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# Influence of Previous Literacy Experiences in the First Language (Catalan and/or Spanish) on Learning to Read in a Foreign Language (Standard Arabic)

**Carla Ferrerós Pagès [1,2,*] and Anna Stern Taulats [3]**

[1] Institut Franco-Cataà Transfronterer, Université de Perpignan, 66860 Perpignan, France
[2] Departament de Filologia i Comunicació, Universitat de Girona, 17004 Girona, Spain
[3] Departament d'Àrab, Escola Oficial d'Idiomes de Drassanes, 08005 Barcelona, Spain
* Correspondence: carla.ferreros@udg.edu

**Abstract**

Learning to read in a second language is conditioned by the linguistic characteristics of the L1 and L2 and their writing systems, and by the learning context and the circumstances of previous literacy experiences. The aim of the present study is to determine which factors most influence the literacy process in a foreign language that is typologically different and has a different writing system from that of the first language in adults (L1 = Catalan and/or Spanish; L2 = Standard Arabic). The results were obtained from reading tests and questionnaires administered to a group of A1 level learners of Arabic ($n$ = 18) with L1 Catalan and/or Spanish. The results show that the morphological characteristics of Arabic, as well as its type of writing system and its non-transparent orthography, impact learners' reading proficiency. Attitudes and prior experiences have an indirect influence on the L2 literacy process, since they are more closely related to learners' self-perception of their reading proficiency, which in turn is linked to a poorer attitude towards social reading and towards second language study in general.

**Keywords:** attitudes; reading; writing systems; second language learning; standard Arabic

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## 1. Introduction

Reading and writing are essential components in the process of formal second language (L2) learning, and one of the factors conditioning their acquisition is the type of prior literacy experience (R. Jiménez et al., 1996; Kamhi-Stein, 2003; Piccinin & Dal Maso, 2021). Learning to read in an L2 is a phenomenon that has been studied especially in children in an immersion context (for a synthesis, see, for example, Koda & Zehler, 2008, and Urbanski, 2023a). In contrast, it has been little studied in adults who are already literate in their L1 and who learn to read in a new writing system in an L2 and even in a foreign language that is not learned in an immersion context.

This study will analyse the learning of reading in Standard Arabic by adults who have completed an A1 level (MECR) in an Escola Oficial d'Idiomes [Official Language School] (EOI) in Barcelona, who have Catalan and/or Spanish as their first language and who were literate in their first language at the primary education stage.

Learning to read in an L2 is principally conditioned by two main factors: (1) the linguistic characteristics of the L1 and L2 and their writing systems and (2) the learning context and the circumstances of previous literacy experiences (Koda & Zehler, 2008; Koda, 2008b; Piccinin & Dal Maso, 2021).

The aim of the present study is to determine which factors are most implicated in the literacy process in a foreign language that is typologically different and has a different writing system from that of the first language by adults (L1 = Catalan and/or Spanish; L2 = Standard Arabic).[1] To achieve this general objective, we will focus on analysing and comparing two issues: on the one hand, reading competence in the L2 will be analysed taking into account the linguistic characteristics and the writing system of the languages involved and, on the other hand, attitudes towards reading in general, considering previous experience in the L1 in terms of attitudes and memories.

Reading competence will be assessed by means of a reading aloud test and a questionnaire on text comprehension. Given that the L2 level of these learners is low (A1 according to the MECR), we will focus on the most basic domain of reading and writing, which is the executive domain, i.e., the control of the written code which enables the encoding and decoding of graphic signs to be transferred to the spoken language. Attitudes will be analysed using a questionnaire on reading experience in L1 and L2, which will be administered prior to the reading test, and a questionnaire on self-perception of the reading aloud process in L2, following the reading test. The results of all tests will be compared to determine whether experiences and attitudes towards reading in L1 have an impact on the acquisition of reading competence in L2.

This study is a novel contribution to the field, as there is limited research that examines prior experiences and attitudes towards reading in L1 as a relevant factor for L2 literacy acquisition. Learning to read and write in Arabic and other languages with non-Latin scripts as L2 has also received little attention (Hansen, 2010; Bishara & Weiss, 2017; Johansson, 2022). Even though Arabic is a language with a long written tradition and has a good number of speakers as an L2, "There is considerably more information available in Chinese and Hebrew than in Arabic and Korean", states Koda (2008a, p. 223).

## 2. Literature Review

### *2.1. Learning to Read in a Second Language*

Learning to read in any language, irrespective of the writing system used, involves learning how this system encodes language, i.e., how graphical elements are converted into linguistic or conceptual objects. In an L2, this is made more difficult by a lack of knowledge of the target language, since when starting to read, in addition to learning the new correspondences between speech units and writing units, the language must be acquired in parallel, and reading comprehension ultimately depends on knowledge of the words (see Verhoeven & Perfetti, 2017, pp. 9–12).

Language acquisition and reading competence in a second language is from the process that takes place in L1, especially in the initial stages (Verhoeven et al., 2019). Its acquisition is conditioned by many factors (Koda & Zehler, 2008; Koda, 2008b; Chung et al., 2019; Urbanski, 2023a), among which are the grammatical characteristics of the first language and the typological distance to the language being learned, the difference between writing systems, the learning context and the circumstances of previous literacy experiences. These previous experiences have an impact from two main points of view: firstly, numerous studies indicate that there is a transfer in literacy processes from the first to the second language in terms of knowledge and skills (Koda, 2008b; Urbanski, 2023a); secondly, this transfer also occurs in the area of attitudes, and this will have an impact on literacy in the L2 (R. Jiménez, 1997; Kamhi-Stein, 2003; Catwright et al., 2015), even if there is little academic literature in this field.

Research on literacy processes in general, and on its acquisition as a second language, is based on multiple perspectives. One of the main themes on which they focus is that of metalinguistic awareness. In a broad sense, metalinguistic awareness is understood as the

ability of learners to reflect on and manipulate linguistic structures (see Kuo & Anderson, 2008). From a phonological point of view, it has been found to be especially relevant to learning to read in alphabetic systems.

