



An Overview of the Persian EFL learners' Spelling Difficulties

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Abstract

Spelling is considered a difficult skill for foreign and second language learners of English as the ability to spell in English language comes with a lot of effort, particularly when the English spelling system is known to be a complex system, even among native speakers. The difficulties could be linguistic and extra-linguistic. This conceptual paper reviews the differences and similarities between English and Persian spelling system, the sages of spelling difficulties among children, particularly the approach suggested by Tabrizi, Tabrizi, and Tabrizi (2013) in which the stages of learning spelling among Iranian learners are analyzed. The types of morphological, phonological, and orthographical spelling difficulties, factors contributing to the spelling difficulty, as well as a comprehensive literature review of EFL studies conducted on English spelling are provided in this paper. Finally, the mental processing and the role of memory are discussed briefly. It was concluded that examining the differences between the learners' first language and English language may provide useful insights into the English spelling problems faced by EFL learners.

Keywords: Spelling; Difficulty; Persian; English; EFL

1. Introduction

2. Learning English Spelling

English spelling is difficult for EFL learners. There are many different reasons that make English spelling difficult, particularly for English learners of other languages. Although several approaches for improving English spelling proficiency have been suggested, most of these approaches are only suitable for non-native speakers. Failure to focus on developing the spelling skill restricts the child's learning ability spatially in their writing skills. Understanding the conventional spelling system of the English language involves knowing its phonemes and graphemes and how they are related and pronounced. With

several letter combinations used to represent the 43 phonemes of English, Bahloul (2007) indicated that even native English speakers find it extremely difficult to spell out the same sound or vocalize the same letter in so many ways. In relation to English language, phonemes are perceptually distinguishable units of sound in the English language that make one word distinct from another (Feng, Yan, & Zhai, 2018; Nejad & Qaracholoo, 2013). A grapheme, on the other hand, is the smallest meaningful contrastive unit in the English language writing system (Cho & Lee, 2015). Whereas a grapheme may or may not correspond to a phoneme in the word it forms, e.g. the letters *ough* in the words *tough* and *thorough*. In addition to understanding the phonemes and graphemes of the English language, learners are also expected to commit to memory how words are spelt. This is technically known as lexical knowledge (L. C. Ehri, 1993). Lexical knowledge involves identifying the letter sequences of particular words and the sounds these letter sequences make. Such a process of spelling involves a variety of actions, beginning with knowledge of the required lexicon. If learners do not find a match between a phoneme and its corresponding grapheme, learners then proceed to guess the spelling based on what they are used to seeing in the materials (books, etc.) they typically deal with (L. C. Ehri, 1993). A comparison between different English-speaking children offers important insights regarding the difficulties of the English language. These challenges reflect the educational and cultural practices that vary between English-speaking cultures (Furstenberg, Levet, English, & Maillet, 2001). An important distinction between British and American approaches to learning English is in the ways tutors focus on the sounds of letters when teaching young children. For example, instead of using the conventional name of the vowel *a* (i.e., the indefinite article) when referring to the letter, British tutors prefer to use /æ/ (Ellefson, Treiman, & Kessler, 2009). According to Furstenberg et al. (2001), this approach (teaching English by the sounds of its letters) contributes to greater spelling accuracy for short-vowel words such as *cat*, as opposed to long-vowel words such as *father*. This greater spelling accuracy is due to the reduced complexity and greater predictability of short-vowel words (Caravolas, Kessler, Hulme, & Snowling, 2005; Nunes, Bryant, & Bindman, 2006; Worthy & Viise, 1996). In the United States, American students appear to have difficulty with long vowels; for example, spelling *tam* for *tame* (Henderson, Dixon, Petersen, Twilley, & Ferreira, 1995; Read & Ruyter, 1985; Treiman & Bourassa, 2000; Treiman & Broderick, 1998). Spelling *tam* for *tame* occurs because *a* is the first letter of the conventional split digraph, with *a* and *e* in the word 'tame' making one sound (Furstenberg et al., 2001). While, digraphs are collections of two letters that make one sound, e.g. *rain* and *book*, a split digraph contains two letters (a-e, e-e, i-e, o-e and u-e), but they are split between a consonant, e.g., *make*, *pure*. Some researchers have identified a letter-name stage in children's spelling development from all English-speaking cultures, and recommend educators to consider the stage of development children are going through when planning their lessons (Bear & Templeton, 1998; Young, 2007). Studies have shown that creative spellings by different English-speaking countries reflect dialects and home languages (Liow & Lau, 2006; Makany, Kemp, & Dror, 2009; Treiman & Kessler, 2006). Ellefson et al. (2009) illustrated how this is manifested in the British and American spellings. Their initial findings on omissions of unstressed final vowels indicated the existence of differences between stops and sustained consonants. In view of this, Ellefson et al. (2009) recommended that British children use one letter (e.g., *g*) to spell both phonemes of the sound label they are taught (e.g., /gə/). Ravid (2001) demonstrated the importance of the association between language forms and the strategies employed in spelling. Ravid (2001) further suggested that young spellers do not need to pay a lot of attention to the form and structure of words. In the early stage of learning how to spell, children tend to have a single-form single-structure perception of the language and use very little variation in word structure. During this stage, young spellers are guided by the regular patterns of letter co-occurrence (Bryant, Nunes, & Aidinis, 1999). There is a tendency for young English learners who are beginning to learn the language's morphology to spell words in the past tense rather than the present tense (Nunes et al., 2006), e.g. *came* instead of *come*. Despite the irregularity of the English writing system, the system can nevertheless be learned. Hildreth (1962) explained that regardless of the problems arising from the English language's non-phonetic nature, it is not entirely non-phonetic, with an approximate 85% of words enjoying elements of consistent phonetic regularity such as *tion*, *dis*, *an*, *con*, *er* and *de*. Teachers could teach these phonetic regularities to students. Other researchers have also asserted that the

rule-governed nature of English renders it teachable (Ediger, 2001; Shemesh & Waller, 2000). These researchers suggest that part of English instruction should consist of learning these rules, which will assist in developing spelling performance and writing ability. Templeton and Morris (1999) further argued that there is a consistency in English arising from frequent patterns of spelling that function within and between syllables. This is useful in identifying the ways certain letter combinations affect sounds of words, particularly in cases where letters appear silent but still affect pronunciation, such as when *e* is added to the word *scrap*, resulting in *scrape*. The 'silent' *e* at the end of the word transforms the syllable's core from /æ/ to /ei/. Awareness of these patterns improves reading and spelling ability. When in doubt about a word's spelling, spellers can then refer to these patterns and letter arrangements (Templeton & Morris, 1999). An alternative explanation is that of Chomsky (2006) who explained one of the reasons the English spelling system has a seemingly arbitrary nature is that it overlooks the language's phonetic variations. For example, the words *nation* and *national* are spelled similarly even though they are pronounced differently. Their spellings are similar because they come from the exact same lexical item. Their meanings are also very closely related. Chomsky (2006) considered this a blessing as differences in spellings do not distort the meaning. Additional variations can occur with stresses and intonation that affect word pronunciation but not spelling. For example, *permit* has different stresses based on whether it is a verb or a noun. In English, meaning is reflected by their lexical spelling that is free of irrelevant phonetic detail that will only confuse spelling. This means that the spelling directly indicates the meaning of the word. This feature provides a stable orthographic representation of words, irrespective of differences in pronunciation. In short, English spelling has an indirect relationship with pronunciation. Despite the numerous challenges associated with learning English, it can nevertheless be taught through carefully designed strategies. Invernizzi, Abouzeid, and Bloodgood (1997) advocated this, stating that spelling activities should be pursued to assist students' spelling development, and that spelling, reading and writing can be improved using newly learned words in writing tasks. They recommended that students should be tested to determine their spelling skills and be grouped based on their needs and abilities. Carefully targeted activities can then be designed, such as comparing words and practicing homophones, to name a few. When such activities are carried out in the form of games and contests, they can be enjoyable while remaining meaningful. Hildreth (1962) believed that learners who are familiar with many letter combinations can generalize from words they already know to new words. For example, if one knows how to spell the word *sending*, he or she would find it easy to spell the word *bending or pending*. As most derivatives of a word are structured by established patterns that can be generalized, systematic and structured spelling instruction can prove effective, despite differences in spelling ability. Schlagal (2001) advised teachers to adopt activities that assist in letter recognition, sound-letter relationships and knowledge of spelling rules. Early English teaching should focus on spelling patterns. For example, students can be taught that the letter *c* should be pronounced /k/ unless it is followed by *i* and *e*, e.g., in *cigar* identifying where short and long vowels occur is also helpful. Such activities are important for students who come from different backgrounds and thus require activities that are specially designed for them. Likewise, Shemesh and Waller (2000) designed a spelling program to use spelling patterns through games and puzzles. J. A. Smith (1973) argued for the contrary, believing that phonic rules are too complicated for young students. According to him, there are simply too many rules with too many exceptions, making spelling an exceedingly complicated task. Such a burden may prove detrimental to early learners. Nevertheless, he does recognize the merit of having a rudimentary knowledge of such rules as a guide to spelling. Hildreth (1962) had earlier recognized that despite the merit of such instruction, knowledge of spelling rules is of limited value. Rather, discovering the rules through repeated exercise is a more effective approach, as rules must be applicable to a large corpus of words to be meaningful for the student. Later, Smedley (1983) argued that if a certain spelling rule can solve similar spelling problems among students, it may be wise to then teach and practice that particular rule with students. Nevertheless, like Hildreth (1962), he also prefers that students discover such rules themselves. Nevertheless, a consensus has yet to be reached among researchers concerning the effectiveness of early exposure to the rules of spelling for greater spelling proficiency, despite their general agreement about the significance of spelling instruction. Hildreth (1962) argued in favor of a hands-on approach to learning

