Second Language Acquisition of Motion Constructions:

A Bidirectional Study of Learners of Arabic and English

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Abstract

In line with Talmy's typology of lexicalisation patterns (1985, 2000), languages differ in the way they express the semantic constituents of motion events into surface elements. English and Arabic motion constructions differ in whether [path] of motion is expressed on a verb, or by a separate particle. Acquisition of the expression of [path] is expected to cause difficulty for second language learners.

In recent years, there has been an increased emphasis in minimalist approaches to L2 acquisition on the importance of the lexicon in accounts of syntactic variation across languages as explained by the feature-based contrastive analysis. This study extends the view of feature reassembly articulated by Lardiere (2000, 2005, 2008, 2009) into the realm of motion events in Arabic and English context following this line of research carried out by Stringer (2012) in the area of spatial morphology.

Within the Feature Reassembly approach, Lardiere (2008, 2009) argues that reassembling features that are represented in one way in the first language and mapping them into different lexical items in the L2 will present a greater difficulty. Data collected from a total of 120 participants (60 Arabic learners of English, 20 English learners of Arabic and two control groups of 20 native speakers of Arabic and English), who successfully completed acceptability judgment and animation description tasks, corroborate this postulation. The results strongly suggest that meanings that are encoded differently in the L2 from the L1 are the most challenging, whilst those which are comparable to their L1 representations present less difficulty. On the basis of the learners' developmental patterns observed in this particular study, I argue that feature reassembly appears to be a significant factor in second language development. This study also supports Stringer's (2012) conclusions that L2 development in this realm is not connected to simple parameter resetting, but to mastery of lexicons.

Keywords: Second Language Acquisition, Features, Lexical Semantics, Motion Events, Feature Reassembly, Path, Verb-Particle Construction.

Dedication

This thesis is dedicated to my late father (1947-2005) and my mother, who have always had confidence in me and offered me endless encouragement and support in all my endeavours and all I want to say:

‘Oh, my Lord! Have mercy on them both, as they did care for me when I was little’.

The Holy Qur'an, Surat Al-Isra: Chapter 17, Verse 24.

I also dedicate this thesis to my son, Yasser (born 2009), my daughter, Diala (born 2013) and my husband, Ageel for his unconditional love, care, understanding and patience.

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Declaration

I declare that this thesis is a presentation of original work and I am the sole author. This work has not previously been presented for an award at this, or any other University. All sources are acknowledged as References.

Chapter 1. Introduction

1.1 Introduction

Imagine a friend saying, ‘I am going on a bear hunt!’ Do you think that the preposition *on* indicates peripheral meaning, and that it would be more idiomatic in English to say ‘in a bear hunt’ or ‘to a bear hunt’ instead? Are motion events expressed through the use of the same lexical items in all languages? Do you sometimes become confused by which preposition to use in the target language? Should we say in English, *jump on* or *jump over*, *swim below* or swim *under*, *fly over* or *fly above*, or sometimes you feel that you need to miss out the preposition in certain contexts and only use another lexical item such as a verb instead? More interestingly, do you find yourself comparing, one way or another, the use of prepositions in the target language to that of your mother tongue?

It has been argued that parts of the language faculty may be inaccessible in post-childhood second language (hereafter L2) acquisition (Hawkins and Chan, 1997; Hawkins, 2000; Franceschina and Hawkins, 2003; Hawkins and Liszka 2003; Hawkins and Casillas, 2008), and that formal features that are assembled differently in the first language (hereafter L1) may be difficult for adult learners of an L2 (Lardiere, 2009).[1] According to the Feature Reassembly Hypothesis (hereafter FRH) articulated by Lardiere (2000, 2005, 2008, 2009), complete acquisition of an L2 is determined by whether or not L2 speakers can effectively reassemble existing features of their L1 into L2-specifications. According to Lardiere (2009), feature reassembly is a required learning process to master the morphological realisations of the formal features throughout the course of acquiring an L2. Lardiere (2005, 2008) claims that L2 acquisition engages learners figuring out how the primitive features should be reconfigured into different morphological configurations in the target language, and that it is the reassembly of features onto lexical items that poses difficulties to L2 learners. With this in mind, Stringer (2005, 2007, 2012) considers the possibility that L2 patterns for expressing motion events may be difficult for L2 learners to master if their L1 has a language specific feature-lexicon distribution.

[1] See Chapter 3 for more arguments on this view.

According to Stringer (2012), the focus of the Minimalist Program (abbreviated MP) on the significance of semantic features in describing syntactic variation (Chomsky, 1995) contributes significantly to our awareness of how languages differ in how they encode motion events.[2] In current minimalist accounts to L2 developments, a number of scholars (e.g., Choi, 2009; Domínguez *et al.* 2011; Yaun and Zhao, 2011; Stringer, 2012; Gil and Marsden, 2013; Hwang and Lardiere, 2013; Spinner, 2013; Cho and Slabakova, 2014, 2015) emphasise the significance of the lexicon in describing syntactic variability across languages as illustrated by the feature-based analysis.