L2 readers may have more difficulties in this respect as they have a reduced vocabulary, so that successful phonological decoding of a written word does not guarantee access to its meaning. Therefore, awareness of other linguistic levels is also relevant to literacy learning: semantic awareness refers to learners' knowledge of how meanings are encoded in the language. Morphological awareness refers to the ability to reflect on word formation processes and, as we will see in Section 2.3, is particularly relevant in the case of Arabic. Koda (2008a) already suggests that learning to read involves different facts of metalinguistic awareness depending on the language: "reflecting the prominence of grapheme-morpheme connections in Chinese characters, morphological awareness was found to be a stronger predictor than phonological awareness of literacy acquisition in Chinese (Li et al., 2002)" (p. 76).

In fact, in recent years several studies have emphasised the role of morphological knowledge in L2 reading comprehension, particularly at beginner levels. Recent studies (i.e., Satori, 2025; Teng & Cui, 2025; James et al., 2021) highlight that morphological knowledge significantly contributes to reading comprehension, independently of vocabulary size. Furthermore, recent research underlines that morphological knowledge may be even more crucial than vocabulary in the early stages of L2 literacy development (Zhang & Koda, 2018). These findings have direct implications for teaching languages other than Indo-European ones, especially those with different morphology systems, such as Arabic (see Section 2.3).

Recent scholarship has also drawn attention to the so-called script effects, that is, the influence of the form and function of writing systems on cognition and literacy development (Pae, 2020). Writing systems vary not only in their graphic appearance but also in the way they encode linguistic information, and this variation can condition the reading process in a second language. For instance, alphabetic systems, logographic systems, and abjads each require different kinds of phonological, morphological, or semantic processing, which in turn may influence how learners approach reading. In this sense, the "script effect" suggests that the characteristics of a writing system are not neutral but interact with both cognitive processing and literacy acquisition. This perspective is particularly relevant for our study, since it allows us to situate the challenges of learning to read in Arabic (an abjad system) within a broader theoretical framework that connects writing systems, cognition, and second language literacy. In line with this, Verhoeven et al. (2019) emphasise that L2 reading processes involve both convergence with L1 reading networks and the recruitment of additional neural resources when linguistic and orthographic demands differ substantially, reinforcing the importance of considering script effects in cross-linguistic research.

Success in reading proficiency depends to a large extent on the attitudes that learners have toward reading (Becker et al., 2010; Artola et al., 2021). Even if attitudes and motivation condition the process of learning to read, there is scarce research that has addressed the relationship between these factors and success in reading proficiency (Artola et al., 2018, p. 142).

In second language learning, attitudes toward reading can be informed by prior literacy experiences, which are in turn one of the most important factors to consider in second language reading acquisition studies (Urbanski, 2023a). It should be noted that the (few) existing research in this field focuses particularly on first language literacy in the early stages of the education system. Some of them are revealing in the sense that they show that there is indeed a close relationship between literacy proficiency and students' own perceptions of proficiency (Catwright et al., 2015).

Although there are few studies assessing the importance of attitude in L2 literacy, there is evidence that attitudes related to the reading experience in the first language may carry over to reading in the target language. R. Jiménez (1997), for example, shows that bilingual readers with L1 Spanish and L2 English with a higher literacy level and a better attitude towards reading in their L1 perceive reading as a pleasurable activity and a good way to learn. A study by Kamhi-Stein (2003) conducted with native speakers of Spanish whose second language is English also suggests that affective factors, including learners' perceptions of their L1 and beliefs concerning reading, play an important role in learning to read in the second language.

In this respect, previous research has also pointed out that learners' attitudes and prior experiences with reading in their L1 can influence their engagement and success in L2 literacy (R. Jiménez, 1997; Kamhi-Stein, 2003), although the number of studies explicitly addressing this connection remains limited. On the other hand, some studies point to transfers between L1 and L2 in the process of learning to read (Verhoeven et al., 2019), and the development of these interlinguistic connections varies depending on the characteristics of the languages in contact. In this sense, the description of Arabic as a language with a non-concatenative morphology underscores the grammatical distance from Indo-European languages, highlighting how structural differences between L1 and L2 may condition the process of acquiring reading competence.

### *2.2. Writing and Orthography Systems*

World languages are transcribed in different writing systems. Even when two languages are transcribed in the same writing system, differences can be observed in orthography, which is the implementation of a given writing system in a specific language (Perfetti & Dunlap, 2008; Verhoeven & Perfetti, 2017). Differences in the characteristics between L1 and L2 writing systems and orthographies play an important role in second-language literacy learning (Koda & Zehler, 2008; Koda, 2008b; Johansson, 2022).

Writing systems are broadly classified according to whether the units of the system transcribe phonological or morphological units. The former include alphabets and syllabaries, and the latter correspond to logographic writing systems (Verhoeven & Perfetti, 2017). Alphabetic systems involve correspondences between letters and phonemes. The writing system of Arabic is a sub-type of alphabetic system called abjad, in which each symbol corresponds to a consonant sound, and (short) vowels are usually not transcribed.

Some authors classify languages according to whether the orthography and/or the writing system used to encode them are more transparent (each grapheme corresponds to a single phoneme) or less transparent (one grapheme may correspond to several phonemes or contain more exceptions).

In alphabetic systems, the conversion from letters to phonemes is fundamental for successful word identification (J. Jiménez et al., 2011; Johansson, 2022). Even so, the type of correspondences established between graphemes and phonemes can lead to different reading strategies (Perfetti et al., 2005; Perfetti & Dunlap, 2008; Verhoeven & Perfetti, 2017): in the reading process of more transparent orthographies, letters are assigned to phonemes which, in milliseconds, are assembled into larger units until the words are decoded. In less transparent orthographies, the word corresponding to a whole-word letter pattern is retrieved, so that the correspondence established between graphemes and linguistic units is more similar to a logographic system than to an alphabetic system (Verhoeven & Perfetti, 2017). In the case of children who learn to read by visually recognising the whole word, this recognition takes precedence over letter–sound correspondences (Perfetti & Dunlap, 2008). Studies on adults learning to read in an L2, including Chinese and English as languages of study, suggest that two very different languages with fundamentally different writing

systems share reading processes (Perfetti & Dunlap, 2008). The processes of correspondence between spelling and phoneme/semantic unit are similar between the languages, but there are divergences in the time course of these processes that are related to the frequency of occurrence of words. However, the type of writing system and orthography of the languages involved determine certain variations in these processes.