how to spell. He argued that children advance in spelling through teacher intervention in the form of checking their works and teaching them word structure, word analysis, and word building. This is achieved through systematic practice. According to J. A. Smith (1973), there are no language theories and principles that are so prestigious that they cannot be scrutinized with “open-minded disbelief” (p. 123). In other words, Smith highlighted that there are no tools and techniques of language teaching and learning that are completely infallible. Thus, instead of choosing teaching tools and techniques based on their prestige, teachers should select approaches that align well with the learning styles and peculiarities of their students. Studies conducted on the efficacy of spelling instruction in the development of spelling proficiency demonstrated that spelling tutorials have rewarding results. For example, Guiler (2007) explained how a spelling program by Miami University’s School of Education enabled learners to receive assistance in identifying their weaknesses and developing strategies to solve them, resulting in students’ improved spelling proficiency. In their investigation on spelling instruction in the United States, Morris, Blanton, Blanton, and Perney (1995) found that teachers used traditional spelling guides, which group words based on patterns. In other words, word classifications would help students to learn the spelling of the classified words easily. This approach was useful for high achieving students but was less effective for low achievers. Such students require simplified techniques. Overall, the study concluded with the importance of spelling instruction, as it exerts a positive influence on writing and reading ability. As mentioned previously (Hildreth, 1962; Smedley, 1983), different problems and environments require different approaches. As such, there are numerous techniques studied and proposed in the literature. Smedley (1983), for example, suggested that students keep a spelling book of difficult words, and for educators to encourage their students to proofread their works prior to submission. Hildreth (1962) suggested that:

1. Learners should be interested in learning the meanings of words and understand them.
2. Spelling is best learned through reading aloud, as doing so highlights the structure of the words.
3. Teachers should divide words into visual and phonetic words. Visual or sight words require students to use their visual memory to remember their spellings because they may have irregular vowel patterns or silent letters. As for phonetic words, their written forms correspond with their pronunciations.

As for spelling activities, Hildreth (1962) suggested that educators should:

1. Underline the silent letters in words.
2. Note misspellings and compare them with correct spellings.
3. Teach students to observe related words.
4. Mark difficult areas.
5. Encourage senior students to engage in generalizing and reasoning, especially for derivation and suffixes.
6. Remind students to pay close attention to the sounds in the word.
7. Design spelling contests and games.
8. Practice rules of word formation with students.
- 9.

2.1 Stages of Spelling Development in Children

Spelling is one of the essential factors that writing. The importance of spelling is accentuated through understanding how children acquire this major facet of literacy, because it provides important

insights into children's current state of knowledge acquisition (Pollo, Treiman, & Kessler, 2008). English spelling ability entails the processes of dividing the spoken words into their respective phonemic components and selecting the appropriate graphemes that represent those phonemes. This includes learning a broad selection of letter combinations (orthography) and many exceptions due to the process of affixation (e.g., *bird* → *birds*) and assimilation (e.g., Latin *in* = 'not' → *possibilis* 'possible' → *impossibilis* 'impossible') among others (Varnhagen, McCallum, & Burstow, 1997). Children develop their phonological, orthographic, and morphological strategies gradually based on the information and strategies employed at various stages of their development (L. C. Ehri, 1993; Frith, 1985; Gentry, 1982; Henderson et al., 1995). These strategies consist of logographic (i.e., using symbols that represent a complete word or morpheme), word-searching (ability to search for words), word-coping (ability to cope with different types of words), productivity (ability to create words effortlessly) and word recognition (the ability of a reader to *recognize* written *words* correctly and virtually effortlessly). As proposed by Gentry (1982), spelling development occurs in five stages. The first stage of spelling development is the pre-communicative stage, where children randomly combine letters and symbols that look like letters. The next stage is the semi phonetic stage. At the semi phonetic stage, children learn to identify parts of the phonetic information contained in the word. The third stage is the phonetic stage. This is the stage where children learn to associate letters to sounds. The next stage is the transitional stage, where the children depend less on sounds for representing words and rely more on visual representation and their understanding of word structure. The final stage is the correct stage. In this stage, children apply what they have learned from the previous stages within a specific writing system. Gentry (1982) further argued that children develop a degree of proficiency in spelling after having reached some measure of mastery of their written vocabulary's phonological, morphemic and orthographic aspects. Gentry's study was supported and further developed in numerous studies. These studies analyzed children's spelling development and emphasized on the various types of knowledge children possess as well as their employment of diverse strategies in spelling (Bryant et al., 1999; L. C. Ehri, 1993; Treiman & Bourassa, 2000; Varnhagen et al., 1997). Another model of spelling development was proposed by Ehri (1993), who categorized children's spelling development in three stages: 1) semi phonetic, 2) phonetic, and 3) traditional. He suggested that children rely on their phonological skills when they first learn to spell. For instance, they might write the letter *R* for the word *are* and *U* for *you*. In the second stage, children begin to read words using phonological information. They also pay more attention to each letter within the words they read. During this period of spelling development, they might write *kar* instead of the word *car*. In the third stage, children can identify words using their orthographic skills which they developed throughout the past two stages by accumulating knowledge about the order of letters in words.

Understanding English spelling process among learners is usually centered on understanding the common causes of spelling errors (Varnhagen et al., 1997), which offers instructive insights regarding the ways in which children manage the sound and spelling system of the language (Stage & Wagner, 1992). Error analysis is required to identify the cognitive strategies employed by children in their attempts to spell. Such analysis is helpful in understanding how children transfer oral language to written form (Berninger et al., 2006; Read & Ruyter, 1985; Temple & Marshall, 1983; Treiman & Cassar, 1996). Among children who are native speakers of a language, phonological processing skills are developed relatively early (Badian, 2001; Bryant et al., 1999). With successful reading, children develop their ability to identify the specific orthographic patterns of words. According to McBride-Chang et al. (2005), phonological, orthographic and morphological processing are important features of spelling development.

2.1.1 Phonological Processing

In the process of effective communication, phonological processing is automatically activated. Phonological processing also happens when one reads and writes. Phonological awareness constitutes a critical part of learning the alphabetic writing system (L. Ehri, 2004; Troia, 2004), irrespective of the

language. Phonological awareness refers to the language user's explicit awareness and conceptual understanding that spoken words consist of phonemes (distinct speech sounds) and combinations of phonemes. Such knowledge is important for recognizing that letters have sound values and for learning to map those sounds with their respective alphabetic symbols (Vellutino, Fletcher, Snowling, & Scanlon, 2004). Phonemic awareness is a sub-skill of phonological awareness. Recognizing sounds forms part of the phonological process and helps to associate meaning with those sounds (Shankweiler et al., 1995; Troia, 2004). As such, phonemic awareness activities are a necessary part of child development, as children need to be able to recognize phonemes in order to learn and use the alphabetic code. The important message to grasp in such activities is that "letters represent phonemes" (Shankweiler et al., 1995). Without phonemic awareness, the print system would confuse readers; they would not know how the symbols they see on the page represent the spoken word. Phonemic awareness thus facilitates growth in printed word recognition, thereby minimizing spelling difficulties (Adams, Foorman, Lundberg, & Beeler, 1998; Gillon, 2004). Language users who can reduce words into their sound units, recognize word density, and combine the sounds together again, have the fundamental skill for using the alphabetic principle (Shankweiler et al., 1995; Troia, 2004). Beginning readers need to be able to understand the alphabetic principle in order to acquire proficiency in letter-sound decoding, which eases the load that the alphabetic writing system imposes on their visual memory. Phonological proficiency requires children to engage in metalinguistic analysis to understand the structural and grammatical patterns of the language. Doing so facilitates their acquisition of other types of knowledge, such as alphabetic knowledge, sublexical knowledge and general orthographic knowledge.

