (2000). *Language, power and pedagogy: Bilingual children in the crossfire*. Clevedon, England: Multilingual Matters.
- Cunningham, A. E., & Stanovich, K. E. (1990). Early spelling acquisition: Writing beats the computer. *Journal of Educational Psychology*, 82(1), 159–162. <https://doi.org/10.1037/0022-0663.82.1.159>
- Cunningham, A. E., Perry, K. E., Stanovich, K. E., & Share, D. L. (2002). Orthographic learning during reading: Examining the role of self-teaching. *Journal of Experimental Child Psychology*, 82, 185–199.
- D'Angiulli, A., Siegel, L., S. and Serra, E. (2001) The Development of Reading in English and Italian in Bilingual Children. *Applied Psycholinguistics*. 22 479-507.
- Daniels, P. T., & Bright, W. (1996). *The world's writing systems*. New York: Oxford University Press.
- David, C., Roşan, A., & Gavril, L. (2019). Reading Strategies of Romanian Readers with Dyslexia in Upper Primary Grades. *Performance Evaluation*, 2, 89-98.
- De Angelis, G. (2007). *Third or Additional Language Acquisition*. Clevedon: Multilingual Matters.
- De Angelis, G., & Dewaele, J. M., (2011). *New trends in crosslinguistic influence and multilingualism research*. Clevedon: Multilingual Matters.
- De Angelis, G., & Selinker, L. (2001). Interlanguage transfer and competing linguisticsystems in the multilingual mind. In J. Cenoz, B. Hufeisen & U. Jessner (Eds.), *Cross-linguistic influence in a third language acquisition. Psycholinguisticperspectives* (pp. 42–58). Clevedon: Multilingual Matters.
- Deacon, S. H. (2012). Sounds, letters and meanings: The independent influences of phonological, morphological and orthographic skills on early word reading accuracy. *Journal of Research in Reading*, 35(4), 456–475.
- De Bot, K., & Jaensch, C. (2015). What is special about L3 processing? *Bilingualism: Language and Cognition*, 18(2), 130–144.
- Defior, S., Gutiérrez-Palma, N., & Cano-Marín, M.J. (2012). Prosodic awareness skills and literacy acquisition in Spanish. *Journal of Psycholinguistic Research*. 41, 285-294.
- DeKeyser, R., & Larson-Hall, J. (2005). What does the critical period really mean? In J.F. Kroll & A. M. B. De Groot (Eds.), *Handbook of bilingualism: Psycholinguistic approaches* (pp. 88–108). Oxford, England: Oxford University Press.
- Demont, E., & Gombert, & J. E. (1996). Phonological awareness as a predictor of recoding skills and syntactic awareness as a predictor of comprehension skills. *British Journal of Educational Psychology*, 66(3), 315-332. doi: 10.1111/j.2044-8279.1996.tb01200.x

- De Jong, P. F., & Messbauer, V. C. (2011). Orthographic context and the acquisition of orthographic knowledge in normal and dyslexic readers. *Dyslexia*, 17, 107–122. doi:10.1002/dys.427
- Dickinson, D.K., McCabe, A., Clarck-Chiarelli, N. and Wolf, A. (2004) Cross-language transfer of phonological awareness in low-income Spanish and English bilingual preschool children. *Applied Psycholinguistics*. 5 323-347.
- Diminescu, D. (2003). *Visibles, mais peu nombreux...: les circulations migratoires roumaines*. Paris: Ed. de la Maison des sciences de l'homme.
- Dinu, A. & Dinu, L.P. (2006). On the data base of Romanian syllables and some of its quantitative and cryptographic aspects. *Proceedings of the LREC, Italy, 1795-1798*.
- Dragomirescu A. (2012), *Ortografia limbii române: definiție, scurt istoric, instrumente*. Revista Limba română 1–2.
- Duncan, L. G., Seymour, P. H. K., and Hill, S. (2000). A small-to-large unit progression in metaphonological awareness and reading? *Q. J. Exp. Psychol. A Hum. Exp. Psychol.* 53, 1081–1104.
- Duranovic, M., Huseinbasic, M. & Tinjak, S. (2012) Development of phonological awareness and letter knowledge in Bosnian preschool children. *International Journal of Linguistics*. 4 (2), 18-34.
- Durgunoglu, A. Y. (1998). Acquiring literacy in English and Spanish in the United States. In A. Y. Durgunoglu & L. Verhoeven (Eds.), *Literacy development in a multilingual context: Cross-cultural perspectives* (pp. 135–145). Mahwah, NJ: Lawrence Erlbaum Associates.
- Durgunoglu, A. Y., & Oney, B. (1999). A cross-linguistic comparison of phonological awareness and word recognition. *Reading and Writing*, 11(4), 281-299. doi: 10.1023/A:1008093232622
- Durgunoglu, A.Y., Nagy, W.E. and Hancin-Bhatt, B.J. (1993) Cross-Language Transfer of Phonological Awareness. *Journal of Educational Psychology*. 85 (3), 453-465.
- Edwards, J. (2003). The importance of being bilingual. In J. M. Dewaele, L. Wei, & A. Housen (Eds.), *Bilingualism: Beyond basic principles* (pp. 28–42). Clevedon: Multilingual Matters.
- Ehri, L. C. (1986). Sources of difficulty in learning to spell and read. *Advances in Developmental & Behavioral Pediatrics*, 7, 121–195.
- Ehri, L. (1991). Development of the ability to read words. In R. Barr, M. Kamil, P. Mosenthal, & P. Pearson (Eds.), *Handbook of reading research* (Vol. 2, 383-417). White Plains, NY: Longman.
- Ehri, L. C. (1995). Phases of development in learning to read words by sight. *Journal of Research in Reading*, 18(2), 116–125.
- Ehri, L.C. (2005). Development of Sight Word Reading: Phases and Findings. In M. S. Snowling, & C. Hulme (Eds.), *The science of reading: A handbook* (pp. 272–295). Oxford: Basil Blackwell.
- Ehri, L. (2015). How children learn to read words. In A. Pollatsek & R. Treiman (Eds.), *The Oxford handbook of reading* (pp. 293–310). New York, NY: Oxford University Press
- Ehri, L., & Wilce, L. (1986). The influence of spellings on speech: Are alveolar flaps /d/ or /t/? In D. Yaden & S. Templeton (Eds.), *Metalinguistic awareness and beginning literacy: Conceptualizing what it means to read and write* (pp. 101-114). Portsmouth, NH: Heinemann.
- Ehri, L., C., Nunes, S., R., Willows, D.M., Schuster, B.V., Yaghoub-Zadeh, Z. & Shanahan, T. (2001) Phonemic awareness instruction helps children learn to read: Evidence from the national Reading Panel's Meta-Analysis. *Reading Research Quarterly*. 36 (TOC), 250-287.

- Ellis, N. C., & Hooper, A. M. (2001). Why learning to read is easier in Welsh than in English: Orthographic transparency effects evinced with frequency-matched tests. *Applied Psycholinguistics*, 22, 571–599.
- Ehrich, J. F., & Meuter, R. F. I. (2009). Acquiring an Artificial Logographic Orthography: The Beneficial Effects of a Logographic L1 Background and Bilinguality. *Journal of Cross-Cultural Psychology*, 40(5), 711–745. <https://doi.org/10.1177/0022022109338624>.
- Escudero, P., Broersma, M. and Simon, E. (2013) Learning words in a third language: effects of vowel inventory and language proficiency. *Language and Cognitive Processes*. 28 (6), 746-761.
- European Commission (2011). Civil society platform on multilingualism: Policy recommendations for the promotion of multilingualism in the European Union. Brussels: European Union. Retrieved from http://ec.europa.eu/languages/pdf/doc5088_en.pdf.
- Extra, G., & Yagmur, K. (Eds.). (2004). Multidisciplinary perspectives. In G. Extra & K. Yağmur (Eds.), *Urban multilingualism in Europe: Immigrant minority languages at home and school* (pp. 11–108). Clevedon, UK: Multilingual Matters.
- Falk, Y. and Bardel, C. (2010). The study of the role of background languages in third language acquisition. The state of the art. *Iral*. 48, 185-219.
- Flynn, S., Foley, C. & Vinnitskaya, I. (2004). The cumulative-enhancement model for language acquisition. Comparing adults' and children's patterns of development in first, second and third language acquisition. *International Journal of Multilingualism*, 1, 3-17.
- Fries, C. (1945). *Teaching and learning English as a foreign language*. Ann Arbor, MI: University of Michigan Press.
- Frost, R. (2005). Orthographic systems and skilled word recognition processes in reading. In M. S. Snowling, & C. Hulme (Eds.), *The science of reading: A handbook* (pp. 272–295). Oxford: Basil Blackwell.
- Frost, R. (2012). Towards a universal model of reading. *Behav. Brain Sci.* 35,263–329.
- Foulin, J. N. (2005). Why is letter-name knowledge such a good predictor of learning to read? *Reading and Writing: An Interdisciplinary Journal*, 18, 129–155.
- Fuciji, M., (2007). On peculiarities of English and Romanian consonants. *Analele științifice ale Universității de stat “B.P. Hasdeu” din Cahul*, 3, 37-42.
- Galatà, V., Zmarich, C. (2011a). Le non-parole in uno studio sulla discriminazione e sulla produzione dei suoni consonantici dell'italiano da parte di bambini pre-scolari. In Gili Fivela, B., Stella, A., Garrapa, L. & Grimaldi, M. (Eds.), *Contesto comunicativo e variabilità nella produzione e percezione della lingua* (Vol. 7). Roma: Bulzoni Editore, 118-129.
- Galatà, V., Zmarich, C. (2011b). Una proposta per valutare l'influenza fonetico-fonologica della lingua di origine dei bambini figli di immigrati sull'acquisizione dell'italiano. In Bruno, G.C., Caruso, I., Sanna, M., Vellecco, I. (Eds.), *Percorsi migranti*. Milano: McGraw-Hill Companies, Publishing Group Italia, 301-317.
- Galatà, V., Meneguzzi, G., Conter, L. & Zmarich, C. (2012). Primi dati sull'acquisizione fonetico-fonologica dell'italiano L2 in prescolari rumeni. In Paoloni, A., Falcone, M. (Eds.), *La voce nelle applicazioni* (Vol. 8). Roma: Bulzoni Editore, 35-50.
- Galatà, V., Angonese G., Conter, L., & Zmarich, C. (2020). Italian as L2 in Romanian pre-schoolers. Evidence from a perception and production task. In *Fattori sociali e biologici nella variazione fonetica / Social and biological factors in speech variation*, C. Bertini, C. Celata, G. Lenoci, C. Meluzzi, I. Ricci (Eds.) (pp.257-280). AISV, Milano, 2017