The orthography of Spanish is considered highly transparent (Perfetti & Dunlap, 2008; Perfetti & Verhoeven, 2017). There is limited research on Catalan, which is considered "moderately transparent" (Llauradó & Tolchinsky, 2015): written Catalan is, in fact, less transparent than Spanish due to phenomena related to vowel reduction in unstressed syllables. On the other hand, Arabic orthography is considered not very transparent. It also has a different writing system from that of Catalan and Spanish (Fender, 2008; Johansson, 2022).

Overall, while research on cognitive processes and reading competence in L2 is abundant, the dimension of attitudes has been much less explored, with only a few contributions such as R. Jiménez (1997) and Kamhi-Stein (2003), which point to the key role of prior experiences and learners' perceptions. Our study seeks to contribute to this still underdeveloped field. As for the second objective, that of linguistic distance, beyond the general considerations mentioned earlier regarding transfer and differences, we will develop this point in the next section through a brief presentation of writing and orthographic systems. In particular, we will describe the case of Arabic and its linguistic characteristics—especially its non-concatenative morphology—which highlight the grammatical distance from the Indo-European languages taken as a reference. Since these share a common functioning within the Indo-European family, we will not go into further depth on them, but rather place the emphasis on Arabic as the contrasting case.

### *2.3. Standard Arabic as Second Language: Reading and Grammar Interaction*

The Arabic alphabet is an abjad alphabetical system used for transcribing languages such as Arabic, Urdu, Fula, Persian, etc. In those languages phonemic awareness, which enables the conversion of letters to phonemes, influences reading in early stages, both in formal L1 and L2 learning (Abu Rabia, 1995; Johansson, 2022), especially as it relates to word reading accuracy, rather than speed and fluency (Saiegh-Haddad, 2008).

In the case of Arabic, this abjad is specialised for the standard variety of the language, which exists in a diglossic situation in the territories where it is spoken: local varieties of Arabic, which have no written tradition, are reserved for familiar and colloquial uses (see Saiegh-Haddad, 2017). This issue is particularly relevant here, as in most cases, Arabic reading is learned as an L2, even in Arabic-speaking territories: children have as their L1 an oral variety of Arabic. Although there is some intelligibility depending on the spoken variety, the gap between some of them can be considerable (Al Wer et al., 2022). This obviously has implications for literacy learning (Fender, 2008; Saiegh-Haddad, 2017, 2019).

Standard Arabic has grammatical features relevant to the study of its writing system (Corriente, 1996; Hansen, 2010). Arabic has gender and number inflection (in both verbs and nouns) and person (in verbs). The inflectional procedures usually involve prefixes and suffixes, but sometimes also predictable vowel changes within the root. Case inflection is also present in nouns and adjectives. As for word formation, Arabic has non-concatenation procedures (Corriente, 1996): in general, words consist of two unpronounceable morphemes in isolation: a consonantal root that provides the basic semantic information, and a fixed pattern with slots for the consonants of the root with the morphosyntactic properties of the lexical item:

| | | | |
|---|---|---|---|
| Consonantal root | $C_1C_2C_3$ | | |
| | NJR | meaning related to… | wood |
| | HDD | | iron |
| | TBX | | cooking |
| | RSM | | drawing |
| | FNN | | art |
| Discontinuous affix | $_{-1}A_{-2}\ _{-2}\ A:_{-3}$ | nouns denoting professions | |
| | najja:r | ‘carpenter’ | |
| | hadda:d | ‘blacksmith’ | |
| | tabba:x | ‘cook’ | |
| | rassa:m | ‘painter’ | |
| | fanna:n | ‘artist’ | |

This abjad system only represents consonants and some long vowels in a way that is closely linked to these morphological patterns, so there is a relationship between morphological awareness and the reading process. Some research related to learning to read Arabic has highlighted the need to incorporate grammatical knowledge (morphological, lexical and semantic) in improving this skill (Abu Rabia, 2002; Hansen, 2010; Alhaqbani & Riazi, 2012) not only from the point of view of comprehension: morphological awareness intervenes in a positive sense in reading even from an executive point of view. Still, it should be noted that these effects do not occur exclusively in abjad systems such as Arabic and Hebrew (Perfetti & Verhoeven, 2017, p. 460).

The Arabic abjad is written from right to left in cursive, and all but six letters are joined to the next letter. All letters have allographic variants according to the ligatures with the letters after and before them. These variants can be significantly different from each other. The direction of reading (in this case inverse to L1) has little impact on learning. In contrast, the shape of the letters and their allographic variants may play a more relevant role (Hansen, 2010).

Another characteristic of this alphabet is the presence of dots above or below letters whose line is the same and which can only be distinguished by these dots. In addition to the dots, which are mandatory, there are a number of optional diacritical symbols which serve to represent two sets of elements: phonetic (mainly short vowels) and morphosyntactic (case and mood in nouns and verbs, respectively). In this sense, the appearance of short vowels in texts is optional and, in fact, they only appear in particular textual typologies (learning manuals, for example). The lack of short vowels facilitates the generation of homograph words (Abu Rabia, 2002; Hansen, 2010).

The optional nature of these diacritical symbols implies the existence of two distinct orthographies, one more transparent and the other more opaque:

> [T]he opacity of unvoweled Arabic is not the result of equivocal graphemes but is the result of the absence of the optional diacritics. The unvoweled orthography, though phonologically underspecified, is a fully specified and consistent consonantry with a regular mapping between the consonantal material of words and their orthographic representation. The morphological structure of this consonantry is likewise transparent, with a regular and uninterrupted representation […] of word patterns (Saiegh-Haddad, 2017, p. 133).

### *2.4. Aims of the Study*

The present study will address issues related to the factors described above, in relation to learners’ linguistic background and their previous literacy experiences, by answering these research questions:

1. What influence do the grammatical differences between L1 and L2 and differences in writing systems have on the process of learning to read in Standard Arabic?
2. Do attitudes and prior experiences towards reading in the L1 have an impact on learning to read in an L2?