2.1.2 Morphological Processing

Morphology focuses on recognizing the sub-lexical units in language, e.g., in identifying the use and meaning of prefixes and suffixes that appear before and after words. As in most European orthographies, the same sound in the English language is often spelled in various ways. For example, the phoneme /t/ in the word "list" is spelled as "d", resulting in "lisd" instead of "list" (Halliday, Matthiessen, & Halliday, 2014; Nunes, Bryant, & Bindman, 1997; Quirk, 2010). However, the exact same phonemes are spelled as 'ed' in the words 'rolled' and 'kissed'. For the inflectional morpheme in regular past verbs, this is its conventional spelling. Some research shows that before children begin using syntactic and morphological spelling strategies, they first spell such words phonetically (rolld, kissd) (Nunes et al., 2006). Such metalinguistic awareness assists greatly in developing spelling and writing proficiency (Bowers, Kirby, & Deacon, 2010; Deacon, Kirby, & Casselman-Bell, 2009; Sénéchal, Basque, & Leclaire, 2006). Among the uses of such knowledge is identifying how to spell different sounds when they appear in different parts of the word (Nunes et al., 2006).

2.1.3 Orthographical Processing

Orthographic processing entails the ability to spell through sound association (Stanovich & West, 1989). It rests on the knowledge of letters and their sequence. Readers who possess orthographic skills can read words by sight and spell words from memory. Fundamentally, orthographic processing develops with reading through which children are exposed to spelling-to-sound knowledge (Stanovich & Siegel, 1994). However, this is not always the case (Wagner & Barker, 1994). Frith (1985) argued that different reading strategies can lead to differences in orthographic skills. For example, a child who adopts a strategy whereby he or she processes or analyzes all the letters in the words being read (Share, 2008) may have different results in terms of orthographic skills, compared to a child who chooses another reading strategy, e.g. in learning the word *definitely* by recognizing the letters as *d-e-f-i-n-i-t-e-l-y*.

2.2 Stages of Learning Spelling among Iranian Learners (Tabrizi Et Al., 2013)

In the context of EFL for Iranian learners, the methods developed by Tabrizi et al (2013) is of high significance because of the effective guidelines and tests developed by them which are used for Iranian students who learn English as a foreign language at the secondary school. Tabrizi et al. (2013) *Book of diagnosis and treatment for Persian dictation* [درمان اختلالات دیکته نویسی] provides a set of approaches and tests which administers creative ways for improving Persian spelling among Iranian students. Mostafa Tabrizi started his research with elementary students in Tehran who failed Persian spelling that year. His aim was to provide transitional practices and treatments for spelling instead of using the traditional method. Despite Tabrizi's approach, in traditional methods of teaching spelling teachers provided information based on lesson instruction without teaching spelling strategies to their students. Also, phonetics was taught formally, and new words were taught in very ineffective ways in each subject. Generally, in traditional spelling method, the teacher does not give any direct instruction on spelling to students. Students practice the given information of lesson provided by the teacher and then students involve in their own learning. Student's ability to spell words was tested at the end of each Persian lesson without any formal teaching of how to spell. After 16 years of investigation, Tabrizi proposed several methods within his approach in his *book of diagnosis and treatment for Persian dictation* in order to overcome the Persian spelling difficulties. Tabrizi et al.'s approach for teaching and learning Persian spelling are recommended by the Ministry of Education of Iran and has been used in Iranian schools since 2007 (Ministry of Education, Iran). Tabrizi et al.'s (2013) approach contains spelling methods designed for teachers to identify the strengths of learning spelling and areas in spelling that need to be worked on. The book provides creative and new methods of learning how to spell instead of using the traditional methods to improve the Persian spelling.

Tabrizi et al. (2013) categorize their approach into several methods based on spelling errors as follows:

- Visual Memory (14 methods)
- Visual Accuracy (16 methods)
- Listening Accuracy (16 methods)
- Revers Coding (4 methods)
- Mirror Writing (4 methods)
- Training Error (2 methods)
- Dysgraphia (13 methods)
- Visual Sequential Memory (5 methods)

These classifications were built to represent the basic diagnosis of Persian dictation. Each of these classifications provided different methods related to phonology, morphology and orthography of Persian spelling. According to Tabrizi et al. (2013, p. 31) several steps must be taken into consideration before selecting the most appropriate methods for students.

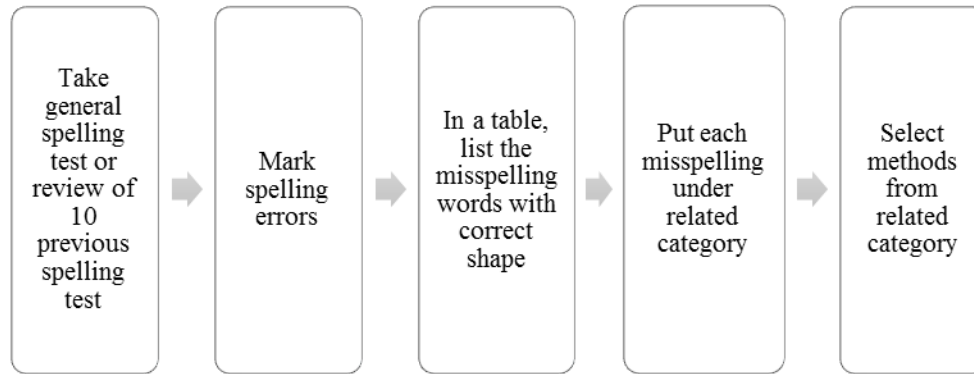


Figure 1. Tabrizi et al.'s (2013, p.13) process of selecting spelling methods

The primary step for a teacher is to note down the students' spelling errors and analyses them. Then the teacher should classify the errors according to the phonological, orthographical, and morphological types. The teacher decides on a plan to treat the problems based on the frequency of the spelling errors in each related type. This plan could consist of two parts: the first part is about the fundamental treatments learning and exercises to execute mental skills. Learners could have low performance in terms of these mental abilities because of lack of engagement and less exposure to these skills. The second part is about the activities to overcome the spelling difficulties while writing. Most educators describe "learning incapability" as the "incapability in one or several mental processes or institutional lessons that their reason to exist is not due to the environmental poorness, brain damage, nervous system problems, emotional issues, or the illnesses related to vision or hearing." However, Tabrizi et al. (2013) suggest "learning disorder" instead of "learning incapability" and define it as "the disorder in one or several mental procedures or institutional lessons which have come into existence due to emotional, environmental, nervous system, brain and sense-receiver poverty. They add that "these problems are not sufficient to be classified as nervous system and brain problems, or even emotional and environmental poverty."

Therefore, they explain the stages of learning as below:

2.2.1 First Stage: Rich Environment

The richer one's environment is in terms of visual, auditory, kinesthetic, tactile, taste, and other similar aspects, the more potential there is for the organism to receive input from them. For example, if a child is deprived of different colors in an environment, he or she will not have a complete visual understanding.

2.2.2 Second Stage: Nervous Receivers

Human beings receive all environmental stimulates through nervous cells or neurons. If parents could provide an environment in which all the senses, including vision, tactile perception, hearing, olfaction, gustation are more stimulated, the child would have a better learning capability. For example, a child who walks on a colorful carpet, or the children whose eyes are more exposed to different colors and lights in the nature, can have a better visual understanding. And, for instance, distinguish the similar letters, e.g. b from p, v from w, n from m (examples adapted to English letters context).

2.2.3 Third Stage: Transferring the Received Messages through Neural Networks to Brain

In this stage, like the previous stages, more practice could lead to better performance of the neural networks. Extreme incapability is classified as an illness, but if it is insufficient, the individual is not called “ill”. However, the person does not have enough ability to transfer information to the brain, therefore, suffers learning disorder. Trainers who are equipped with neuropsychology knowledge, movement therapy, and other related arenas could treat this disorder.

2.2.4 Fourth Stage: The Cooperation and Harmony Between Different Learning Sections

This is the last stage of learning in brain. The brain gets much stronger with more stimulators. The short-term memory, long-term memory, generalization, differentiation, and creativity sections are all located in brain. The more the brain is engaged in activities, the learning ability will improve.

Spelling difficulties have different types and there should be a solution for each type of the errors. By counting the frequency of the type of the errors and treating the types that are more frequent, the learners will receive more marks in a short time. This could increase their confidence level, and motivate them to continue the treatment.