- Gallagher, A., Frith, U., & Snowling, M. J. (2000). Precursors of literacy delay among children at genetic risk of dyslexia. *Journal of Child Psychology and Psychiatry*, 41(2), 202–213.
- García, O. (2011). *Bilingual education in the 21st century. A global perspective*. Malden, MA: John Wiley & Sons.
- Garton, A., & Pratt, C. (1989). *Learning to be literate: The development of spoken and written language*. Basil Blackwell.
- Gass, S. (1979) Language Transfer and Universal Grammatical Relations. *Language Learning*, 29 (2), 327-344.
- Gass, S. M., & Selinker, L. (Eds.). (1994). *Language transfer in language learning*. Amsterdam: John Benjamins.
- Genesee, F., Geva, E., Dressler, D. & Kamil, M. (2006). Synthesis: Cross-linguistic relationships. In D.L. August & T. Shanahan (Ed.), *Developing literacy in a second language: Report of the National Literacy Panel* (pp. 153–174). Mahwah, NJ: Erlbaum.
- Geva, E., & Siegel, L. S. (2000). Orthographic and cognitive factors in the concurrent development of basic reading skills in two languages. *Reading and Writing: An Interdisciplinary Journal*, 12, 1–30.
- Geudens, A. (2006). Phonological awareness and learning to read a first language: Controversies and new perspectives. *LOT Occasional Series*, 6, 25-43
- Geva, E., & Wade-Woolley, L. (1998). Component processes in becoming English-Hebrew biliterate. In A.Y. Durgunoglu & L. Verhoeven (Eds.). *Literacy Development in a Multilingual Context: Cross-Cultural Perspectives* (pp. 85–110). Mahwah, NJ: Lawrence Erlbaum Associates.
- Geva, E., & Wang, M. (2001). The development of basic reading skills in children: A cross-language perspective. *Annual Review of Applied Linguistics*, 21, 182-204.204.
- Georgiou, G. K., Das, J. P., & Hayward, D. (2009). Revisiting the “Simple View of Reading” in a group of children with poor reading comprehension. *Journal of Learning Disabilities*, 42(1), 76–84. doi:10.1177/0022219408326210.
- Georgiou, G., Torppa, M., Manolitsis, G., Lyytinen, H., & Parrila, R. (2012). Longitudinal predictors of reading and spelling across languages varying in orthographic consistency. *Reading and Writing*, 25, 321–346.
- Gogolin, I. (2011). *Bilingual education*. In J. Simpson (Ed.), *The Routledge Handbook of Applied Linguistics* (pp. 229–242). London: Routledge.
- Goriot, C., van Hout, R., Broersma, M., Lobo, V., McQueen, J. M., & Unsworth, S. (2018). Using the peabody picture vocabulary test in L2 children and adolescents: effects of L1. *International Journal of Bilingual Education and Bilingualism*, 1–23.
- Gollan T.H., Montoya, R.I., Fennema-Notestine C, Morris S. K. (2005). Bilingualism affects picture naming but not picture classification. *Mem Cognit.* 33(7):1220-34.
- Gonzalez, L. A. (1986). *The effect of first language education on the second language and academic achievements of Mexican immigrant elementary school children in the United States*. Doctoral dissertation, University of Illinois at Urbana-Champaign.
- Goodman, I., Libenson, A., & Wade-Woolley, L. (2010). Sensitivity to linguistic stress, phonological awareness and early reading ability in preschoolers. *Journal of Research in Reading*. 33, 113-127.
- Goodrich, J. M. & Lonigan, C. J. (2014). Lexical characteristics of words and phonological awareness skills of preschool children. *Applied Psycholinguistics*, 1-23.
- Goodrich, J. M., & Lonigan, C. J. (2016). Lexical characteristics of Spanish and English words and the development of phonological awareness skills in Spanish-speaking language-minority children. *Reading and Writing*, 29(4), 683–704. doi:10.1007/s11145-016-9622-3.

- Goodrich, J.M., Lonigan, C.J. & Farver, J.M. (2014) Children's expressive language skills and their impacts on the relation between First and Second language phonological awareness skills. *Scientific Studies of Reading*, 18 (114), 129.
- Goswami, U. (2006). Orthography, Phonology, and Reading Development: A CrossLinguistic Perspective. In: Joshi, R.M. and Aaron, P.G., eds. (2006) *Handbook of Orthography and Literacy*. London: Lawrence Erlbaum Associates, 463-480.
- Goswami, U. (2008) The development of reading across languages. *Annals of the New York Academy of Sciences*, 11 (45), 1-12.
- Goswami, U. & Bryant, P. (1990) *Phonological Skills and Learning to Read*. UK: Lawrence Erlbaum Associates Ltd.
- Gottardo, A., Gu, Y., Mueller, J., Baciú, I., & Pauchulo, A.L. (2011). Factors affecting the relative relationships between first- and second-language phonological awareness and second language reading. In A. Y. Durgunoglu (Ed.), *Language and literacy development in bilingual settings* (pp. 141-167). New York: Guilford.
- Gottardo, A., & Mueller, J. (2009). Are first- and second-language factors related in predicting second-language reading comprehension? A study of Spanish-speaking children acquiring English as a second language from first to second grade. *Journal of Educational Psychology*, 101, 330-344.
- Gottardo, A., Yan, B., Siegel, L. S., & Wade-Woolley, L. (2001). Factors related to English reading performance in children with Chinese as a first language: More evidence of cross-language transfer of phonological processing. *Journal of Educational Psychology*, 93(3), 530-542.
- Gottardo, A., Chiappe, P., Yan, B., Siegel, L., & Gu, Y. (2006). Relationships between first and second language phonological processing skills and reading in Chinese-English speakers living in English-speaking contexts. *Educational Psychology*, 26, 367-393.
- Gough, P. B., & Tunmer, W. E. (1986). Decoding, reading, and reading disability. *Remedial and Special Education*, 7(1), 6-10. doi:10.1177/074193258600700104
- Grosjean, F. (1989). Neurolinguists, beware! The bilingual is not two monolinguals in one person. *Brain and Language*, 36, 3-15
- Gut, U. (2010) Cross-linguistic influence in L3 phonological acquisition. *International Journal of Multilingualism*, 7 (1), 19-38.
- Hammarberg, B. (2010). The languages of the multilingual: Some conceptual and terminological issues. *International Review of Applied Linguistics*, 48, 91-104.
- Harris, M., & Giannouli, V. (1999). Learning to read and spell in Greek: The importance of letter knowledge and morphological awareness. In M. Harris & G. Hatano (Eds.), *Learning to read and write: A cross-linguistic perspective*. New York, NY: Cambridge University Press.
- Hayes-Harb, R. (2006). N
- Hatcher, P., J., Hulme, C. and Ellis, A., W. (1994) Ameliorating early reading failure by integrating the teaching of reading and phonological skills: the phonological linkage hypothesis. *Child Development*, 65 41-57.
- He A.W. (2012). Heritage Language Learning and Socialization. In: Hornberger N.H. (eds) *Encyclopedia of Language and Education*. Springer, Boston, MA.
- Herdina, P., & Jessner, U., (2002). *A Dynamic Model of Multilingualism*. Multilingual Matters.
- Herrmann, J. A., Matyas, T., & Pratt, C. (2006). Meta-analysis of the nonword-reading deficit in specific reading disorder. *Dyslexia*, 12, 195-221.
- Hoffmann, C. (2001). Towards a description of trilingual competence. *International Journal of Bilingualism*, 5(1), 1-17
- Hogan, T. P., Catts, H. W., & Little, T. D. (2005). The relationship between phonological awareness and reading implications for the assessment of phonological awareness. *Language, Speech, and Hearing Services in Schools*, 36(4), 285-293.