These two questions aim to fill the gaps in research on the processes of learning to read with regard to the impact of attitudes and linguistic awareness between typologically distant languages, with different writing systems, and with little tradition of study in this area, in the case of Standard Arabic.

## 3. Method

### *3.1. Sample*

The sample for this study is composed of 18 participants. The inclusion criteria are as follows: students of Arabic as an L2 at level A1. All of them study at the Escola Oficial d'Idiomes de Drassanes (Barcelona). This is a small sample considering the population (A1 level Arabic students in Catalonia) is itself small, as these courses are only offered in five EOIs. The methodology combines both a qualitative and a quantitative approach. Given the sample size, it should be noted that it will be essentially qualitative, but we will provide some numerical data that we believe will be useful to complement the analysis.

Participants were informed of the aim of the study and agreed to take part in the research. Their anonymity was guaranteed through the use of numerical codes.

### *3.2. Instruments*

#### 3.2.1. Reading Aloud

Participants read a short text, corresponding to level A1 (MECR), aloud:

مَرْحَبًا! إِسْمي مَحْمود عَبْد الكَرِيم وَعُمْري 34 سَنة. أنا صُحُفيّ سُوريّ وأَعْمَل في التِّلْفِزيون في بَرْنامَج "الكِتاب الجَدِيد". لَسْتُ مُتَزَوِّجا، أنا مَخْطوب وَخَطِيبَتي إِسْمها رانِيا. هِيَ مِن دِمَشق مِثْلي أَيْضًا وَلَكِنَّها لا تَعمَل مَعي بَلْ في مَدْرَسة لِأَنَّها مُدَرِّسة اللُّغة الفَرَنْسِيّة. نَحْنُ نَعْمَل كُل الأيام وَلَكِن يَوم السَّبْت وَ يَوم الأَحَد نَذْهَب مَع الأَصْدِقاء إِلى السِّينَما أو إِلى مَطْعَم.[2]

The voice of the informants, who were reading the text for the first time, without prior preparation, was recorded. After a second silent reading, they have answered the following reading comprehension questions:

— What does the text talk about? Can you briefly summarise what you have read?
— Based on the text and your knowledge, say what these words mean: بَرْنامَج (television programme) and خَطِيبَتي (my fiancée).

It should also be noted that students had been systematically trained in reading throughout the course as part of their regular classroom instruction. The reading test was administered at the end of the academic year and formed part of the final course assessment.

#### 3.2.2. Questions on the Reading Process and Self-Perception

After the reading test, results were obtained on the self-perception of the reading experience by means of the following questions:

— How did you feel reading the text? Explain briefly.
— What was difficult to understand?
— What did you find easier to understand?
— Did you use any strategy to deduce the meaning of a fragment or a word that you did not understand?

3.2.3. Questionnaire on Attitudes and Interests in Reading (In L1 and L2)

The questionnaire used for this study is an instrument for assessing attitudes and interests for adult learners of Arabic as L2. This questionnaire is the adaptation of a validated instrument designed to evaluate attitudes and interests towards reading in the first language (Artola et al., 2018), which assesses five dimensions through items that informants rate using a Likert-type scale from 1 to 4: motivation towards reading, reading interests, attitudes towards social reading (that is, group reading, for example, in the classroom), perception of reading competence, and attitude towards learning and studying. This questionnaire is designed for students in the second year of primary school who are learning to read in their first language. We have therefore adapted it to the context of our study: we have split some questions to include the experience of reading and writing in L1 and L2 (Arabic) in the dimensions corresponding to 'reading interests', 'reading motivation', and 'perception of reading competence'. As for the questions on homework, they have been adapted to the context of formal second language learning (items corresponding to the dimension 'attitudes towards study'). Some questions relating to the dimension 'attitudes towards social or collective reading' and the dimension 'reading interests' have been removed because they are not relevant to a study with adult participants.

The final questionnaire resulted in a total of 28 questions corresponding to the following dimensions:

— Reading interests (in L1 and L2) (1 = not at all interested and 4 = very interested).
— Motivation towards reading (1 = not at all motivated and 4 = very motivated).
— Attitudes towards social reading (in L1 and L2) (1 = unfavourable and 4 = favourable).
— Motivation towards studying Arabic (1 = unfavourable and 4 = favourable).
— Perception of reading proficiency (in L1 and L2) (1 = not very proficient and 4 = very proficient).

*3.3. Data Analysis*

As for the reading test, the degree of attainment of the main reading skills was qualitatively assessed on the basis of J. Jiménez et al. (2011), taking into account the A1 level of the informants and the characteristics of Arabic (see Section 2.3):

1. Alphabetical knowledge:
   — Correct decoding of graphic symbols.
   — Pronunciation of symbols corresponding to sounds that do not exist in L1.
2. Linguistic knowledge:
   — Correct establishment of correspondence between morphological patterns and pronunciation (pronunciation of short unwritten vowels).
   — Correct pronunciation of phonological phenomena not represented by writing (correct elision in genitive structures and in prepositional syntagms and correct assimilation of the definite article before coronal consonant).
3. Fluency:
   — Speed.
   — Intonation.

To ensure reliability in the analysis, the results were jointly examined by two evaluators. Both raters reviewed the participants' performances and discussed any discrepancies until a consensus was reached. This collaborative procedure aimed to minimise subjectivity in the interpretation of the data and to strengthen the validity of the findings.

Each of the three items was scored as 1 (achieved) or 2 (not achieved). An item was considered 'Achieved' if participants correctly produced more than 60% of the evaluated

elements, considering the students' proficiency level. For instance, in assessing the reading of symbols representing sounds not present in the L1, performance was classified as 'Achieved' if 16 or more were produced correctly (out of a total of 27). In the case of fluency, which is difficult to measure numerically, it was considered 'Achieved' if the reading was carried out in such a way that neither the speed nor the intonation hindered a potential listener's comprehension of the text.

The results obtained from the attitude questionnaire were analysed quantitatively, despite the small sample size, using a statistical analysis programme. From this analysis it has been possible to establish the correspondences between the different variables described in Section 4.

The results obtained through the attitude questionnaire were interpreted in the light of the results obtained through the reading test assessment in order to determine whether attitudes and interests have an impact on the literacy process.