3. Visual Memory and Visual Accuracy

Human visual memory is a vital memory for cognition which enables us to identify the things that we have seen before, even in the case of a very short hints, in spite of severe distinctions at the level of image in, for example orientation and lighting. Visual memory can also be helpful in the case of the things that we have not even seen for some longer time, e.g. we still remember *supermario* game look like (Schurgin, 2018). Visual accuracy or visual acuity (VA) refers to the “measure of the ability of the eye to distinguish shapes and the details of objects at a given distance. Examining VA must be consistent to discover any sight changes. Although VA examines one dimension of vision, the examination should be conducted correctly and precisely as inaccurate VA can instigate wrong decisions and affect learners’ performance (Marsden, Stevens, & Ebri, 2014). The main reason for such spelling errors is the weak visual memory, i.e. the child is not able to recall the letter image in the word. Correct dictation of these words could help the learner; however, this help does not necessarily transfer to the other cases. The children’s visual memory should be improved not only to let them learn the correct spelling of the words that are written incorrectly, but also, they will memorize better every time reading and writing a new word. However, the above exercises are not enough for enhancing visual memory. First, memory can be divided into sensory, long-term, short-term, explicit (declarative), implicit (procedural), autobiographical, and memory and Morpheus (episodic and semantic memory). The duration of the short-term memory is estimated to vary from $\frac{1}{4}$ of a second to 30 seconds. For example, you can see the phone number of a relative and remember the number until calling that number, but you will forget that number soon. Because, in fact, that number is only in your short-term memory. If you would like to have that number in your long-term memory, you will need a stronger motivation and repeat that as much as possible. The exercise, in order to have significant positive impacts on in resolving spelling difficulties, should be accompanied by the creation and enhancement of motivation by the educators among language learners. In fact, it is the sensory memory that changes to short-term and finally long-term memory. Second, often even when the visual memory is improved the learners commit errors that are related to the weak visual memory or not paying enough attention. However, those learners might have a visual understanding problem. For instance, a child who could write “weak” instead of

“week” (example adapted) due to not paying attention, or due to problem in visual differentiation. Analysing the frequency of such type of error as well as analysing and comparing the frequency of the errors that happen due to paying less or no attention, will facilitate distinguishing the problem, whether it is related to low attention or visual differentiation. Visual sequential memory, which refers to the “retention of the order of a series of visually presented stimuli, and it is probable that this ability is relevant to reading” (Guthrie & Goldberg, 1972, P. 41), is crucial to word recognition. In order to remember the word “door” we should be able to recall all letters of “door” in the correct sequence. Without remembering all letters and or the sequence of the letters, the word “door” might be remembered as “do”, “doo”, or “oor”. In addition, the comprehension of phrases depends on visual sequential memory. In the writing of “dark black tea”, remembering the words order is necessary to avoid confusion, for example with “black tea dark” or “tea dark black” that might have totally different meanings (Guthrie & Goldberg, 1972). It is also important to differentiate visual sequential memory from other types of visual perception and visual memory.

4. *Listening Accuracy*

Spoken and written forms of children’s language are closely relevant especially during the primary stages of reading and writing skills in language acquisition as speech production is one of the key elements in spelling development. For instance, some studies explored the impact of listening skills and decoding skills on the spelling ability of the EFL learners. Investigating orthography among college students, Miele (1998) reported that poor speller had weak phonological and lexical competence, and emphasized the role of spelling in English language classrooms.

5. *Training Error*

Training error could be generally divided into two types; training the “non-word errors” (those are not found in the dictionaries and glossaries and therefore considered misspelled), and training “real-word errors” (errors that are used in the wrong contexts, e.g., peace and piece). Both types are based on either a vocabulary set or a confused set and could be studied using an error model or language model (source model). There is a difference between a language model and error model. In training spelling most of the language models attempt to obtain the contextual features of and information, whereas error models do not take context into consideration in modeling the word organization and change possibilities. In a nutshell, it would be useful to consider the contextual information in the error model. This is also supported by Sun, Gao, Micol, and Quirk (2010).

6. *Cross-Linguistic Influence in Teaching of English Spelling*

Kontra (2012) defines cross-linguistic influence (CLI) as the transfer of knowledge or skill of a language that has been acquired to another language that a learner acquires later. The development of a dominant culture can also influence a language. This appears particularly true in reference to social media and communication technologies (N. Müller & Hulk, 2001; Paradis & Navarro, 2003). With increased global migration and globalization, the role of how a native language influences second language acquisition has become clearer. Difficulties in acquiring a second language are no longer attributed solely to individual ability or intelligence, but increasingly to the influence of language users’ native language

and culture on the targeted second language. This has led to greater research on cross-language transfer (Jarvis, 2011). L1–L2 connections refer to the relationship between language users' first language and second language (Geva & Verhoeven, 2000; Koda, 2005; Sparks, Patton, Ganschow, & Humbach, 2009). Interestingly, this trajectory in L1-L2 research has not focused on language performance in schools (Paradis & Navarro, 2003). However, from the studies that have focused on CLI, there are numerous reports on how children's native language influences their second language despite their ability to distinguish between the two. Researchers found that the children's L1 influenced their L2 in areas such as syntax (Hacohen & Schaeffer, 2007; Hulk & Müller, 2000; Kupisch, 2007; G. Müller, 1998; N. Müller & Hulk, 2001; Paradis & Navarro, 2003; Serratrice, Sorace, & Paoli, 2004; Yip & Matthews, 2000), phonology (Kehoe, Lleó, & Rakow, 2004; Paradis & Navarro, 2003) and derivational morphology (Nicoladis, 2003). Comparing languages or 'cross-linguistic comparisons' are an effective tool for determining whether or not certain phonological and orthographic skills of one language are applicable in other languages. Such comparison is also meaningful to determine spelling performance and the effectiveness of spelling strategies (Cossu, Gugliotta, & Marshall, 1995; Geva & Siegel, 2000; Leong & Joshi, 1997; Mann & Wimmer, 2002). Even so, such studies remain limited (Goswami, 2000). This is probably due to their complexity as cross-linguistic comparisons largely pertain to second-order linguistic phenomena such as culture, religion and society. This includes understanding the process of knowledge transfer from particular cognitive frameworks to written formats, which naturally entails the issues of culture, society, history and a host of other factors (DeKeyser, Alfi-Shabtay, & Ravid, 2010). Another challenge in this type of study is the fact that alphabetic orthographies may diverge from their principles. This means that writing systems may not strictly observe a phoneme-grapheme and grapheme-phoneme correspondence (Genesee, Geva, Dressler, & Kamil, 2006). Despite these challenges, cross-linguistic comparison studies should still be conducted, as their outcomes are potentially capable of determining if spelling development rests on certain cognitive universals, which would help researchers to know more about the areas that can contribute to the teaching and learning of spelling and what it takes to have a good spelling skill. Researchers have also put an emphasis on understanding the factors active in cross-linguistic influence. Among such factors include structural overlap (Hulk & Müller, 2000; N. Müller & Hulk, 2001), which refers to how one language overlaps the other in terms of linguistic structure, causing it to be opened enough to allow the other language to exert some influence. Under such circumstances, it is possible that such overlapping causes language users to use the structures of one language to produce utterances in another language. This openness in structure and the possibility of one language influencing the other in such a way may be a source of ambiguity for foreign language learners. One of the tenets of language transfer theory is that the native language exerts either a positive influence or a negative influence on learners who are learning a second language. In the case of similarities between the first and second language, this influence is likely to be positive; however, where there are differences, the influence is likely to be negative (Wang, 2009). Similarities between languages refer to the equivalents between the L1 and L2. The presence of these equivalents greatly facilitates language acquisition among EFL learners (B. Smith & Swan, 2001). For example, Spanish speakers find learning English easier than Persian and Japanese, whose speakers use extremely different writing systems. Conversely, when the native language does not have any equivalents for the target language's linguistic features, learners face problems (B. Smith & Swan, 2001). For example, the letters *p* and *v* do not exist in Arabic, thereby causing pronunciation and spelling difficulties in the words involving these letters among Arabic learners of English. Kharkhurin (2007) illustrated the complexity of relations involved in the CLI process in his discussion on how two lexicons function within a bilingual speaker's shared conceptual system to promote cross-language transfer. In their concept of transferability, Hatfield and Patterson (1983) argued that for transfer to occur, the language user should perceive the linguistic item as an unmarked item that is typologically congruent with the second language. Lakshmanan and Selinker (2001) proposed that transfer occurs from one language to the other when various factors work together to influence the language acquisition process, which they referred to as Multiple Effects Principle (MEP). Johnston, Anderson, and Holligan (1996) also discussed the interaction of such factors, positing that when two or more forces converge, interlanguage forms emerge. They added that these interlanguage forms are harder

to eradicate compared to those that are caused by just one factor. In a nutshell, language transfer is affected by the interaction of multiple variables. These variables can be categorized based on whether they are related to the learner or to the language (Murphy, 2005). Both classes of variables are actively involved in the interaction between languages.

6.1 Learner-based Variables

6.1.1 Proficiency

This is perhaps the most active factor in promoting language transfer, especially when the learner's proficiency is at a low level (Odlin, 1989; Poulisse & Bongaerts, 1994). This variable is based on the common observation that learners draw from the strategies employed in their native language to help cope with the challenges of second language acquisition (SLA). This is most apparent when both languages share similarities and when there is a higher number of morphemes in the learners' native language that they can apply in the target language (Fuller, 2003; Poulisse & Bongaerts, 1994; Ringbom, 2007). Odlin (1989) argues that this specific dynamic often exerts a negative influence. However, he distinguishes between transfers occurring at low and high levels of proficiency. Transfers that occur at a high level of proficiency tend to be more positive, such as the transfer of cognate vocabulary. In summary, Jarvis (2000) argues that the native language manifests in a more positive way in the L2 when the learner acquires the L2 tools that can accommodate that transfer in the acquired language. Proficiency clearly exerts an important influence on language transfer, which may be positive or negative (Jarvis, 2011).