- Hollingshead, A. B. (1975). Four-factor index of social status. Unpublished manuscript, Department of Sociology, Yale University, New Haven, Connecticut, U.S.
- Hornberger, N. H. (1990). Creating successful learning contexts for bilingual literacy. *Teachers College Record*, 92(2), 212–29
- Hornberger, N.H. (ed.): 2003, *Continua of Bi-literacy: An Ecological Framework for Educational Policy, Research and Practice in Multilingual Settings*, Multilingual Matters, Clevedon, UK.
- Hornberger, N. H. (2006). Voice and Biliteracy in Indigenous Language Revitalization: Contentious Educational Practices in Quechua, Guarani, and Maori Contexts. *Journal of Language, Identity & Education*, 5 (4), 277-292.
- Hoover, W., & Gough, P. B. (1990). The simple view of reading. *Reading and Writing*, 2(2), 127–160. doi:10.1007/BF00401799.
- Hudelson, S. (1987) The role of native languageliteracy in the education of languageminority children. *Language Arts*, 64 (3), 826-841.
- Hutzler, F., Ziegler, J. C., Perry, C., Wimmer, H., & Zorzi, M. (2004). Do current connectionist models accounts for reading development in different languages? *Cognition*, 91, 273–296.
- Ioup, G. (2008). Exploring the role of age in the acquisition of a second language phonology. In Hansen Edwards, J.G., Zampini, M.L. (Eds.), *Phonology and Second Language Acquisition*. Philadelphia: John Benjamins Publishing Company, 41-62.
- Istat (2020). Censimento permanente della popolazione e delle abitazioni: gli stranieri in Italia. Retrieved from <https://www.istat.it/it/archivio/251651>.
- Janssen, M., Bosman, A. M. T., & Leseman, P. P. M. (2011). Phoneme awareness, vocabulary and word decoding in monolingual and bilingual Dutch children. *Journal of Research in Reading*, 36(1), 1–13.
- Jaspaert, K. & G. Lemmens (1990). Linguistic evaluation of Dutch as a third language. In M. Byram & J. Leman (eds.), *Bicultural and trilingual education: The Foyer model in Brussels*. Clevedon: MultilingualMatters, 30–56.
- Jessner, U. (2006). *Linguistic Awareness in Multilinguals. English as a ThirdLanguage*. Edinburgh: Edinburgh University Press
- Jessner, U. (2008) A DST Model of Multilingualism and the Role of Metalinguistic Awareness. *The Modern Language Journal*. 92 (2), 270-283.
- Jessner, U. (2010) Metalinguistic awareness in multilinguals: cognitive aspects of third language learning. *Language Awareness*. 8 (3-4), 201-209.
- Jessner, U. (2014). On multilingual awareness or why the multilingual learner is a specific language learner. In L. Aronin & M. Pawlak (Eds.), *Essential topics in applied linguistics and multilingualism. Studies in honor of David Singleton* (pp. 175–184). Heidelberg: Springer
- Jones, G., Gobet, F. and Pine, J.M. (2008). Computer Simulations of Developmental Change: The Contributions of Working Memory Capacity and Long-Term Knowledge. *Cognitive Science*. 32 (7), 1148-1176.
- Juel, C. (1988). Learning to read and write: A longitudinal study of 54 children from first through fourth grades. *Journal of Educational Psychology*, 80, 437-447.
- Kahn-Horwitz, J., Schwartz, M., & Share, D. L. (2011). Acquiring the complex English orthography: A tri-literacy advantage? *Journal of Research in Reading*, 34(1), 136-156.
- Kalmijn, M. (1998). Intermarriage and Homogamy: Causes, Patterns, Trends. *Annual Review of Sociology*, 24, 395-421.
- Kahn-Horwitz, J., Kuash, S., Ibrahim, R. and Schwartz, M. (2014) How do previously acquired languages affect acquisition of English as a foreign language: The case of Circassian. *Written Language & Literacy*. 17 (1), 40-61.

- Kartz, L. & Frost, R., (1992) The Reading Process is Different for Different Orthographies: Orthographic Depth Hypothesis. Report number: ED359575. New Haven, Connecticut: ERIC.
- Kaushanskaya, M., Marian V., (2009). The bilingual advantage in novel word learning *Psychonomic Bulletin & Review*, volume 16, p. 705 - 710
- Kirby, J. R., Parrila, R. K., & Pfeiffer, S. L. (2003). Naming speed and phonological awareness as predictors of reading development. *Journal of Educational Psychology*, 95(3), 453–464.
- Kemp, N. (2009). The acquisition of spelling patterns: Early, later or never? In C. Wood & V. Connelly (Eds.), *Contemporary perspectives on reading and spelling* (pp. 76–91). NY: Routledge.
- Kirby, J. R., Parrila, R. K., & Pfeiffer, S. L. (2003). Naming speed and phonological awareness as predictors of reading development. *Journal of Educational Psychology*, 95(3), 453–464.
- Kisselev, O., Dubinina, I., & Polinsky, M. (2020). Form-Focused Instruction in the Heritage Language Classroom: Toward Research-Informed Heritage Language Pedagogy. *Frontiers in Education*, 5.
- Kivisto-De Souza, H., (2015). Phonological awareness and pronunciation in a second language. PhD Dissertation, University of Barcelona, Department of English Language and Literature, Barcelona.
- Koda, K. (2004). *Insights into second language reading: A cross-linguistic approach*. New York: Cambridge University Press.
- Koda, K. (2008). Impacts of prior literacy experience on second-language learning to read. In K. Koda & A.M. Zehler (Eds.), *Learning to read across languages: Cross-linguistic relationships in first- and second-language literacy development* (pp. 68–93). New York: Routledge.
- Koda, K., & Reddy, P. (2008). Research timeline: Cross-linguistic transfer in second language reading. *Language Teaching*, 41(4), 497–508.
- Koda, K. and Zehler, A., M. (2008) *Learning to Read Across Languages: Cross-Linguistic Relationships in First- and Second-Language Literacy Development*. New York ; London: Routledge.
- Kuo, L. and Anderson, R.C. (2008) Conceptual and Methodological Issues in Comparing Metalinguistic Awareness across Languages. In: Koda, K. and Zehler, A.M., eds. (2008) *Learning to Read Across Languages*. New York: Routledge, 39-67.
- Kuo, L. J., Uchikoshi, Y., Kim, T. J., & Yang, X. (2016). Bilingualism and Phonological Awareness: Re-examining Theories of Cross-Language Transfer and Structural Sensitivity. *Contemporary educational psychology*, 46, 1–9. <https://doi.org/10.1016/j.cedpsych.2016.03.002>
- Lado, R. (1957). *Linguistics across cultures: applied linguistics for language teachers*. Ann Arbor, MI: University Michigan Press.
- Lambert, W. (1974). Culture and language as factors in learning and education. In F. Aboud & R. D. Meade (Eds.), *Cultural factors in learning*. Bellingham: Western Washington State College.
- Lance, D., Swanson, L., & Peterson, H. (1997). A validity study of an implicit phonological awareness paradigm. *Journal of Speech, Language & Hearing Research*, 40, 1002-1010.
- Lasagabaster, D. (2000). Three languages and three linguistic models in the Basque Educational System. In J. Cenoz & U. Jessner (eds.), *English in Europe: The acquisition of a third language*. Clevedon: Multilingual Matters, 179–197.
- Lazarescu, G. (2013). *Dictionar italian-roman / roman italian pentru toti (50000 de cuvinte si expresii)*. Bucharest, Niculescu.