The reading comprehension responses, as well as the questions on the reading process and self-perception, were analysed qualitatively, extracting the most relevant units of meaning that emerged from their responses. These have been grouped into categories which bring together those smaller units of meaning that had something in common. The presentation of results and the analysis of the data takes into account the establishment of these categories, which are related to the results obtained from the other two tests.

## 4. Results

### *4.1. Reading Proficiency in Standard Arabic*

Among the three dimensions assessed, fluency and intonation are the one with the smallest range: only six participants read the text with a fluency that is to be expected at A1 level. These six informants also scored well in the other categories (decoding graphic symbols and, except in one case, linguistic knowledge). The dimension in which participants score highest is 'decoding graphic symbols', followed by 'linguistic knowledge' (Table 1).

**Table 1.** Reading tests results.

| Participant | Decoding of Graphic Symbols | Linguistic Knowledge | Fluency, Speed and Intonation |
|---|---|---|---|
| 001 | Not achieved | Not achieved | Not achieved |
| 002 | Achieved | Not achieved | Not achieved |
| 003 | Achieved | Achieved | Not achieved |
| 004 | Achieved | Achieved | Not achieved |
| 005 | Achieved | Achieved | Achieved |
| 006 | Achieved | Achieved | Achieved |
| 007 | Achieved | Achieved | Not achieved |
| 008 | Achieved | Not achieved | Not achieved |
| 009 | Achieved | Not achieved | Achieved |
| 010 | Achieved | Achieved | Achieved |
| 011 | Achieved | Achieved | Achieved |
| 012 | Not achieved | Not achieved | Not achieved |
| 013 | Achieved | Not achieved | Not achieved |
| 014 | Not achieved | Not achieved | Not achieved |
| 015 | Not achieved | Not achieved | Not achieved |
| 016 | Not achieved | Not achieved | Not achieved |
| 017 | Achieved | Not achieved | Not achieved |
| 018 | Achieved | Achieved | Achieved |

Difficulties related to decoding graphic symbols are as follows:

— Problems with diacritics:

- Confusion of short vowels (e.g., change of fatha (short vowel [a]) to *damma* (short vowel [u]); we illustrate this with diacritics on the letter corresponding to [b]: بَ to بُ).
- Confusion of letters with the same or similar shape but with different diacritical points (e.g., ي for ب, or ح for ج).

— Problems reading symbols transcribing sounds that do not exist in L1 (e.g., generalisation of the sound [x] for the letters corresponding to the sounds [x] and [h]).

In the A1 level being assessed, difficulties related to linguistic knowledge linked to the reading process are mainly related to the non-assimilation of the consonant of the definite article (al-) in front of the coronal consonant (e.g., reading [al-sabt] instead of [as-sabt]).

As for speed, fluency, and intonation, all participants who did not score well in this category read slowly and fragmentarily, resulting in a neutral intonation which hinders comprehension of the text.

The difficulties outlined above are those taken into account in determining whether participants have good reading competence, given the characteristics of the writing system and the characteristics of the languages involved. Other errors relevant to the analysis (not to the assessment of reading literacy) are as follows.

Some errors in decoding graphic symbols show good recognition of the consonant roots of words. This issue is relevant to the analysis of reading literacy in a language such as Arabic, as these are errors that show good acquisition of some linguistic features. Thus, some informants have confused the following words in the process of reading aloud:

| | | |
|---|---|---|
| اليوم | for | لأيَام |
| al-yum | | al-aya:m |
| ‘the day’ | | ‘the days’ |
| الصديقة | for | لأصْدِقاء |
| al-sadiiqa | | al-asdiqaʔ |
| ‘the friend (f.)’ | | ‘the friends (m.)’ |

They have also confused similar words in common usage:

| | | |
|---|---|---|
| محمد | for | مَحْمود |
| Mohammed | | Mahmud |
| عند | for | عَبْد |
| ʕnd | | ʕbd |
| possessive particle | | part. (surname) |

Some errors in reading diacritics could be in the sense of recognising regular patterns of word formation. For example, the word مَخْطُوب (trans. maktu:b, ‘fiancé’) is read as mukhatib. In this example, the reading of the symbol for [a] instead of the symbol for [u] in a word beginning with [m] seems to indicate that the participant recognises a recurrent pattern of words beginning with a mu- prefix (pattern: muCaCiC).

In general, from the participants’ answers to the comprehension questions, no major difficulties are apparent beyond some occasional lexical problems (e.g., “policeman” for “journalist”) which do not hinder overall comprehension of the text. Most of the informants state that what they found easiest to understand was the presentation of the character (name, age, city), and what they found most difficult was the explanation of his profession.

Participants 001 and 003 show the least understanding of the text:

> "I don't know what it is about, as I have focused on reading. But I know that it is about Majmara's presentation, age, where he works and what he does, where he lives" (001).

> "I know it's about a TV journalist and his ex-partner" (003).

As for the questions related to the perception of their reading process, it stands out that most of the informants found the text difficult and felt that they did not read it well or understand it well. Only participants 005, 006, 010, 012, and 018 claim to have been able to read and understand the text with few difficulties.

In the answers concerning the self-perception of the reading experience, almost all of them explain that the context helped them to understand the words they did not know. One of the participants (012), despite having shown a good understanding of the text, states the following:

> "I am not able to understand much when I read instantly [. . .], I focus on reading and lose comprehension [. . .]. My reading ability is totally independent of my comprehension ability. It's very curious, it's never happened to me before with any other language" (012).

This perception, which participant 012 describes explicitly, appears implicitly in all the responses: they state that, in general, they have had difficulties in understanding the text when reading it aloud for the first time. Previous research (i.e., Ellis, 1999; Rezaei, 2022) has highlighted the connection between listening and reading as complementary sources of input in second language acquisition. Incorporating this perspective is particularly relevant for the case of Arabic, since the abjad script may disconnect learners from the speed and immediacy of input they are accustomed to in more transparent alphabetic systems. In our data, some participants explicitly report that their ability to decode text does not align with their capacity to comprehend it in real time, a gap which may be explained by the lack of synchrony between oral input and the processing demands of the Arabic script.