6.1.2 Target Language Exposure and Use

The length to which one is exposed to the second language invariably corresponds with his/her proficiency in that language and the type of transfer that occurs between the two languages (Odlin, 1989). Age and dynamic play certain roles in this variable. However, the effectiveness of these factors depends on the type of linguistic task the language user is doing (Jarvis & Pavlenko, 2007).

6.1.3 Language Mode

Language mode is a concept that has been relatively influential in cross-linguistic studies, and refers to the speaking, listening, reading, writing, viewing, and presenting of language use (Dewaele, 2001; Fuller, 2003; Grosjean, 2001). According to Grosjean (2001), language mode is a state of readiness to process any two forms of language at a particular point in time. He further argues that this state of readiness is as one of the key factors of the language transfer process. This concept holds that a language (be it native or acquired) actively determines language processing. None are completely isolated, but one can assert greater influence on the other depending on its degree of activation.

6.1.4 Linguistic Awareness

The greater one is aware of the features of a language, such as its semantics, linguistic structures, sociolinguistic knowledge, phonology, and orthography, the greater cross-linguistic influence can occur. The transfer is fostered by a stronger familiarity with the key characteristics of cross-linguistic transfer (Kellerman, 1995; Odlin, 1989).

6.1.5 Age

Many researchers posit that younger children are less likely to transfer concepts from their L1 to the L2. Lakshmanan and Selinker (2001) state that young children learn a second language based on the input given to them or through various L2 teaching approaches. Venturing deeper into this process, Odlin (1989) observes that children aged between four and ten tend to observe a single syntactic pattern, as opposed to adults who are more flexible.

6.1.6 Educational Background

Educational background is a factor for positive language transfer (Odlin, 1989). The more proficient learners are in their L1 linguistic skills, the better they are positioned to effectively acquire the second language through the assistance of their skills from their native language. Despite what appears to be a rather logical assertion, little research has been conducted on this dynamic, perhaps due to the difficulty of distinguishing between the influence of educational background and transfer-of-training.

6.1.7 Context

Context is not a linguistic feature but nevertheless exerts some influence on language transfer. This feature constitutes a sociolinguistic perspective that draws on the learner's society. Researchers have found that bilingual settings or communities correlate positively with an enhanced linguistic transfer, particularly lexical transfer (Grosjean, 2001; Odlin, 1989). Although bilinguals commonly practice code-switching, linguistic transfer also takes place (Dewaele, 2001; Grosjean, 2001). Within the parameters of SLA research, studies indicate that transfer is affected by formality/informality. Increased formality may mean reduced transfer because the learner is constrained by linguistic structure and rules (Dewaele, 2001; Grosjean, 2001). In informal settings such as when telling a story, learners employ greater creativity in their task thereby practicing greater transfer, especially when they are more proficient (Kellerman, 1995; Poulisse & Bongaerts, 1994).

6.2 Language-Based Variables

6.2.1 Language Typology

Studies and classifies languages according to their structural and functional features. The study of cross-linguistic influence developed along with researchers' evolving understanding of language typology. The relationship between typology and linguistic structures was an area of interest to early specialists in this field (Jarvis & Pavlenko, 2007; Johnston et al., 1996; Odlin, 1989; Weinreich, 1963). A few researchers have even found typology to be a more important factor than other variables including proficiency and exposure in language transfer (Jarvis & Pavlenko, 2007; Ninio, 1992; Poulisse & Bongaerts, 1994). H. Douglas Brown (2000) as well as Saville-Troike (2012) refer to the influence of the native language on second language acquisition as transfer, which may be either positive or negative. If learning is facilitated by previous knowledge, the transfer is positive. In this case, the L1 assists learners by serving as a reference to solve problems in the L2 (H Douglas Brown & 吳一安, 2000). However, the transfer is negative when the differences between the L1 and L2 interfere with the learning process, which the studies in the following paragraph illustrate.

6.2.2 Frequency

The more commonly used a certain linguistic feature is in the native language, the more likely it is to be transferred to the acquired language (Larsen-Freeman, 1997). Features that are less common are what Kellerman (1995) labels as “psychologically marked” and as a result, are less transferable. In other words, the linguistic feature’s potential for cross-linguistic transfer emanates from its prominence in the native language, as explained by the concept of activation (Faerch & Kasper, 1986; Poulisse & Bongaerts, 1994). This type of transfer is unintentional and differs from intentional forms such as code-switching.

6.2.3 Word Class

The pragmatism associated with certain words also influences cross-linguistic transfer. Faerch and Kasper (1986) distinguished between the conscious transfer of terms and transfer based on activation in the native language. As opposed to code-switching, which is intentional and focused (Odlin, 1989), a lexical transfer is often unintentional and involves function words (Ringbom, 2007). The dichotomy between content words and function words in unintentional transfer was explored by Poulisse and Bongaerts (1994). They found that content words appear to be intentional choices as evidenced by the language users’ repair process to accommodate the term in the acquired language, whereas unintentional transfers were often associated with common function words. They considered this a result of the relationship between proficiency and attention. Learners with lower L2 proficiency are more conscious of their selection of words, putting a greater focus on content words. This also means that they pay less attention to function words, causing them to transfer these words unintentionally from their L1.

6.2.4 Morphological Transfer

Most researchers assert that free morphemes in the native language are more likely to be transferred to the acquired language compared to bound morphemes (Andersen, 1991; Gass, 1988). Myers-Scotton (1993) suggested that this is because morphemes that are bound need to come from the matrix language, i.e., the dominant language in code-switching, into which elements of an L2 are embedded.

7. *EFL Studies Related to English Spelling*

H. Douglas Brown (2000) notes that acquiring a foreign language is a difficult process, and learners seldom acquire proficiency in a new language without committing various linguistic errors, which is all part of the acquisition process. Corder (2003) advocates that systematic analyses of learners’ errors are important to design syllabuses and identify appropriate strategies, rather than a top-down approach. Burt and Dulay (1975) highlighted that familiarity with student difficulties is a valuable guide for determining proper EFL instructional techniques. These include difficulties in spelling, which hinder effective communication (Smedley, 1983). As such, the ability to spell correctly is necessary for students to communicate successfully in the written discourse (Rahbari, 2018). The problems English learners have with spelling often concern around their substitution or omission of single letters or pairs of letters (Cook, 1997). For vowel substitutions, Cook (1997) found that learners had the most difficulty with the letters *a*, *e* and *i*, as evident in their incorrect spelling of words such as *catagories*, *exctly* and *persueded*. The letter *e* was often used instead of *i*, as in *definetely*, and *i* was used instead of *e*, as in *convinient*. As

for consonants, problems often occurred when students had to choose between *s*, *c*, *z* and *t*, causing errors like *courses*, *persent* and *revoluzion* (Cook, 1997). Additionally, letters in the *ct*, *cq*, *ch* and *gh* consonant pairs were the most commonly omitted, leading to misspellings such as *attracts*, *aquisition* and *scolarship*. Another omission that was common among them was the final, silent *e*, resulting in words like *blad*, *befor* and *softwar*. The letter *e* was also frequently omitted before *-ly* and in the past tense and past participle forms of words, leading to *completly* and *likly*, as well as *happend* and *prefferd* (Cook, 1997). Another problem that Cook (1997) found among L2 users was consonant doubling, particularly with the letter *l*, as in *controll*, *already* and *carefull* (Cook, 1997). Another issue is the influence of L1 composition skills on the L2. Researchers have taken two different positions regarding this issue. In the first, researchers acknowledge that there is a positive influence on the L2. Studies have demonstrated that learners with more developed L1 literacy perform better in the second language (Odlin, 1989; Wentz, 2005). Cumming (1990) also identified expertise in writing as a key factor that influences composing processes in the L2. He concluded that writing expertise comes with unique cognitive characteristics that are specially developed to apply across languages. Furthermore, both implicit and explicit knowledge are transferred in the composing process, as discovered by Edelsky (2006) in her study of bilingual children. Researchers who take the second position argue that there is a negative influence on the L2. They question the correspondence between L1 and L2 writing skills, as L1 writing differs from L2 writing in both composition and written texts. Long (1990) categorically states that L2 writing is fundamentally different from L1 writing. This is because language is very much a cultural phenomenon; as such, each one is distinct and dissimilar from others (Connor, Hieber, Arts, & Zwolan, 2000), as demonstrated in cross-linguistic studies (Caravolas, 2004; Seymour, Aro, & Erskine, 2003; Treiman, 1993). However, the overriding concern when it comes to correspondences between L1 writing and L2 writing is to minimize the occurrence of difficulties and maximize the possibility of accurate spellings. Book and Harter (1999) highlight that prevention strategies can be developed by determining the causes of spelling difficulties. Bahloul (2007) as well as Kharma and Hajjaj (1997) point out that spelling difficulties are the cause of natural developmental factors. Bahloul explains that the L2 users go through a linguistic development stage that has a determining influence on their linguistic capabilities. Learners at this stage will find it difficult to avoid making spelling errors as they have yet to reach an advanced level of English ability. Bahloul (2007) asserted that L2 learners are expected to overcome such difficulties as they advance in English. He believes that the source of spelling difficulties mostly lies in the irregularity of the English writing system. Such apparent irregularity confuses learners as there is, in some cases, a complete disconnection between the written word and the way it is sounded (Henderson et al., 1995). Hildreth (1962) also associated spelling difficulties with English word structure, which contains many inconsistencies. According to Hildreth (1962), there are four characteristics that contribute to the irregularity of the English writing system. The first concerns differences in sounds despite having the same letter combination, as in *get* versus *gem*. The next characteristic is that one sound can have various letter combinations, such as *made* and *maid*. Silent letters are the third characteristic. They are inherent in many English words, such as *debt*, *enough*, *light*, *tongue*, and *foreign*. The fourth characteristic concerns variations in spelling, which add to the complicated nature of the English language. For example, *theatre-theater* and *color-colour*. Additionally, the unpredictability of the pronunciation of many letter combinations further contributes to the confusion and challenge of learning English, especially *th*. Henderson et al. (1995) noted that *ph* is similarly unpredictable, as in *digraph* and *uphill*. Like Hildreth (1962) and B. Smith and Swan (2001) also commented on the large number of letter combinations in English, which complicate spelling for learners. Besides the irregularity of the English language, differences in learner backgrounds and environments also cause spelling difficulties. To many researchers, differences between the learner's first language and the target language are obstacles in the learning process. Bahloul (2007) explained that Arab learners find English spelling difficult because of the differences in the way vowels are used. Arabic consists of three written vowels that can be short or long. The vowels are spoken, not written. In actuality, written vowels do not even have to be used to write Arabic words, as skilled Arabic readers can easily fill in the unwritten short vowels using contextual clues Bahloul (2007). Besides that, Al Jayousi (2011) and Al-Bakri and Bader (1998) found that Jordanian EFL