- Lehtonen, A., & Treiman, R. (2007). Adults' knowledge of phoneme-letter relationships is phonology based and flexible. *Applied Psycholinguistics*, 28, 95-114.
- Leikin, M., Schwartz, M., Share, D. L. (2010). General and specific benefits of bi-literate bilingualism: a Russian-Hebrew study of beginning literacy. *Reading and Writing*, 23, 269-292.
- Leppanen, U., Aunola, K., Niemi, P. & Nurmi, J. (2008) Letter knowledge predicts Grade 4 reading fluency and reading comprehension. *Learning and Instruction*, 548-564.
- Lesaux, N. K., & Geva, E. (2006). Synthesis: Development of Literacy in Language-Minority Students. In D. August & T. Shanahan (Eds.), *Developing literacy in second-language learners: Report of the National Literacy Panel on Language-Minority Children and Youth* (p. 53-74). Lawrence Erlbaum Associates Publishers.
- Li, L. & Wu, X. (2015) Effects of metalinguistic awareness on reading comprehension and the mediator role of reading fluency from Grade 2 to 4. *Plos One*. 10 (3), 1-16.
- Liberman, I., Shankweiler, D., Fischer, W. & Carter, B. (1974). Explicit syllable and phoneme segmentation in the young child. *Journal of Experimental Child Psychology*, 18, 201-212.
- Liberman, I., Shankweiler, D., & Liberman, A. M. (1989). The alphabetic principle and learning to read. In D. Shankweiler & I. Y. Liberman (Eds.), *International Academy for Research in Learning Disabilities monograph series*, No. 6. *Phonology and reading disability: Solving the reading puzzle* (p. 1-33). The University of Michigan Press.
- Lindsey, K. A., Manis, F. R., & Bailey, C. E. (2003). Prediction of first-grade reading in Spanish-speaking English-language learners. *Journal of Educational Psychology*, 95(3), 482-494. <https://doi.org/10.1037/0022-0663.95.3.482>
- Loizou, M., & Stuart, M. (2003). Phonological awareness in monolingual and bilingual English and Greek five-year-olds. *Journal of Research in Reading*, 26(1), 3-18.
- Lonigan, C. J., Burgess, S. R., & Anthony, J. L. (2000). Development of emergent literacy and early reading skills in preschool children: Evidence from a latent variable longitudinal study. *Developmental Psychology*, 36, 596-613.
- Loporcaro, M. (1996). On the analysis of geminates in Standard Italian and Italian dialects. In Hurch, B. & Rhodes, R. (eds.), *Natural Phonology: The State of the Art. Papers from the Bern Workshop on Natural Phonology, September 1989*, 153-187. Berlin, New York & Amsterdam: Mouton de Gruyter.
- Lundberg, I., Frost, J., & Petersen, O. (1988). Effects of an extensive program for stimulating phonological awareness in preschool children. *Reading Research Quarterly*, 23, 263-284.
- MacLean, M., Bryant, P., & Bradley, L. (1987). Rhymes, nursery rhymes, and reading in early childhood. *Merrill-Palmer Quarterly*, 33, 255-276.
- MacNamara, J. (1966). *Bilingualism and Primary Education*. Edinburgh: Edinburgh University Press.
- Maagiste, E. (1984). Learning a third language. *Journal of Multilingual and Multicultural Development* 5, 415-421.
- Manolitsis, G., Georgiou, G., Stephenson, K., & Parrila, R. (2009). Beginning to read across languages varying in orthographic consistency: Comparing the effects of non-cognitive and cognitive predictors. *Learning and Instruction*, 19(6), 466-480.
- McBride-Chang, C., (1995). What is phonological awareness? *Journal of Educational Psychology*, 87, 179-192.
- McBride-Chang, C., Bialystok, E., Chong, K.K.Y. & Li, Y. (2004) Levels of phonological awareness in three cultures. *Experimental Child Psychology*. 89, 93-113.

- McDowell, K., Lefever-Davis, S., Kear, D., & Hamm, D. (2006). Interactions between vocabulary and phonological distinctness: Impact on phonological awareness. Annual meeting of the National Reading Conference. Los Angeles, CA.
- McGuinness, D., McGuinness, C., & Donohue, J. (1995). Phonological Training and the Alphabet Principle: Evidence for Reciprocal Causality. *Reading Research Quarterly*, 30(4), 830-852. doi:10.2307/748200.
- Meisel, J.M. (2004). The Bilingual Child. In Bhatia, T.K., Ritchie, W.C. (Eds.), *The Handbook of Bilingualism*. Oxford, UK: Blackwell Publishing Ltd, 90-113.
- Melby-Lervag, M. & Lervag, A. (2011) Cross-linguistic Transfer of Oral Language, Decoding, and Phonological Awareness and Reading Comprehension: A Meta-Analysis of the Correlational Evidence. *Journal of Research in Reading*. 34, 114-135.
- Metsala, J. L., & Walley, A. C. (1998). Spoken vocabulary growth and the segmental restructuring of lexical representations: Precursors to phonemic awareness and early reading ability. In J. L. Metsala & L. C. Ehri (Eds.), *Word Recognition in Beginning Literacy* (pp. 89–120). Mahwah, NJ: Erlbaum.
- Miur, (2020). Gli alunni con cittadinanza non italiana a.s. 2018/2019, Ministero dell'Istruzione – Ufficio Gestione Patrimonio Informativo e Statistica. Retrieved from <https://www.miur.gov.it/web/guest/-/scuola-online-i-dati-sugli-alunni-con-cittadinanza-non-italiana-per-l-anno-scolastico-2018-2019>.
- Montrul, S. 2016. *Heritage language acquisition*. Cambridge: Cambridge University Press.
- Morais, J., Alegria, J., & Content, A. (1987). The relationships between segmental analysis and alphabetic literacy: An interactive view. *Cahiers de Psychologie Cognitive/Current Psychology of Cognition*, 7(5), 415–438.
- Morais, J., Bertelson, P., Cary, L., & Alegria, J. (1986). Literacy training and speech segmentation. *Cognition*, 24, 45-54.
- Mungketklang, C., Bavin, E.L., Crewther, S.G., Goharpey, N. & Parsons, C. (2016) The Contribution of Memory and Vocabulary to Non-Verbal Ability Scores in Adolescents with Intellectual Disability. *Front. Psychiatry*. 7 (2016), 1-8.
- Muñoz, C. (2000). Bilingualism and trilingualism in school students in Catalonia. In J. Cenoz & U. Jessner (Eds.), *English in Europe: The acquisition of a third language* (pp. 7–21). Clevedon, UK: Multilingual Matters.
- Muter, V. & Diethelm, K. (2001) The contribution of phonological skills and letterknowledge to early reading development in a multilingual population. *Language Learning*. 51 (2), 187-219.
- Muter, V., Snowling, M., J. & Taylor, S. (1998) Segmentation, not rhyming, predicts early progress in learning to read. *Journal of Experimental Child Psychology*. 71 3-27.
- Nag, S., & Snowling, M. J. (2012). Reading in an alphasyllabary: Implications for a language universal theory of learning to read. *Scientific Studies of Reading*, 16, 404–423.
- Nagy, W. E., & Scott, J. A. (2000). Vocabulary processes. In M. L. Kamil (Ed.), *Handbook of Reading Research* (Vol. 111, pp. 269–284). Mahwah, NJ: Erlbaum
- Ng, E. (2015). Bilingualism, bi-literacy and cognitive effects: A review paper. *University of Sydney Papers in TESOL*, 10, 93-128.
- Niyekawa, A. M. (1983). Biliteracy acquisition and its sociocultural effects, in M.C. Chang (ed.), *Asian- and Pacific-American Perspectives in Bilingual Education*, Teachers College Press, New York, 97–119.
- Norel, M. (2010). Metodica predării limbii și literaturii române în învățământul primar. Brașov Grup Editorial Art.
- Odlin, T. (1989). *Language transfer: Cross-linguistic influence in language learning*. Cambridge, England: Cambridge University Press.