Some responses in this self-perception questionnaire relate good comprehension of the text to knowledge of Arabic morphological patterns. Thus, for example, informant 015 states that words with suffixed pronouns have made it difficult for them to read, as they do not allow them to recognise the roots of the words immediately. Similarly, informant 003 indicates that the fact that certain words share a root can make them easier to understand.

### *4.2. Attitudes Towards Reading and Previous Literacy Experiences*

Only three participants (001, 002, and 003) show no or little interest in reading in their L1, while the rest show a great deal of interest or a lot of interest. As for reading in L2, 15 participants show a lot of interest, and 3 show quite a lot of interest: no participant scores the questions in this dimension with a 1 or a 2. The 3 students who score 1 or 2 for interests in L1 are not the same 3 who score 3 for reading interests in L2, i.e., there is no relationship between a lack of interest in reading in L1 and a lower interest in reading in L2.

Only three learners give a score of 1 or 2 for motivation to read in general (002, 003, and 013); two of these match two of the participants who show little or no interest in reading in L1. Fifteen participants show quite a lot or a lot of motivation.

As for attitudes towards social reading, there are also differences regarding whether learners are asked about L1 or L2. In the case of L1, four respondents have a rather unfavourable attitude, two show a very favourable attitude, while twelve have a rather favourable attitude. As for L2, five participants show an attitude between unfavourable and rather unfavourable, and there seems to be no relationship with those who show a

rather unfavourable attitude in L1, as only one participant rates social reading in the two languages unfavourably.

Attitudes towards studying Arabic are mostly between rather favourable (12 participants) and favourable (5 participants). Only one informant (013) shows an unfavourable attitude towards the study of Arabic.

The last dimension for which results were obtained concerns the perception of reading proficiency in L1 and L2. In the first case (L1), the informants have, in general, a good perception of how the process of learning to read in their L1 developed during their childhood. Only two informants responded that they were not very proficient in this process. These same two informants and ten more claim to be not very proficient or rather not very proficient in reading in Standard Arabic. Five participants believe that they are rather proficient, while only one informant claims to be proficient.

The following table shows the results obtained for each participant in relation to their attitudes towards reading in L1 and L2 (Table 2).

**Table 2.** Attitude questionnaire results.

| Participant | Interests in Reading | | Motivation Towards Reading | Social Reading Attitudes | | Attitudes Towards Studying Arabic | Perception of Reading Competence | |
|---|---|---|---|---|---|---|---|---|
| | L1 | L2 | L1/L2 | L1 | L2 | L1/L2 | L1 | L2 |
| 001 | 2 | 4 | 3 | 2 | 2 | 3 | 2 | 1 |
| 002 | 1 | 4 | 1 | 2 | 3 | 4 | 3 | 2 |
| 003 | 2 | 3 | 2 | 3 | 1 | 3 | 3 | 2 |
| 004 | 3 | 4 | 3 | 3 | 3 | 3 | 3 | 3 |
| 005 | 4 | 4 | 3 | 3 | 3 | 3 | 3 | 2 |
| 006 | 3 | 4 | 4 | 3 | 3 | 3 | 3 | 2 |
| 007 | 3 | 4 | 3 | 2 | 3 | 3 | 3 | 3 |
| 008 | 4 | 4 | 3 | 2 | 3 | 4 | 3 | 3 |
| 009 | 3 | 4 | 3 | 3 | 3 | 3 | 4 | 2 |
| 010 | 3 | 3 | 3 | 3 | 3 | 3 | 4 | 2 |
| 011 | 4 | 4 | 4 | 4 | 3 | 3 | 4 | 3 |
| 012 | 4 | 3 | 4 | 3 | 2 | 3 | 4 | 1 |
| 013 | 3 | 3 | 2 | 3 | 2 | 1 | 3 | 1 |
| 014 | 4 | 4 | 4 | 3 | 3 | 3 | 4 | 2 |
| 015 | 4 | 4 | 4 | 3 | 2 | 4 | 2 | 1 |
| 016 | 3 | 4 | 4 | 3 | 3 | 3 | 3 | 2 |
| 017 | 4 | 4 | 3 | 4 | 3 | 4 | 4 | 3 |
| 018 | 3 | 4 | 3 | 3 | 3 | 4 | 4 | 4 |

Some relationships can be drawn from the above data which, given the small sample size, cannot be generalised but do point to some relevant ideas. All informants who report little or no interest in reading in their first language have a poor perception of their own reading proficiency in Arabic. In the same vein, all informants who do not feel they have good reading competence in Arabic have little or no motivation towards reading in general. No informant with little or no motivation for reading in general feels fairly or very competent reading in Arabic.

Informants who have a memory of having had a poor acquisition of reading proficiency in L1 perceive that they also have a poor reading proficiency in L2.

Another finding, interesting for the relevance it may have for studies of L2 reading instruction, is that all informants who feel they are proficient in Arabic have a favourable attitude towards social reading in Arabic, which does not always correspond to the attitude they have towards social reading in their first language.

## 5. Discussion

### 5.1. The Impact of Linguistic Factors and the Characteristics of the Writing System on the Process of Learning to Read in the L2

The reading test confirmed that both the grammatical features of the L2 and its writing system significantly influence the acquisition of reading in Arabic by learners whose L1 differs typologically and orthographically. As outlined in Section 2, Standard Arabic employs non-concatenative morphology: words are formed by combining a consonantal root, which carries core semantic meaning, with a second morpheme that encodes morphosyntactic information. This structure is crucial in learning to read and write Arabic (Saiegh-Haddad, 2017). Moreover, the use of an abjad script—where short vowels (part of the non-root morpheme) are typically unwritten—leads to reading challenges. However, learners gradually learn to recognise consonantal patterns, enabling them to infer these missing vowels and even decode unfamiliar words.

But these deductions can lead to errors. In the case of A1 learners these are rare, as they have not yet learned to recognise many of the patterns. Even so, some do occur when reading plural words which they have usually seen in the singular: They read al-yum (اليوم 'the day') instead of al-ayaam (لأَيَام 'the days'), or al-sadiiqa (الصديقة 'the friend') instead of al-asidqaʔ(لأَصْدِقاء 'the friends'). There is even a case of a diacritic reading error that could go in this direction: informant 009 mistakes a symbol indicating the absence of a vowel for a symbol indicating a short [u] in a word beginning with [m], suggesting that the participant is beginning to recognise a recurrent pattern of words beginning with a mu- prefix (pattern: muCaCiC). Another error that has appeared in more than half of the cases has to do with difficulties in reading the word for 'television', which, being a loan word, does not comply with the Arabic word structure. This is evidence that even at A1 level learners have already developed a certain morphological awareness which has implications for reading.