students tended to spell words with the letters *b* and *p* incorrectly. For example, the students misspelled *playing* as *blaying*. This is because /b/ and /p/ are distinguished sounds in English, but this is not the case in Jordanian Arabic. In his study on in the Egyptian and Iraqi dialects of Arabic, Broselow, Huffman, Chen, and Hsieh (1995) also highlighted the phonological differences between English and Arabic as one of the causes for Arab learners' English spelling difficulties. His findings demonstrated the learners' struggle with consonant clusters as Arabic dialects seldom cluster consonants. For example, he found that Iraqi speakers tended to insert the /i/ vowel sound before the first consonant of a word. They spelled the word *splash* as *esplash*, and pronounced it as /i s.plaʃ/. On the other hand, Egyptians inserted the vowel between the first and the second consonant of the same word, spelling it as *seplash* and pronouncing it as /s i.plaʃ/. Broselow et al. (1995) concluded that some of the errors made by L2 learners can be attributed to their transfer of L1 phonological conventions and rules. Similarly, in studies focusing on children, Rosatorras, Navés, Celaya, and Pérez-Vidal (2006) and Celaya and Torras (2001) found that English misspelling took place when the children relied more on their L1. Hildreth (1962), Burt and Dulay (1975), and Corder (2003) assert that the analyses of difficulties should be followed by the development of syllabuses and strategies to target specific problems. For instance, Harter (1999), in a landmark study involving the evaluation 3096 spelling tests, 608 compositions by high school students, and 1492 themes from university students, suggested various strategies to deal with the spelling difficulties he identified in his study. His suggestions include inculcating a desire within learners to be accurate in spelling and to check their works, and promoting better observation of word forms, with special attention to difficult words. He also recommended that better visual memory and analysis of words with corresponding pronunciation, as well as observing meaning can assist in remedying spelling difficulties. Ringbom (2007) studied the English spelling errors committed by native students from Finland and Sweden. The Finnish language corresponds more closely with the English language compared to the Swedish language. Ringbom (2007) classified the errors into two groups: words that were misspelled, and the mismatch between pronunciation and misspelled words. The former could be further divided into: A) misspellings due to incorrect substitutions (*deside* for *decide*), overgeneralizations of patterns (*receave* for *receive*) and homophones (*where* for *were*), and B) spellings that omit silent vowels (*stayd* for *stayed*) or that violate rules (*sais* for *says*). As for the latter, the errors were subdivided into: A) transposing letters, resulting in different words (*quiet* for *quite*) or mistaking two different words for each other (*has* for *had*), and B) omitting vocalized letters (*conrol* for *control*) or spelling non-words (*jatting* for *chatting*). Ringbom (2007) reported that Finnish students committed more early-stage errors than their Swedish counterparts as the Finnish language is significantly phonetic. Nevertheless, Ringbom (2007) found that as the students' awareness of the differences between their L1 and L2 increased, the propensity to commit such errors significantly decreased. Ramadan (1986) divided the errors he identified from his research into three broad groups: the Morphemic group, the Intra-morphemic group, and the Splits group. Five types of errors made up the morphemic group; these errors concerned: 1) derivation (*snobish* for *snobbish*), 2) phonemes (*watcht* for *watched*), 3) residue (*bite* for *bit*), 4) inflection (*driveing* for *driving*), and 5) omissions (*time* for *times*). As for the intra-morphemic group, the errors identified concerned: 1) ambiguous correspondences (*bouth* and *faimly*), 2) homophones (*there* for *their*) and quasi-homophones (*wondered* for *wandered*), 3) poor articulation (*sandwishes* for *sandwiches*), and 4) syllable reduction (*mato* for *tomato*). Finally, the errors identified under the Splits group concerned: 1) pseudo-compound words (be sides for besides) and 2) compound words (*break fast* for *breakfast*). Additionally, the study found that the majority of mistakes occurred in vowel phonemes and silent letters. According to Ramadan (1986), his study subjects tended to commit errors in the middle of words. However, similar to Ringbom's (2007) conclusion, Ramadan (1986) found that the errors decreased as students advanced in English. In a study similar to Ringbom (2007) and Ramadan (1986), Al-Bakri and Bader (1998) analyzed spelling errors made by English language students in Jordan's Yarmouk University and found that they committed eight types of errors: 1) omission (deletion of letters), 2) substitution (changing one letter for another), 3) inversion (reversal of two adjacent letters), 4) insertion (addition of letters), 5) pronunciation (errors influenced by pronunciation), 6) segmentation (splitting of single words into two words), 7) miscellaneous (mixed sort of errors, such as writing *hes* instead of *he's*), and 8) unclassified errors (words

without explanation or illegible words). In Al-Karaki's (2005) study on the spelling errors made by 8th and 11th grade students in the Jordanian city of Al-Karaki (2005), six types and six causes of spelling errors were identified. The types of errors found concerned substitution, segmentation, disordering, omission and addition. There were also miscellaneous errors, under which unreadable words or words that could not be categorized were placed. Results showed that addition, substitution and omission were the most frequently occurring errors, and that these errors were mainly committed by younger students. Al-Karaki (2005) found that these six spelling errors emanated from six causes: namely, lack of knowledge in English spelling rules; incorrect generalizations (*womans* for *women*); differences between the phonology of L1 and L2 (students spelled words in the way they pronounced them); incorrect pronunciation due to the English language's non-phonetic nature; inconsistency of word derivation in English; and performance-related factors such as boredom, carelessness or tiredness. However, Al-Karaki (2005) also noted that there was an overlap in these spelling errors, making it difficult to attribute them to just one identified cause. For example, the omission of the letter *e* in the word *definitely*, resulting in *definitly*, may be because of ignorance or carelessness. Since the *e* is not pronounced, the error of omission could even be due to the English language's non-phonetic nature. Bahloul (2007) found that learners misspelled more than 20% of the target words used in his study. He categorized the spelling errors into three groups: developmental errors which result from the learners' developmental stages, intralingual errors due to L1 interference, and interlingual errors due to the L1's spelling system (Bahloul, 2007). Each of them is discussed in the following paragraphs. Based on Bahloul's (2007) study, five types of developmental errors were identified; assimilation (transformation of a grapheme due to the influence of an adjacent sound, such as the *t* in *great* being changed into *d*); epenthesis (addition of a consonant at the end of a word based on its preceding phoneme, as in *mined* for *mine*); metathesis (reversal of two letters in a word, as in *frist* for *first*); syllable simplification and truncation (omission of a part or whole of a syllable, such as *ecslant* for *excellent*); and cluster simplification (omission of one out of two adjacent consonants, as in *ilan* for *island*). As for intralingual errors, three types were identified by Bahloul (2007). They are phoneme/grapheme matching (spelling of vowels in the same way they are pronounced, as in *ather* for *other*); graphemic unification (spelling of the letter *g* and *c* as *j* and *s* respectively, such as *calleje* for *college* and *shoise* for *choice*), and monographicization (simplification of multi-grapheme words, as in *foren* for *foreign*). Grapheme is a letter or letters that spell a sound in a word. A multi grapheme word has several letters representing a sound; e.g., in *leaf* the sound /ee/ is represented by the letters 'e a', in *night*. The sound /ie/ is represented by the letters 'igh'. Bahloul (2007) identified four types of interlingual errors. They are epenthesis (the breaking of consonant clusters with a vowel, as in *tempting* for *tempting*); vocalic transfer (replacement of vowels in the L2 as affected by their L1, resulting in words such as *mach* for *much*); nativization (spelling of an English word with L2 pronunciation, as in *Amreca* for *America*); and consonantal replacement (replacement of a letter with a similar other, as in /b/ for /p/).