- Odlin, T. (1991). Transfer in language production. Hans Dechert and Manfred Raupach (Eds.). Norwood, NJ: Ablex, 1989. xvii 278. *Studies in Second Language Acquisition*, 13(1), 90-91.
- Olson, R. K. 2002. Dyslexia: nature and nurture. *Dyslexia*, 8, 143-159.
- Pasquarella, A., Chen, X., Gottardo, A. and Geva, E. (2014) Cross-Language transfer of word reading accuracy and word reading fluency in Spanish-English and Chinese-English bilinguals: Script-Specific Processes. *Journal of Educational Psychology*. 1-15.
- Pavlenko, A. and Jarvis, S. (2008) *Cross-Linguistic Influence in Language and Cognition*. New York, London: Routledge.
- Perfetti, C. A. (2003). The universal grammar of reading. *Scientific Studies of Reading*, 7(1), 3-24.
- Perfetti, C. A. (2007). Reading ability: Lexical quality to comprehension. *Scientific Studies of Reading*, 11, 357-383.
- Perfetti, C.A. & Dunlap, S. (2008) Learning to read: general principles and writing system variations. Metalinguistic awareness across languages. In: Koda, K. and Zehler, A.M., eds. (2008) *Learning to Read Across Languages*. New York: Routledge, 39-67.
- Perfetti, C. A., Liu, Y., Fiez, J., Nelson, J., Bolger, D. J., & Tan, L.-H. (2007). Reading in Two Writing Systems: Accommodation and Assimilation of the Brain's Reading Network. *Bilingualism: Language and Cognition*, 10(02), 131-146.
- Perfetti, C.A., & Liu, Y. (2005), Orthography to Phonology and Meaning: Comparisons Across and within Writing Systems. *Read Writ* 18, 193-210
- Perfetti, C. A., Liu, Y., & Tan, L. H. (2002). How the mind can meet the brain in reading: a comparative writing systems approach. In H. S. R. Kao, C. Leong, and D. Gao (eds). *In Cognitive Neuroscience Studies of the Chinese Language*. (pp. 35-39). Aberdeen, Hong Kong: Hong Kong University Press.
- Perfetti, C. A., & Zhang, S. (1991). Phonological processes in reading Chinese characters. *Journal of Experimental Psychology: Learning, Memory, and Cognition*, 17(4), 633.
- Petrescu, M. C. (2014). *Minority Language Acquisition and Retention: A study of Canadian-born Romanian Speaking Bilingual Children*. PhD Thesis. Toronto, University of Toronto
- Petrescu, M. C., & Helms-Park, R. (2018). The Lexical Development of Canadian-Born Romanian L1 Bilingual Kindergarteners. *Languages*, 3(3), 33.
- Petscher, Y., & Kim, Y.-S. (2011). The utility and accuracy of oral reading fluency score types in predicting reading comprehension. *Journal of School Psychology*, 49(1), 107-129.
- Polinsky, M. (2018). Bilingual children and adult heritage speakers: The range of comparison. *International Journal of Bilingualism*, 22(5), 547-563.
- Posner, R. (1966). *The Romance Languages*. Cambridge, UK: Cambridge University Press.
- Raven, J., Raven, J. C. & Court, J.H. (1996) *Standard Progressive Matrices*. Oxford, England: Oxford Psychologist Press.
- Ramirez, G., Chen, X. and Geva, E. (2010) Morphological awareness in Spanish-speaking English language learners: within and cross-language effects on word reading. *Reading Writing*. 23 337-358.
- Rack, J. P., Snowling, M. J., & Olson, R. K. (1992). The nonword-reading deficit in developmental dyslexia: A review. *Reading Research Quarterly*, 27, 29-53.
- Rauch, D., P., Naumann, J. and Jude, N. (2012). Metalinguistic awareness mediates effects of full biliteracy on third language reading proficiency in Turkish-german bilinguals. *International Journal of Bilingualism*. 16 (4), 402-418.
- Reddy, P., & Koda, K. (2013) Orthographic constraints on phonological awareness in biliteracy development. *Writing System Research*. 5 (1), 110-130.
- Riccio, C. A., Amado, A., Jiménez, S., Hasbrouck, J. E., Imhoff, B., & Denton, C. (2001). *Cross-Linguistic Transfer of Phonological Processing: Development of a Measure of*

- Phonological Processing in Spanish. *Bilingual Research Journal*, 25(4), 583–603. doi:10.1080/15235882.2001.11074468.
- Ringbom, H. & Jarvis, S. (2011) The Importance of Cross-Linguistic Similarity in Foreign Language Learning. In: Long, M.H. and Doughty, C.J., eds. (2011) *The Handbook of Language Teaching*. Sussex, UK: Willey-Blackwell, 106-118.
- Romaine, S. (1995). *Bilingualism*. Oxford, UK: Blackwell
- Rothman, J. (2011) L3 Syntactic Transfer Selectivity and Typological Determinacy: The Typological Primacy Model. *Second Language Research*, 27, 107-127.
- Rothman, J. (2013) Cognitive Economy, Non-Redundancy and Typological Primacy in L3 Acquisition: Evidence from initial stages of L3 Romance, in Baauw, S., Dirjkoningen, F. & Pinto, M. (eds), *Romance Languages and Linguistic Theory 2011*. Amsterdam: John Benjamins, 217-248.
- Rothman, J. (2015) Linguistic and cognitive motivations for the Typological Primacy Model (TPM) of third language (L3) transfer: Timing of acquisition and proficiency considered. *Bilingualism: Language and Cognition*, 18, 179-190.
- Rothman, J., Cabrelli Amaro, J., & De Bot, K. (2013). Third language acquisition. In J. Herschensohn & M. Young-Scholten (Eds.), *The Cambridge handbook of second language acquisition* (pp. 372-393). Cambridge, UK: Cambridge University Press.
- Safont, M. P., (2005). *Third language learners. Pragmatic production and awareness*. Clevedon: MultilingualMatters.
- Sanz, C. (2000) Bilingual education enhances third language acquisition: vidence from Catalonia. *Applied Psycholinguistics*. 21 23-44.
- Sanz, C. (2007). The role of bilingual literacy in the acquisition of a third language. In C. Perez-Vidal, A. Bel & M. J. Garau (eds.), *A portrait of the young in the new multilingual Spain*. Clevedon: MultilingualMatters, 220–240.
- Sartori, G., Job, R., & Tressoldi, P. E. (1995). *Batteria per la valutazione della dislessia e della disortografia evolutiva (Battery for assessing developmental dyslexia and disorthography)*. Florence, Italy: Edizioni O.S.
- Savage, R. (2001). The “Simple View” of Reading: Some evidence and possible implications. *Educational Psychology in Practice*, 17(1), 17–33. doi:10.1080/02667360120039951
- Savin, H. B. (1972). What the child knows about speech when he starts to learn to read. In J. F. Kavanagh & I. G. Mattingly (Eds.), *Language by ear and by eye: The relationship between speech and reading*. Oxford, England: Massachusetts Inst. of Technology P.
- Sclifos, M. (2008). Structura silabică în limbile română și engleză. *Limba Română* 7-8, 182-188.
- Scontras, G., Fuchs Z., & Polinsky. M. (2015). Heritage language and linguistic theory. *Frontiers in Psychology* 6, 01545.
- Skutnabb-Kangas, T. (1995). Multilingualism and the education of minority children. In O. García & C. Baker (Eds.), *Policy and practice in bilingual education: Extending the foundations* (pp. 40–62). Clevedon: Multilingual Matters.
- Segalowitz, N. S. (1986). Skilled reading in the second language. In Jyotsna, Vaid (Ed.), *Language processing in bilinguals: Psycholinguistic and neuropsychological perspectives*. Hillsdale, NJ: Erlbaum.
- Sénéchal, M., Ouellette, G., & Rodney, D. (2006). The misunderstood giant: On the predictive role of early vocabulary in future reading. In D. Dickinson, & S.B. Neuman (Vol. Eds.). *Handbook of Early Literacy Research*, Vol. 2 (pp. 173-184). New York, NY: Guilford Press.
- Seymour, P. H. K., Aro, M., & Erskine, J. M. (2003). Foundation literacy acquisition in European orthographies. *British Journal of Psychology*, 94, 143-174.
- Share, D. L. (1995). Phonological recoding and self-teaching: Sine qua non of reading acquisition. *Cognition*, 55, 151-218.

- Share, D. L. (2008). On the anglocentricities of current reading research and practice: The perils of overreliance on an 'outlier' orthography. *Psychological Bulletin*, 134, 584–615.
- Schoonen, R., A. van Gelderen, K. De Glopper, J. Hulstijn, P. Snellings, A. Simis & M. Stevenson (2002). Linguistic knowledge, metacognitive knowledge and retrieval speed in L1, L2 and EFL writing. In S. Ransdell & M.-L. Barbier (eds.), *New directions for research in L2 writing*. Dordrecht: Kluwer Academic Publishers, 101–122.
- Schwartz, M., Geva, E., Share, D.L. and Leikin, M. (2007) Learning to read in English as third language: The cross-linguistic transfer of phonological processing skills. *Written Language & Literacy*. 10 (1), 25-52.
- Schwartz, M., Leikin, M. & Share, D. L. (2005). Bi-literate bilingualism versus mono-literate bilingualism: A longitudinal study of reading acquisition in Hebrew (L2) among Russian-speaking (L1) children. *Written Language and Literacy*, 8, 179–207.
- Schwartz, B. & Sprouse, R. (1996) L2 cognitive states and the Full Transfer/Full Access model. *Second Language Research*, 12, 40-72.
- Serrano F. & Defior D. (2012). Spanish dyslexic spelling abilities: the case of consonant clusters. *J. Res. Read*, 35, 169–182. 10.1111/j.1467-987.2010.01454.x.
- Serrano, F., Defior, S. & Martos, F. (2003). To be or not to be phonologically aware: A reflection about metalinguistic skills of student of teacher. In R. M. Joshi, C. K. Leong, & B. L. J. Kaczmarek (Eds.), *Literacy acquisition: The role of phonology, morphology and orthography* (pp. 209–215). Amsterdam: IOS Press
- Share, D. L. (1995). Phonological recoding and self-teaching: Sine qua non of reading acquisition. *Cognition*, 55(2), 151–218.
- Share, D. L. (2004). Orthographic learning at a glance: On the time course and developmental onset of self-teaching. *Journal of Experimental Child Psychology*, 87, 267–298. <http://dx.doi.org/10.1016/j.jecp.2004.01.001>.
- Share, D. L., & Stanovich, K. E. (1995). Cognitive processes in early reading development: Accommodating individual differences into a model of acquisition. *Issues in Education*, 1, 1–57.
- Siegel, L. S., Share, D., & Geva, E. (1995). Evidence for superior orthographic skills in dyslexics. *Psychological Science*, 6(4), 250-254. doi:10.1111/j.14679280.1995.tb00601.x.
- Siguán, M., & Mackey, W. F. (1986). *Educación y bilingüismo*. Madrid: Santillana.
- Spencer, L. H., & Hanley, J. R. (2003). Effects of orthographic transparency on reading and phoneme awareness in children learning to read in Wales. *British Journal of Psychology*, 94, 1–28.
- Sprenger-Charolles, L., & Siegel, L. S. (1997). A longitudinal study of the effects of syllabic structure on the development of reading and spelling skills in French. *Applied Psycholinguistics*, 18(04), 485.
- Storch, S. A., & Whitehurst, G. J. (2002). Oral language and code-related precursors to reading: Evidence from a longitudinal structural model. *Developmental Psychology*, 38, 934–947.
- Swain, M., Lapkin, S., Rowen, N., & Hart, D. (1990). The role of mother tongue literacy in third language learning. *Language, Culture and Curriculum*, 3, 65–81.
- Swanson, H.L., Rosston, K., Gerber, M., & Solari, E. (2008). Influence of oral language and phonological awareness on children's bilingual reading. *Journal of School Psychology*, 46, 413–429.
- Stanovich, K.E. (2000). *Progress in understanding reading. Scientific foundations and new frontiers*. New York: The Guilford Press.
- Stella, G., Pizzoli, C. E., and Tressoldi, P. E. (2000). *Peabody Test di Vocabolario Recettivo*. Torino: Omega Edizioni.