These errors indicate that language acquisition is proceeding satisfactorily. This is a good example of error being an active and necessary element in the learning process, as it provides insight into the extent to which goals are being achieved in relation to L2 learning (Corder, 1967).

Some responses from the post-reading self-perception questionnaire also show some learners' awareness of regular Arabic word formation:

> "[one strategy I have used to deduce the meaning of a word I did not understand] is to take into account the meaning of words that have the same root" (003).

Studies on reading processes and their acquisition in an L2 take into account precisely the learners' metalinguistic awareness (Kuo & Anderson, 2008; James et al., 2021; Johansson, 2022; Satori, 2025). In alphabetic systems, such as Arabic, good phonological awareness is essential, but not enough, especially at initial levels in L2 learning (Sadeghi et al., 2016). Due to the morphological characteristics of Arabic described above, morphological awareness is also essential, even when learning to read at an executive level (Kuo & Anderson, 2008). Our results show that knowledge of morpheme form—linked to the type and function of the word within the sentence—contributes to vocabulary comprehension, in line with Satori's findings (Satori, 2025).

Those previous studies agree on the need to increase research in this regard. Teng and Cui (2025) highlight the necessity of exploring morphological structures beyond those already analysed. Urbanski (2023b) argues that further research is needed to determine whether the grammatical elements known by learners help them overcome reading difficulties in the L2. Additionally, more investigation is required to assess whether the generalisations drawn from these findings can be applied to understand reading processes in languages with different morphosyntactic structures. In this sense, the results presented

here contribute to enlarging the corpus of data for the study of these phenomena from a more global point of view. Specifically, in the case of Arabic, the morphological level is decisive, as its system of roots and nonconcatenative affixes may help learners deduce the meaning of lexical items—as made explicit by informant 003.

These issues have been discussed by researchers on the acquisition of Standard Arabic literacy by native speakers:

> Very little research has been conducted in the area of morphological processing by Arabic language children. [. . .] Some researchers have argued that Arabic-speaking children must learn to rely on morphological mapping skills to help them read unvowelized texts. [. . .] However, as Shimron (1999) notes, knowledge of how children develop and utilize morphological mapping skills is a completely new area in literacy research with Semitic languages (Fender, 2008, pp. 115–116).

It is interesting to bear this in mind for further studies since, as already described in Section 2, there are no native speakers as such for Standard Arabic, so the findings of studies of this kind may be relevant for research in the field of L2 acquisition.

Not only do linguistic differences between L1 and L2 have an impact on the process of learning to read in L2, but so do the characteristics of the writing system itself. Arabic corresponds to a type of orthography that is not very transparent (Perfetti & Dunlap, 2008). According to authors such as Verhoeven and Perfetti (2017), in more transparent orthographies, phonemes are assigned to letters during the reading process, which are assembled into larger units in milliseconds. In contrast, in orthographies such as Arabic, words corresponding to letter patterns are completely retrieved. The case of Arabic is, in this sense, complex. Although its orthography is generally considered opaque, it is often learned through vocalised texts, which make the orthography more transparent.

Although vocalised Arabic may be less opaque, it is clear, and our data support this, that morphological skills and knowledge are mobilised in the reading process, and this can be explained by the greater transparency of the orthography of the L1s (Catalan and/or Spanish) compared to Arabic. In fact, Johansson (2022) demonstrates that reading develops more quickly in languages with more transparent orthographies. In our case, students are not only learning a new writing system, but they are moving from a fairly transparent system to a system that is perhaps less so.

This mobilisation of morphological awareness shown by the results may, however, have another explanation, taking into account all the data presented and the arguments of Fender (2008): perhaps it does not derive so much from the fact of being a more or less transparent orthography, but from the combination of two factors. On the one hand, the grammatical characteristics of the target language and, on the other, the difficulty they have in decoding the symbols of the new writing system. Hansen (2010) shows that the difficulties in acquiring Arabic literacy are rather linked to the non-recognition of unknown graphemes (some quite similar to each other), which can represent phonemes that are unfamiliar to learners. The lack of vowels can hinder these processes in the sense that they contribute to the generation of homographic words. Even so, this same study (Hansen, 2010) shows that at initial levels, the appearance of short diacritic vowels can also contribute to reading difficulties. In other words, both the absence and the presence of vowels, for different reasons, contribute to the difficulty of achieving success in reading competence. These difficulties lead them to rely on other linguistic levels of processing, not just phonological. Given the characteristics of the language, a good knowledge of the morphological level facilitates the reading process, as some of the students explain.

Our findings can also be interpreted in light of broader theoretical perspectives. Neurocognitive accounts of L2 reading suggest that literacy acquisition involves both convergence with first language reading networks (intralingual processes) and the recruitment of

additional neural resources when the demands of the writing system differ substantially (interlingual processes) (Verhoeven et al., 2019). In parallel, the "script effect" hypothesis (Pae, 2020) posits that the specific features of a writing system shape cognitive and literacy processes. From this viewpoint, the reading difficulties observed among our participants may not only derive from limited proficiency in Arabic but also from the specific cognitive demands imposed by the abjad script, which differs substantially from the transparent alphabetic systems of Catalan and Spanish. In this regard, our data provide further evidence that literacy acquisition in typologically distant languages is shaped not only by linguistic factors but also by the intrinsic characteristics of their writing systems.

### *5.2. The Impact of Attitudes and Previous Reading Experiences on the Process of Learning to Read in L2*

Another factor involved in learning to read in an L2 is the learners' previous reading and literacy experiences (R. Jiménez et al., 1996; Kamhi-Stein, 2003; Urbanski, 2023a). According to Koda (2008b) these prior experiences have an impact not only on the possible transfer of literacy processes between the two languages, but also in the area of attitudes.