In summary, there are several factors that cause spelling difficulties, such as the irregularity of the English language and lack of mastery over spelling rules and their exceptions, as the studies in this section have shown. They form the major challenges that EFL learners need to overcome in order to achieve proficiency in English spelling. These challenges must be dealt with because spelling difficulties negatively affect writing proficiency and reading ability. Furthermore, considering the influence of the learners' L1 on L2 acquisition, it was suggested that spelling proficiency should be developed through specially designed activities that cater to the different backgrounds of learners, as well as to target specific spelling problems faced by them. In view of the foregoing discourse, and in order to obtain a deeper understanding of the specific challenges faced by Iranian EFL students, the differences between the Persian and English language are discussed in the following section.

8. Persian and English Language

Recently a significant body of contrastive rhetoric research has been conducted. Introduced by Robert Kaplan in 1966, contrastive rhetoric highlights the ways one's culture impacts his or her writing in a second language. According to Souzandehfar (2011), the linguistic and cultural patterns of ESL and EFL learners' original language influence their written English at both the word and discourse levels (Souzandehfar, 2011). Although research on L2 writing has been neglected in many parts of the world including Iran, there is now a greater need to develop a better understanding of this (Abdolrezapour & Eslami-Rasekh, 2010), considering the importance of English as a widespread language in international commerce.

Persian, also known as Farsi, is an Indo-Iranian language that is derived from the Indo-European language family (Georgi, Xia, & Lewis, 2010; Ghomeshi, 2003; Trask, 2007). It includes two major dialects spoken in neighboring countries such as Dari in Afghanistan and Tajik in Tajikistan (Toosarvandani, 2004; Windfuhr, 1979). In this study, only the modern written Persian in Iran is discussed. According to Windfuhr (1979), Persian is a syllable-timed language. This means that the number of syllables in a sentence determines the amount of time to read it. Persian syllables begin with a consonant (C), followed by a vowel (V). Their possible structures include CV, CVC, or CVCC. Persian language does not have syllable-initial consonant clusters. Consonant clusters exist at the end of the syllables, with a maximum of two consonants in the cluster.

Table 1. Persian Syllables Structure

Persian Syllables	Examples
CV	ma / mə / [ما] meaning 'we' / <i>há</i> [ها] used for plural nouns
CVC	toop / tup / [توپ] meaning 'ball'
CVCC	mard / mærd / [مرد] meaning 'man'

Source: Hall (2007, p.6)

Persian language contains many Arabic lexical loanwords, but so many of these have been so Persianized, that their meanings are different from the original Arabic words. The nominal system of Persian morphology is quite simple, as unlike Arabic, it does not have a case system and is gender-blind. However, there are singular and plural forms. The singular form does not accept suffixes (coda); but the plural form does, e.g., the suffix *-há* [ها] (which can be used for all nouns that are countable) (QasemiZadeh & Rahimi, 2006). For adjectives, the suffixes *-tar* and *-tarin* are used for comparative and superlative forms, respectively (Karimi, Turpin, & Scholer, 2006). Besides that, the number of verbal lexemes that the Persian language has is very limited, forming a closed word class of approximately 200 elements only. Most verbal meanings in Persian are expressed through verbal predicates formed from a light verbal head and a predicative element. In Persian morphology, there is one verbal stem for past tense forms and another for present tense forms. The former is used for the formation of past tenses, infinitives, the participle of obligation or possibility, as well as the past participle, from which the passive voice and compound tenses are derived from. The latter is used to form present tenses as well as the gerund, present participle and imperative forms. All verbal paradigms in the Persian language are composed of given stems combined with a set of prefixes and suffixes.

Persian text is cursive and horizontally written from right to left (Khanlari, 1979). The Persian alphabet is based on the Perso-Arabic script. Thus, it displays the same letters used in the Arabic alphabet. In this regard, Persian is like Arabic, with the only difference being in the set of characters used.

However, the Persian alphabet features an additional four consonant characters (پ, چ, ژ, گ), making it 32 letters in total.

ا	ب	پ	ت	ث	ج	چ	ح	خ	د	ذ
الف	به	په	ته	ته	جیم	چه	حه	خه	دال	ذال
	zâi	dâl	xe	he	če	jīm	se	te	pe	be
	z	d	x	h	č	j	s	t	p	b
	[z]	[d]	[x]	[h]	[tʃ]	[dʒ]	[s]	[t]	[p]	[b]
ر	ز	ژ	س	ش	ص	ض	ط	ظ	ع	غ
ره	زه	ژه	سین	شین	صاد	ضاد	ظا	ظا	عین	غین
	ġeyn	eyn	zâ	tâ	zâd	sâd	šin	sin	že	ze
	ġ	'	z	t	z	s	ʃ	s	ž	z
	[œ/ɤ]	[ʔ/Ø]	[z]	[t]	[z]	[s]	[ʃ]	[s]	[ʒ]	[z]
ف	ق	ک	گ	ل	م	ن	و	ه	ی	
فه	قاف	کاف	گاف	لام	میم	نون	واو	هه	ی	
	ye	he	vâv	nun	mim	lâm	gâf	kâf	qâf	
	y	h	v	n	m	l	g	k	q	
	[j]	[h/Ø]	[v]	[n]	[m]	[l]	[g]	[k]	[œ/ɤ]	

Figure 2. Persian Alphabet
Source: Daniels and Bright (1996, p. 747)

A Persian letter is written with a single stroke, with or without additional marks such as zigzag bars or dots that may be situated above, in the middle, or below the stroke. These additional marks enable writers to distinguish between characters that share an overall shape, either by their presence or absence, number or position in relation to the stroke. If these additional marks are written ambiguously, they may be wrongly read and thus totally misunderstood. It should be noted that Persian alphabets and their phonetic transcription is different from Arabic, e.g., unlike Arabic in which every alphabet has a different sound, in Persian there are several different sounds in that are pronounced similarly such as in *bæhs* with Persian /s/ and Arabic θ sound despite the fact that the word has the same meaning (*discussion/argument*) in both languages. These type of words in Persian are often borrowed from Arabic. This difference is illustrated in table 2.8 where some consonants are obviously absent, i.e., they have similar sounds, e.g. /h/ for θ and ح. Persian language consists of 29 phonemes in total, with three tense vowels (/æ/, /i/, /u/), three lax vowels (/ɒ/, /e/, /o/), and two diphthongs (/ei/, /ou/) (Baluch, 2006; Windfuhr, 1979). In the Persian script, lax vowels are not inscribed and can be pronounced with various vowel combinations. Students learning Persian may find the language confusing for this reason. For example, the word *krm* (کرم) has five possible scriptural features, leaving the student to choose the correct word out of the five options, based on the context.

Table 2. Five derived words from *krm* (کرم)

Root form	Word	Meaning
کرم	/kæræm/	'benevolence'
کرم	/kerem/	'cream'
کرم	/kærm/	'vine'
کرم	/korom/	'chrome'
کرم	/kerm/	'worm'

The length of vowels depends on whether speakers are using formal or informal speech. In the former, they do not differ in length, whereas in the latter, their length may vary (Hall, 2007). To illustrate, vowel length of the Persian words such as the following can be changed: *gush* (/guʃ/) (*ear*); *begu* (/begu/) (*tell*) and *gusht* (/guʃt/) (*meat*). The native Persian speaker will understand them, but the L2 student of the Persian language may face some difficulties.

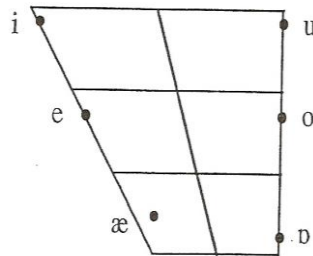


Figure 3. Persian vowels
Source: Association (1999, p. 124)

Figure 3. shows the Persian language's three tense vowels (/æ/, /i/, /u/) and three lax vowels (/ɒ/, /e/, /o/). As an overview of the tense vowels: /æ/ is a mid-front unrounded vowel; /i/ is a high-front-unrounded vowel, and /u/ is a high-back-round sound. As for the lax vowels: /ɒ/ is a low central unrounded vowel; /e/ is a mid-front-unrounded; /o/ is a mid-back sound. Twenty-three out of the Persian scripts, 32 alphabets are consonants, the remaining six are vowels.