- Storch, S. A., & Whitehurst, G. J. (2002). Oral language and code-related precursors to reading: Evidence from a longitudinal structural model. *Developmental Psychology*, 38, 934-947.
- Thomas, J. (1988). The role played by metalinguistic awareness in second and third language learning. *Journal of Multilingual and Multicultural Development* 9, 235-46.
- Treiman, R., (1985). Onsets and rimes as units of spoken syllables: evidence from children, *Journal of Experimental Child Psychology*, 39, 161-181.
- Treiman, R. & Cassar, M., (1997). The beginnings of orthographic knowledge: Children's knowledge of double letters in words. *Journal of Educational Psychology*, 89(4), 631-644. <https://doi.org/10.1037/0022-0663.89.4.631>
- Treiman, R., & Zukowski, A. (1991). Levels of phonological awareness. In S. A. Brady & D. P. Shankweiler (Eds.), *Phonological Processes in Literacy: A Tribute to Isabelle Y. Liberman* (pp. 97-117). Hillsdale, NJ: Lawrence Erlbaum Associates.
- Treiman, R., & Zukowski, A. (1996). Children's sensitivity to syllables, onsets, rimes, and phonemes. *Journal of experimental child psychology*, 62(3), 193-215.
- Treiman, R., Mullennix, J., Bijeljac-Babic, R., & Richmond-Welty, E. D. (1995). The special role of rimes in the description, use, and acquisition of English orthography. *Journal of Experimental Psychology: General*, 124, 107-136.
- Tressoldi, P. E., Stella, G., & Faggella, M. (2001). The Development of Reading Speed in Italians with Dyslexia. *Journal of Learning Disabilities*, 34(5), 414-417.
- Umera-Okeke, N. (2008). Spelling and Phonetic Inconsistencies in English: A Problem for Learners of English as a Foreign/Second Language. *African Research Review*, 2(1).
- Van Bon, W. H. J., & Van Leeuwe, J. F. J. (2003). Assessing phonemic awareness in kindergarten: The case for the phoneme recognition task. *Applied Psycholinguistics*, 24, 195-219.
- Verhoeven, L. (1991). Acquisition of bi-literacy. In J. H. Hulstijn & J. F. Matter (Eds.), *Reading in two languages* (pp. 61-74). Amsterdam: AILA.
- Verhoeven, L. (1994). Transfer in bilingual development. The linguistic interdependency hypothesis revisited. *Language Learning*, 44, 381-415.
- Verhoeven, L. (2007) Early bilingualism, language transfer, and phonological awareness. *Applied Psycholinguistics*. 28 425-439.
- Wagner, R. & Torgesen, J. (1987). The nature of phonological processing and its causal role in the acquisition of reading skills. *Psychological Bulletin*, 101(2), 192-212.
- Wagner, R. K., Torgesen, J. K., & Rashotte, C. A. (1994). Development of reading-related phonological processing abilities: New evidence of bidirectional causality from a latent variable longitudinal study. *Developmental Psychology*, 30, 73-87.
- Wagner, R. K., Torgesen, J.K., & Rashotte, C.A. (1999). *Comprehensive Test of Phonological Processes*. Austin, TX: PRO-ED Publishing, Inc.
- Walley, A., C., Metsala, J., L. & Garlock, V., M. (2003) Spoken Vocabulary Growth: Its Role in the Development of Phonological Awareness and Early Reading Ability. *Reading & Writing: An Interdisciplinary Journal*. 16, 5-20.
- Wang, M., Ko, I.Y. & Choi, J. (2009) The importance of morphological awareness in Korean-English biliteracy acquisition. *Contemporary Educational Psychology*. 34 132-142.
- Wang, M., Park, Y. & Lee, K.R. (2006) Korean-English biliteracy acquisition: Crosslanguage phonological and orthographic transfer. *Journal of Educational Psychology*. 98 (1), 148-158.
- Winkel, H., & Lee, L. W. (2013). "Learning to read and write in Malaysian/Indonesian: a transparent alphabetic orthography," in *South and Southeast Asian Psycholinguistics*, eds H. Winkel and P. Padakannaya (Cambridge: Cambridge University Press).
- Wise, J. C., Sevcik, R.A., Morris, R. D., Lovett, M. W., & Wolf, M. (2007). The relationship among receptive and expressive vocabulary, listening comprehension, pre-reading

- skills, word identification skills, and reading comprehension by children with reading disabilities. *Journal of Speech, Language and Hearing Research*, 50, 1096–1109.
- Wurm, S. A. (2001). *Atlas of the World's Languages in Danger of Disappearing*. Paris: UNESCO.
- Zanobini, M., Viterbori, P. & Saraceno, F. (2012). Phonology and language development in Italian children: an analysis of production and accuracy. *Journal of Speech Language and Hearing Research*, 55(1), 16-3.
- Zhang, D., Koda, K. and Sun, X. (2014) Morphological awareness in biliteracy acquisition: A study of young Chinese EFL readers. *International Journal of Bilingualism*. 18 (6), 570-585.
- Ziegler, J. C., & Goswami, U. (2005). Reading acquisition, developmental dyslexia, and skilled reading across languages: A psycholinguistic grain size theory. *Psychological Bulletin*, 131(1), 3–29.
- Ziegler, J. C., Bertrand, D., Tóth, D., Csépe, V., Reis, A., Fásca, L., *et al.* (2010). Orthographic depth and its impact on universal predictors of reading: a cross-language investigation. *Psychol. Sci.* 21, 551–559.
- Zipke, M. (2007) The role of metalinguistic awareness in the reading comprehension of sixth and seventh graders. *Reading Psychology*. 28 375-396.
- Zipke, M., Ehri, L.C. and Cairns, H.L. (2009) Using Semantic Ambiguity Instruction to Improve Third Graders Metalinguistic Awareness and Reading Comprehension: An experimental Study. *Reading Research Quarterly*. 44 300-321.

APPENDIX I



UNIVERSITÀ
DEGLI STUDI
DI MILANO

MODULO CONSENSO GENITORI

Il Suo figlio o la Sua figlia è invitato a prendere parte in uno studio di ricerca che analizzerà alcune sue abilità di capire e analizzare i suoni di una lingua e la sua capacità di lettura di tale lingua. Suo figlio o Sua figlia è stato selezionato come possibile partecipante grazie alla sua fascia di età e alla sua esposizione alla lingua romena oppure perché ha dei compagni di classe rumeni. Le chiediamo di leggere questo modulo e di porre eventuali domande prima di accettare la partecipazione di Suo figlio o la Sua figlia a questo studio.

Lo scopo di questo studio è scoprire la capacità di analizzare i suoni per vedere poi il legame con l'abilità di lettura ad alta voce tra i bambini bilingue italo-rumeni che imparano l'inglese come terza lingua. Se accetta che Suo figlio o Sua figlia partecipi a questo studio, le verrà chiesto di completare un questionario sull'utilizzo dell'italiano, del rumeno (se applicabile) e dell'Inglese da parte di Suo figlio e di restituirlo all'insegnante di classe di tuo figlio. Suo figlio o Sua figlia potrebbe essere invitato/-a a partecipare alla fase successiva dello studio. Riceverà una notifica in merito entro due settimane dalla restituzione del questionario. Insieme all'insegnante di scuola di Suo figlio o Sua figlia, organizzeremo una batteria di test a scuola. In questa fase, Suo figlio o Sua figlia, accompagnato dall'insegnante, verrà interrogato dalla ricercatrice per il vocabolario del Rumeno, Italiano e Inglese o solo dell'Italiano e Inglese, per l'abilità di analizzare i suoni di queste tre due/tre lingue e per le capacità di lettura ad alta voce. Il primo parametro sarà misurato attraverso un test che utilizza le immagini come supporto. Per la seconda abilità, al bambino verrà chiesto di segmentare alcune parole in suoni o di ricomporre alcune parole a partire dai suoni o dalle sillabe, o identificare la parola diversa in una serie da tre. Per l'ultima abilità, ai bambini verrà data una serie di parole da leggere ad alta voce più una serie di parole senza senso.