Both previous studies (Catwright et al., 2015; Artola et al., 2021) and the results presented in this study suggest that, in order to assess the impact that attitudes have on the process of learning to read, it is relevant to also assess students' self-perceptions of their reading proficiency. We have observed that informants who say that they were not very proficient in learning to read in L1 are also not very proficient in L2. This correlation suggests a link between memories and attitudes towards reading in L1 and the L2 learning process.

According to our data, there is a correlation between perceived and actual reading proficiency in L2, but only when proficiency is low: participants with poor test results also reported low self-assessed proficiency and described the reading process as difficult. However, no clear link was found between high reading proficiency and positive self-perception, as several participants who performed well still believed their reading skills were low.

As for the relationship between attitudes and interests towards reading and reading competence in L2, the results are inconclusive. Participants with low interest in reading in their own language have the perception of having poor reading proficiency in Arabic (participants 001, 002, and 003), although they have obtained unequal results in the reading tests. These same informants 002 and 003, as well as 013, also report low motivation towards reading in general. Like informants 002 and 003, participant 013 obtains unequal results in the reading test.

There does not seem to be a clear relationship between reading interests in L1, and reading motivation in general, and reading proficiency in L2. However, we have seen that participants who show less interest in reading have the impression of having low reading proficiency in L2. In that sense, one issue of relevance to the process of teaching and learning to read in L2 is that there is a clear relationship between interests and motivation and self-perception of reading competence in L2.

Below is a summary of the relationships that were observed and just explained (Table 3):

As we have already pointed out, there are few studies correlating attitudes and the reading process in an L2, and our findings are in line with those obtained in previous studies. Kamhi-Stein (2003) states that readers' beliefs towards reading may influence reading behaviour, and R. Jiménez (1997) states that there is a relationship between the attitude towards reading in L1 and the perception of reading in L2. Similarly, and according to the data from our study, the impact of attitudes towards reading in general on learning

to read in an L2 is more about attitudes towards reading and self-perception of reading competence in general than about learners' actual competence in reading.

**Table 3.** Attitudes' questionnaire summary.

| | | |
|---|---|---|
| Low reading proficiency in L1 (childhood) | → | Low reading proficiency in L2 (now). |
| Low reading perceived proficiency in L2 | → | Low reading proficiency in L2 |
| Low interest in reading in L1<br>Low reading motivation in L1<br>Low reading interest in general | → | Low reading perceived proficiency in L2 |

Taking all of this into account, it is crucial to bear in mind that among the factors that have the greatest impact on L2 acquisition are learners' attitudes as well as affective factors (Larsen-Freeman, 2018; Sun, 2019). Both can be greatly modified by their self-perception of their learning process and can therefore contribute to success or failure in second language acquisition. Thus, our study reveals that attitudes do have an impact on reading acquisition, albeit indirectly, as they influence overall language learning. As our results have shown, success in language learning—whether lexical or grammatical—contributes to an improvement in students' reading proficiency. In this regard, our study shows that previous experiences influence the success of L2 reading acquisition—not only in the ways explicitly discussed in studies such as Urbanski (see the Urbanski, 2023a review), but also through more indirect elements, such as learners' attitudes and motivation toward reading in their first language (L1), which act as underlying factors shaping their engagement with reading in the L2.

## 6. Conclusions

This study aimed to identify the key factors influencing the acquisition of reading skills in Arabic by learners whose first language is Catalan and/or Spanish. Focusing on two relatively underexplored areas—reading attitudes and prior experiences, and the grammatical and orthographic characteristics of Arabic—we contribute to the limited body of research on both L2 literacy and reading in Arabic. While the study's small sample size, due in part to the limited number of formal Arabic programmes in Catalonia, restricts generalizability, the combined qualitative and quantitative approach provides valuable insights that can guide future research.

The results highlight the significant role of linguistic features in L2 reading acquisition. Arabic's non-concatenative morphology and opaque orthography pose challenges, particularly for learners unfamiliar with the script, requiring the development of morphological awareness. This awareness is linked to many of the reading difficulties observed. Although attitudes and prior experiences did not show a strong direct effect on literacy outcomes, an indirect influence was found: learners with poor self-perceived reading competence tended to report lower motivation and less positive attitudes toward reading and, potentially, toward L2 learning overall.

In the context of formal L2 learning, literacy is particularly important when the learner is not in an immersion context, as there is no input, and learning takes place mainly through reading and writing. This work contributes to providing clues as to which factors have the greatest impact on learning to read and, by extension, on the process of learning Arabic as an L2 in general. On one hand, attitudes toward reading influence language learning; on the other, explicit instruction in grammatical features—particularly morphology—is key to the development of reading proficiency in the target language, which is itself shaped by learners' motivation. Although attitudes remain an underexplored factor, and their connection to reading development in L2 is not yet fully understood, our results clearly

indicate that they have a positive impact on both language acquisition and, ultimately, literacy development.

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**Institutional Review Board Statement:** Ethical review and approval were waived for this study by the Ethics Committee of the University of Girona. The Committee determined that although the research involves human participants, it falls outside the biomedical field. According to their guidelines, permission is only required under specific circumstances, which do not apply to this study. The regulations of Ethics Committee of the University of Girona shows that "research involving people: When the research relates to individuals, specifically excluding research involving patients and/or clinical experimentation. When research projects involving people entail the processing of special categories of data: the person's racial or ethnic origin, political opinions, religious or philosophical beliefs, or trade union membership, genetic or biometric data intended to uniquely identify a natural person, or data concerning their health, sex life, or sexual orientation." This study does not involve any of the mentioned special categories of data.

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**Data Availability Statement:** The data from this research are not yet publicly available, but anyone interested can contact the corresponding author of this article to obtain them.

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## Notes

[1] We use the label 'second language' to refer to the learning of a foreign language, even if it takes place in a non-immersion context.

[2] Hello! My name is Mahmoud Abdulkarim and I am 34 years old. I am a Syrian journalist and I work in television in the programme 'The New Book'. I am not married, I am engaged and my fiancée's name is Rania. She is from Damascus like me, but she doesn't work with me but in a school because she teaches French. We work every day, but on Saturdays and Sundays we go with friends to the cinema or to a restaurant.

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