8.1 Linguistic differences between Persian and English

Like Persian, English belongs to the Indo-European language group. It has a Latin-based alphabet of 26 letters in total. According to Windfuhr (1979), English is a stress-timed language. This means that the length of time taken to vocalize a sentence is contingent on the number of stressed syllables in the sentence. The higher the number of stressed syllables in the sentence, the longer it takes to say it. English syllables may take the form of (C) (C) (C) V (C) (C) (C) (C), with the brackets indicating variant insertion (Kessler & Treiman, 1997). In the English language, consonant clusters can be used at both the beginning and end of a syllable structure, with the initial cluster allowing up to three consonants and the final cluster having a maximum of four consonants. To illustrate, the word *scrambles* (/skræmblz/) has a cluster of three consonants at the start and four at the end, resulting in a CCCVCCCC syllable structure. Phoneticians do not agree on the number of vowels in the English language. While a few of them have suggested that there are 12 vowels in the English language, this study follows the position taken by the majority, who maintain that the language has 11 vowels only. Persian and English in terms of their rhythm, orthographies, vowels and consonants. Rhythmically, Persian is considered a syllable-timed language, while English is a stress-timed language. Concerning orthography, the English script is opaque, which means that there is no one-to-one correspondence between its letters and sounds, whereas Persian is transparent. The Persian alphabet also differs completely from the Roman alphabet in terms of the shape of the letters and the direction of reading the alphabet (Baluch, 2006). Furthermore, Persian text can be read without vowels being specified, although only skilled readers are able to do so (Baluch, 1992). However, Persian and English are similar in that their alphabets represent vowels and consonants, whereby words are formed with syllables, i.e. they are both alphabet writing systems. Next, the differences between the English and Persian vowel systems will be considered. To ease explanation, Figure 4. is provided to show the vowels of the two languages in comparison to each other. This

comparison is drawn from the work of Yavas and Barlow (2006), with the English vowels encircled by ovals:

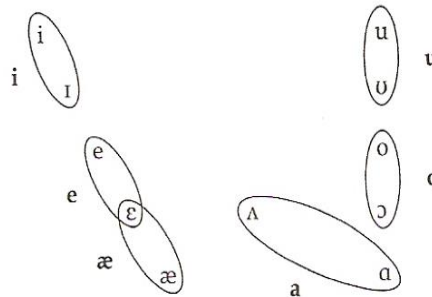


Figure 4. Comparison between English and Persian Vowels
Source: Yavas and Barlow (2006, p. 197)

English and Persian differ considerably in terms of their number of vowels. The English system has more vowels than the Persian system, with the former consisting of 11 (or possibly 12) different vowels, and the latter containing only six vowels. English and Persian also differ in terms of vowel length. In the Persian system, there is no variation in formal speech, but there is in the English system. To illustrate, consider the two English words *live* and *leave*. The meaning changes along with the length of the vowel. Yet another difference can be observed in terms of their tense/lax distinctions. The English language has tense/lax vowel pairs such as /e/ vs. /ɛ/, /i/ vs. /ɪ/ and /u/ vs. /ʊ/. However, such vowel pairings are non-existent in the Persian system. Even though long Persian vowels are sometimes analyzed as possessing the same quality as English tense vowels, this assertion is hardly tenable because they are not always as contrastive as English tense/lax vowel pairs (Mirhassani (2003). Persian diphthongs, on the other hand, which are the sounds created by combining two single vowel letters. There are four diphthongs in Modern Persian: 1) /āy/ is a glide very close to—and slightly more open than—/i/ in English ‘kite’; 2) /ey/ is a glide very close to [-ai-] in ‘date’; 3) /ow/ is a glide very close to [-o-] in ‘prose’; 4) /uy/ is a diphthong usually occurs in compound words, e.g., جویبار *juybār* (stream). As for the consonantal differences between Persian and English, Yavas and Barlow (2006) observed that the former has more consonants than the latter. Figure 5. shows how the consonants are distributed when the two languages are compared.

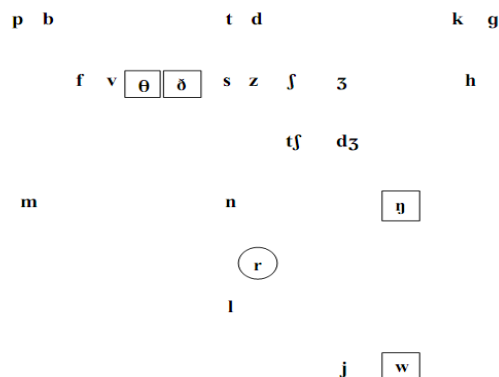


Figure 5. Overlay of the Persian Consonants on the English Inventory
Source: Yavas and Barlow (2006, p. 197)

The higher number of consonants in the Persian language compared to the English language means that some consonants that are present in Persian are absent in English, such as the voiced uvular stop /ɣ/ and the voiceless uvular stop /g/ in the Persian words *gham* (sadness) and *qasr* (castle) respectively (Gentry, 1982). Persian is also void of affricates, while fricatives and nasal consonants have a larger distribution in English. Although Persian has a semivowel consonant, the semivowel does not exactly correspond to the English semivowels /v/ or /w/; rather it is a hybrid sound between the two semivowels. Persian /w/ sound does not have an exact point of articulation. This highlights that the difference does not just lie in the number of consonants, but also in the distribution patterns of the consonants, which are a more glaring way to distinguish between the two languages (Kalanzadeh, Gohar, & Bakhtiarvand, 2012).

8.2 English Spelling and the role of memory

Memory could be affected by particular items or remarkable events that have been experienced before by individuals, and by their general information about a subject or an area (Suprenant, 2009). According to Pacton, Borchardt, Treiman, Lété, and Fayol (2014) our memory for everything, including spellings, could be affected by our experiences with individual items as well as the common knowledge and information we form through those experiences with series of items. Learners are required to remember words or chunks of words items during their language learning process. In order to recall words, they need to remember the letters of each word which requires learners to remember, for instance, the correct order of letters and number of letters to produce one written word. Learners of English who are required to produce written words tend to utilize morphological information while performing the spelling task. Additionally, in writing a new word, the morphological knowledge is denoted lexically and is brought to the production level. When a term becomes phonologically confusing which results in syllables to get more difficult, the orthographic production system helps in terms of using the knowledge of words to create words that are orthographically initiabile. Memory plays a different role in spelling and reading. The less common sequences of letters in a word could indicate the word's identity its major subcomponents when the readers are processing. Spellers are required to deal with entire letters of a word and the letters' positions in a word. By exposing learners to various kinds of associated spellings, the learners' memory of that item is affected by the way spelling matches the graph tactic elements. Readers might have the advantage of having less spelling difficulty due to uniqueness of the words or less common combination of letters. On the other hand, spellers are less benefitted from this in recalling the infrequent, less seen or unusual chunks of letters. In other words, learners have more difficulty with less common combination of letters in spelling.

Conclusion

Spelling offers a convenient way of attaining cultural knowledge about meaning, history, phonology, articulation, and motor plans by teaching the form and meaning of the new words. The tacit and complicated knowledge of words could provide grammatical and inferential clues to maintain the words' information. Semantic information of the words affects the graphemic information that learners extract, i.e. in computing of the character. Deep structures should be unloaded prior to the construction of a reading or writing model, which means the meaning of difficult words should be introduced to students first before they start learning the spelling of the words. Therefore, spelling could show learners' knowledge about words that they were not aware of. English spellers require a certain knowledge, for example, about the position of a stress to be placed in English words (*cinema vs veranda*), or the knowledge of if there is any need for a final-*e* in English words (*rage vs rag*). While some learners might

tend to override phonology and show spelling patterns, other learners may be confused about graphemes as well as the order of those graphemes, partially indicating spelling patterns. Furthermore, sounds help learners when spelling words, especially in writing. Phoneme by phoneme writing, as a production task of spelling, is very important for alphabetic principle (understanding that there are systematic and predictable relationships between written letters and spoken sounds). Spellers tend to over-generalize on phonological basis (*buffe*), opting for *-e* after *v*, and sidestepping *-e* after *g* (give not giv/ rigg not rigge). Understanding what happens in the mind, for instance in the case of learners' poor working memory which would possibly influence their learning and the effect on academic achievement, could promote achieving more reliable approaches and exercise in learning skills such as reading and spelling. Among the skills leading to better spelling achievement, phonological processing and speeded naming tasks play a significant role (Berninger, et al., 2008). In addition, a progressive route of phonological awareness as well as a developing path of phonological processing skills could affect upcoming success in spelling among impaired and typically developing populations. In this regard, giving explicit instructions on how to spell is the most effective way in spelling and highlighted the need for further research on working memory over and above direct teaching to advance success in spelling. In other words, efficient spelling methods and experiments openly aim for spelling. Spelling products are often realized as regularly enhancing with overt training with various preparation approaches, exercises, and instant corrective feedback given to the learners. They also found that phonological skills were critical for spelling, verifying the significance of phonological processing involved in spelling.

In conclusion, examining the differences between the learners' first language and English language may provide useful insights into the English spelling problems faced by EFL learners.

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