L'unico rischio connesso a questo studio è la possibilità che il bambino si annoi durante le prove. Per anticipare ciò, i compiti saranno assegnati in un'atmosfera rilassata nell'aula multimediale della scuola, dove incoraggerò il bambino a mettersi a proprio agio nel rispondere alle domande dei test. Dopo il completamento di ogni attività, al bambino verrà offerto di scegliere un adesivo del proprio personaggio preferito dal cestino fornito. E quando avranno completato tutte le attività, riceveranno un certificato di partecipazione. Potrà richiederlo alla scuola di Suo figlio sei settimane dopo il completamento delle attività.

Le registrazioni di questo studio saranno mantenute private. I moduli di consenso, i questionari e i fogli di lavoro dei bambini saranno conservati in modo sicuro insieme ai risultati anche dopo il completamento di questo studio. La Sua decisione di partecipare o meno non influirà sui Suoi rapporti attuali o futuri con l'Università degli Studi di Milano o con la scuola elementare di Suo figlio. Se decide di consentire a Suo figlio o a Sua figlia di partecipare, è libero di ritirare Suo figlio in

qualsiasi momento senza influire sul Suo rapporto con l'Università degli Studi di Milano o la scuola elementare di Suo figlio. Inoltre, Suo figlio può anche interrompere la partecipazione in qualsiasi momento, se lo desidera, comunicandolo all'insegnante o a me. Al bambino che non avrà terminato tutti i test l'uscita non inciderà in alcun modo sul voto scolastico. La ricercatrice che conduce questo studio è Irina Stan, una dottoranda presso l'Università degli Studi di Milano. In caso di domande, è possibile contattare il ricercatore al numero 391#####, oppure, il tutor di questo progetto, la Prof.ssa Paola Catenaccio, all'indirizzo paola.catenaccio#####.

Firma genitore

Data

Autorizzo il trattamento dei miei dati personali ai sensi del Dlgs 196 del 30 giugno 2003 e dell'art. 13 GDPR (Regolamento UE 2016/679)

APPENDIX 2



**UNIVERSITÀ
DEGLI STUDI
DI MILANO**

Soggetto nr _____
 Scuola _____
 Provincia _____
 Note: HL = _____
 (riservato alla scuola)

QUESTIONARIO SOCIOLINGUISTICO SOGGETTO E GENITORI

Dati studente

I. ANAGRAFICI

1. Nome _____
2. Sesso (M o F): _____
3. Età _____
4. Nazionalità _____
5. Paese di nascita _____
6. Se il paese di nascita è diverso dall'Italia, indichi l'età a cui suo figlio/sua figlia è arrivato/a in Italia:

7. Figlio/-a unico/-a? (metta SI o NO) _____
8. Se NO, indichi il numero di fratelli e/o sorelle e l'età (esempio: 1 fratello (2 anni) e due sorelle (4 e 5 anni): _____

II. SCOLASTICI

1. Classe (esempio: 5a elementare): _____
2. Suo figlio/Sua figlia ha iniziato gli studi in Italia? (metta SI o NO): _____
3. Se NO, indichi la prima classe che Suo figlio/Sua figlia ha frequentato in Italia (esempio: 2a elementare):

4. Complessivamente, come giudicherebbe l'andamento scolastico di Suo figlio/Sua figlia?
 1. MOLTO BASSO
 2. BASSO
 3. SUFFICIENTE
 4. BUONO
 5. OTTIMO

5. Quali sono le materie forti di Suo figlio/Sua figlia (esempio: matematica, italiano, ecc)?

6. Quali sono le materie deboli di Suo figlio/Sua figlia (esempio: matematica, italiano, ecc)?

III. LINGUISTICI

1. Quali lingue parla Suo figlio/Sua figlia? _____

2. Quale lingua/quali lingue giudicherebbe come lingua/-e madre di Suo figlio/Sua figlia?

3. A quale età Suo figlio/Sua figlia ha iniziato a parlare HL? _____

4. A quale età Suo figlio/Sua figlia ha iniziato a parlare ITALIANO? _____

In risposta alle domande 5 - 10 scelga la risposta piu' appropriata tra le seguenti:

1. MOLTO BASSO

2. BASSO

3. SUFFICIENTE

4. BUONO

5. OTTIMO

5. Come giudicherebbe il livello di conoscenza dell'HL di Suo figlio/Sua figlia (secondo la sua età)?

1	2	3	4	5
---	---	---	---	---

6. Come giudicherebbe il livello di conoscenza dell'ITALIANO di Suo figlio/Sua figlia (secondo la sua età)?

1	2	3	4	5
---	---	---	---	---

7. (se applicabile) Come giudicherebbe le capacità di lettura in HL di Suo figlio/Sua figlia (secondo la sua età)?

1	2	3	4	5
---	---	---	---	---

8. (se applicabile) Come giudicherebbe le capacità di scrittura in HL di Suo figlio/Sua figlia (secondo la sua età)?

1	2	3	4	5
---	---	---	---	---

9. Come giudicherebbe le capacità di lettura in ITALIANO di Suo figlio/Sua figlia (secondo la sua età)?

1	2	3	4	5
---	---	---	---	---

10. Come giudicherebbe le capacità di scrittura in ITALIANO di Suo figlio/Sua figlia (secondo la sua età)?

1	2	3	4	5
---	---	---	---	---

11. (se applicabile) In quali circostanze Suo figlio/Sua figlia ha imparato a **parlare in HL** (esempio: a casa con I genitori/i parenti, in un corso a scuola, etc)?

12. (se applicabile) In quali circostanze Suo figlio/Sua figlia ha imparato a **leggere in HL** (esempio: a casa con I genitori/i parenti, in un corso a scuola, etc)? Se Suo figlio/Sua figlia è iscritto/-a ad un corso di HL indichi la data dell'iscrizione.

In risposta alle domande 13-18, indichi l'uso dell'HL e dell'ITALIANO di Suo figlio/Sua figlia nelle varie situazioni. Utilizzi la seguente scala e metta una X sull'opzione scelta:

1=SOLO HL

2=PIÙ HL CHE ITALIANO

3=TANTO HL QUANTO ITALIANO

4=PIÙ ITALIANO CHE HL

5= SOLO ITALIANO

13. Da piccolo, prima di iniziare la scolarizzazione:

ALL'ASILO

1	2	3	4	5
---	---	---	---	---

IN CASA

1	2	3	4	5
---	---	---	---	---

IN ALTRI LUOGHI

1	2	3	4	5
---	---	---	---	---

14. Durante il periodo scolastico:

A SCUOLA

1	2	3	4	5
---	---	---	---	---

IN CASA

1	2	3	4	5
---	---	---	---	---

IN ALTRI LUOGHI

1	2	3	4	5
---	---	---	---	---

15. In casa, con la MADRE:

1	2	3	4	5
---	---	---	---	---

16. In casa, con il PADRE:

1	2	3	4	5
---	---	---	---	---

15. In casa, con i fratelli/le sorelle:

1	2	3	4	5
---	---	---	---	---

17. Con i nonni:

1	2	3	4	5
---	---	---	---	---

18. Con gli amici:

1	2	3	4	5
---	---	---	---	---

Dati genitore (metta 1 per madre o 2 per padre) _____ :**I. ANAGRAFICI**

1. Nome _____
2. Sesso (M o F): _____
3. Età _____
4. Nazionalità _____
5. Paese di nascita _____
6. Se il paese di nascita è diverso dall'Italia, indichi il numero di anni di residenza in Italia _____
7. Livello più alto di studio ottenuto _____
8. Occupazione attuale _____
9. Se il paese di nascita è diverso dall'Italia, indichi l'occupazione nel paese di nascita

II. LINGUISTICI:

1. Quali lingue parla? _____
2. Quale lingua/quali lingue giudicherebbe come Sua/Sue lingua/-e madre?

3. A quale età ha iniziato a parlare HL? _____
4. A quale età ha iniziato a parlare ITALIANO? _____
5. (se l'italiano non è Sua lingua madre) In quali circostanze ha imparato l'ITALIANO? (esempio: sul lavoro, in casa, in seguito ad un corso, ecc)

In risposta alle domande 6 - 11 scelga la risposta piu' appropriata tra le seguenti:

1. MOLTO BASSO
2. BASSO
3. SUFFICIENTE
4. BUONO
5. OTTIMO

6. Come giudicherebbe il Suo livello di conoscenza dell'HL?

1	2	3	4	5
---	---	---	---	---

7. Come giudicherebbe il Suo livello di conoscenza dell'ITALIANO?

1	2	3	4	5
---	---	---	---	---

8. Come giudicherebbe le Sue capacità di lettura in HL?

1	2	3	4	5
---	---	---	---	---

9. Come giudicherebbe le Sue capacità di scrittura in HL?

1	2	3	4	5
---	---	---	---	---

10. Come giudicherebbe le Sue capacità di lettura in ITALIANO?

1	2	3	4	5
---	---	---	---	---

11. Come giudicherebbe le Sue capacità di scrittura in ITALIANO?

1	2	3	4	5
---	---	---	---	---

III. MOTIVAZIONALI

A. In una scala da 1 a 5 (5 essendo il massimo), quanto è importante per Lei che **Suo figlio/Sua figlia**:

1. Parli bene l'HL?

1	2	3	4	5
---	---	---	---	---

2. Parli bene l'ITALIANO?

1	2	3	4	5
---	---	---	---	---

3. Sappia scrivere in HL?

1	2	3	4	5
---	---	---	---	---

4. Sappia scrivere in ITALIANO?

1	2	3	4	5
---	---	---	---	---

5. Sappia leggere in HL?

1	2	3	4	5
---	---	---	---	---

6. Sappia leggere in ITALIANO?

1	2	3	4	5
---	---	---	---	---

7. Parli bene l'INGLESE?

1	2	3	4	5
---	---	---	---	---

8. Sappia scrivere in INGLESE?

1	2	3	4	5
---	---	---	---	---

9. Sappia leggere in INGLESE?

1	2	3	4	5
---	---	---	---	---

10. Conosca la cultura e le tradizioni HL?

1	2	3	4	5
---	---	---	---	---

11. Conosca la cultura e le tradizioni ITALIANE?

1	2	3	4	5
---	---	---	---	---

12. Conosca la cultura e le tradizioni INGLESIS?

1	2	3	4	5
---	---	---	---	---

13. Abbia amici HL?

1	2	3	4	5
---	---	---	---	---

14. Abbia amici ITALIANI?

1	2	3	4	5
---	---	---	---	---

*B. In una scala da 1 a 5 (5 essendo il massimo), quanto è importante per **Lei personalmente:***

1. Parli bene l'HL?

1	2	3	4	5
---	---	---	---	---

2. Parli bene l'ITALIANO?

1	2	3	4	5
---	---	---	---	---

3. Sappia scrivere in HL?

1	2	3	4	5
---	---	---	---	---

4. Sappia scrivere in ITALIANO?

1	2	3	4	5
---	---	---	---	---

5. Sappia leggere in HL?

1	2	3	4	5
---	---	---	---	---

6. Sappia leggere in ITALIANO?

1	2	3	4	5
---	---	---	---	---

7. Parli bene l'INGLESE?

1	2	3	4	5
---	---	---	---	---

8. Sappia scrivere in INGLESE?

1	2	3	4	5
---	---	---	---	---

9. Sappia leggere in INGLESE?

1	2	3	4	5
---	---	---	---	---

10. Conosca la cultura e le tradizioni HL?

1	2	3	4	5
---	---	---	---	---

11. Conosca la cultura e le tradizioni ITALIANE?

1	2	3	4	5
---	---	---	---	---

12. Conosca la cultura e le tradizioni INGLESII?

1	2	3	4	5
---	---	---	---	---

13. Abbia amici HL?

1	2	3	4	5
---	---	---	---	---

14. Abbia amici ITALIANI?

1	2	3	4	5
---	---	---	---	---

Romanian Test Items

RPhS

greu
 (a) jigni
 pahar
 şah
 jucărie
 albastru
 zbori
 hrană
 ceapă
 geantă
 încet
 plâns
 diavol
 horă
 zgârcit
 şeic
 miere
 împrumut
 hidrant
 nazal

RPhB

panel
 totoş
 şoapte
 curs
 scoici
 hambar
 (a) miauna
 naţiune
 hoinar
 machiaj
 ateneu
 zdreanţă
 podea
 sânge
 (a) încurca
 mâncare
 şchiop
 melci
 necaz
 haz

RSyB

aur
 duel
 brâu
 muzee
 şoapte
 august
 anual
 ştiucă
 pauză
 şcolari
 oaste
 deget
 bezea
 treabă
 culoare
 cheltuială
 pantofi
 poveste
 abţibild
 proprietate

RORo

zdreanţă – **z**delci - **z**dup
ştrenţar – **ş**tiri- **ş**trand
scurt – **s**cui - **s**upă
cui – **p**ui - **c**or
gras – **g**ram - **g**las
scară – **s**curt - **s**pate
gaură – **g**hinte - **g**ram

mare – **m**axim - **p**oştă
soare – **s**arma - **d**oare
linte – **m**inte - **l**untre
câine – **c**are- **m**âine
cânt – **s**ânt - **c**arte
spate – **p**oate - **s**pătar
zaţ – **z**id - **z**meu

vrăbie – **v**esellie - **v**reme
şcoală – **ş**iret - **ş**iră
frişcă – **h**rişcă - **f**asole
bani – **b**ar - **s**cară
fragment – **f**raier - **f**urtun

RWR

arcaş
 ochi
 ghem
 haide
 gheaţă
 (a) sfredeli
 hoţi
 fişă
 ştreang
 (a) înhţa
 greu

RPWR

rărămie
 gheşti
 jijinor
 zal
 (a) zgomări
 arăpos
 stungă
 hoipoc
 zurzunac
 oaină
 horcan

rău
ălorlalte
stupi
ăștia
(a) înșela
cântec
basma
amuzant
jder

sporee
raj
pușoi
(a) împrucina
lăicou
oaspure
zmelă
junoi
(a) țăui

APPENDIX 4

Italian Test Items**IPhS**

do
matita
visita
doccia
vacca
centro
acqua
due
rose
cappotto
cuoco
geloso
ieri
giugno
zia

scelto
sabbia
guadagno
sciare
papavero

IPhB

mela
vita
ponte
frate
conto
mente
difesa
cervello
tesoro
fortuna
verdura
cappello
arancia
tecnica
fogliame

tagliare
compagno
maglia
testamento
zafferano

ISyB

cavallo
momento
soldato
speranza
mulino
favore
disegno
futuro
candella
sostanza
famiglia
gomma
nazione
luglio
fagiolo

maggiolino
appetitoso
fantasticare
posteggiare
strepitoso

IORo

braccio – bus - branco
pane – cane- palla
sposo– scusa - sponda
zampa– gelo - zeta
padre – madre - piede
gemma – gusto - gente
stiva – stile - scuola

strada –struzzo- stanco
laccio– faccio - lancio
flauto– ferro - fluido
sciare – sciolto- scuola
razza– stazza - rampa
ceco – gente - cesta
cibo – cine - gelo

costo –posto - cuore
gnocco – gnorri - niente
bello – bravo - brando
vero – cero - cielo
costo – casco - cesto

IWR

anno
aglio
quando
lettera
verza
spalla
chicco
implica
recessione

IPWR

sottare
mittotere
chiarpire
foregna
specare
crurivo
diperre
sbagliare
zumbare

scheletro
commercio

contagioso
scherzare
bibliografia
diagnostico
discrezionale
irascibile
assaggio
risciacquare
misconosciuto

lopotto
sciafo

igli
pando
tazio
scimiaro
rascenno
prasconere
sirbolone
sломma
stuzza

APPENDIX 5

English Test Items**EPhS**

dog
spot
flag
push
book
chair
spoon
cat
rose
rug
lace
lack
noon
June
bread

lock
close
cook
shop
rock

clap – clock - crack
peach – beach- pool
tall– small - test
post– cost - pat
gras – gram - glad
rose – nose - rest
park – mark - pine

EWR

nine
fan
frog
blue
table
nest
melts
socks
book

EPhB

dad
glad
crab
van
plan
hug
snow
blow
grass
small
train
star
stop
dress
smell

crab
green
step
clap
plum

EORo

mad –moon- paw
jump– jam - goat
nut– nap - rug
wait – wet- run
dig – sleep - day
box – fox - bee
stay – star - song

EPWR

sast
mirst
pift
nolp
vocks
klooth
spalt
strem
doupt

ESyB

banana
baby
money
tummy
coffee
easy
robot
ladder
zero
family
teacher
garden
holiday
tomorrow
geography

helicopter
opening
beautiful
yesterday
December

lamb –spot - lake
show – sheep - sun
hand – hard - sad
vest – food - farm
class – glass - clock

help
gift
sport
rabbit
bucket
flower
Sunday
butterfly
sailor
conclusion
blueberries

vloker
rospits
glay
nosher
shoon
weg
pash
plutrail
balaloo
seether
wraling