The feature-based account developed by Stringer (2012) adds favourably to cognitive linguistic work on motion events in that it offers answers to a varied set of questions with reference to motion event lexicalisations. Stringer (2012) argues where languages vary not in sweeping generalizations of how they express motion in verbs or predicates according to Verb-framed or Satellite-framed viewpoints (Talmy, 1985, 1991, 2000; Slobin, 1996, 2003), but rather in how specific predicates vary in terms of the semantic features they host. He claims that describing variation in terms of features involves a re-examination of earlier generative-oriented research on motion events, which have anticipated parametric variations in spatial morphology lying at the level of language-specific structures (Inagaki, 2001; Zubizarreta and Oh, 2007).

Following Stringer's (2005, 2007, 2012) line of argument, I have carried out an empirical study investigating whether Arabic learners of English and English learners of Arabic are able to reconfigure spatial features in new clusters in their L2 acquisition of motion events. That is, this study following the line of experimental studies on spatial morphology initially carried by Stringer (2005, 2007, 2012), extends the view of feature reassembly articulated by Lardiere (2005, 2008, 2009) into the L2 acquisition of motion events in new language combinations: L1 Arabic-L2 English and L1 English-L2 Arabic.[3]

[2] Over the last two decades, the attention of generative model has moved from the Principles and Parameters approach to a Minimalist account (Chomsky, 1998, 2001).The MP is a major line of research in the field of linguistics that has been established within generative grammar since the 1990s, initiated with the work of Chomsky (1993). The current study is outlined within the generative theory of L2 syntax, and more precisely the MP.

[3] Stringer's (2005, 2007, 2012) research is mainly based on Japanese and French speakers.

This chapter explains the significance of this study, and provides a brief summary of the relevant literature in order to identify knowledge gaps in the field. It then goes on to briefly state the research questions and the formulated hypotheses and put them in a practical context. Furthermore, it provides a summary of the research methods, defines key terms, and, finally, provides an overview of the scope of the thesis.

1.2 English and Arabic semantic-syntactic systems

Following Talmy's typology of lexicalisation patterns (1985, 2000), languages vary in the way they encode the semantic elements (i.e. meanings) of motion events onto surface elements (i.e. linguistic forms).[4] Explicitly, in line with Talmy's typology (1985, 2000), languages vary in the way they express the semantic elements (i.e. Path and Manner) of motion events onto surface elements (i.e. verbs or prepositions).[5]

It follows, typologically, that English and Arabic are founded on distinct systems, which differ syntactically, yielding a critical factor for L2 speakers in terms of the proper use of the target constructions (Shoebottom, 2015). According to Talmy (1985, 2000), English and Arabic motion constructions vary in whether Path of motion is encoded on a verb (e.g., *follow*), or by an adposition, an affix, or a particle called 'Satellite' (e.g., *after*). To illustrate, consider examples (1a-b), where in (1a) motion is typically lexicalised by means of a verb + particle construction/combination (hereafter VPC) such as *run after* whilst in (1b) it is lexicalised in only a bare verb *follow*:

(1) a. The cat ran after the mouse. (English)

[4] Other non-linguistic representations (e.g., gestures) are beyond the scope of the current study. For studies on the role of gestures in lexicalizing motion events refer to Kita *et al*. (2001), Nunez and Sweetser (2006) and Özçalışkan (2012).

[5] Talmy (2009:1) has introduced these semantic components of motion events with the first letter being capitalized, e.g. Path (with a capital 'P'), Manner (with a capital 'M'), etc. However, for the purpose of this study, I used Stringer's (2005, 2007, 2012) representations, e.g., <V, [MANNER], __ (PATH)>, with a slight modification. Stringer adapted his representations of feature sets from Emonds (1991, 2000). In this thesis, the semantic features will be presented with the use of square brackets [], e.g., [path], [manner] on their own or coupled with the relevant surface form (e.g., a particle, a verb), e.g., [p, path], [v, manner] all in small letters. A full definition of the term "feature" is offered in Chapter 3.

b. *laḥqa* *alqiṭ* *alf?r.*[6] (Arabic)
followed the-cat the-mouse.[7]
'The cat followed the mouse.'

According to Tamly's typology of lexicalisation patterns (1985, 1991, 2000), English, and a variety of Germanic languages, allow VPCs such as the structure in (1a). On the other hand, languages such as Spanish, French, Greek, Hindi, and Arabic are highly constrained in permitting manner of motion verbs to occur with path predicates (*ibid*), usually allowing structure (1b). Whilst this difference might not influence L2 acquisition of these constructions clearly English allows bare verbs (e.g., *follow*) in the same way Arabic does, yet there are other cases where it might cause a learnability issue. To illustrate, consider examples (2a-b), where in (2a) motion is typically lexicalised through manner verb + particle (e.g., *pop out of*) in English, whilst in Arabic in (2b) it is lexicalised in path verb + particle (e.g., *exit from*), which is unacceptable in English. Examples (2a-b) do not reflect exactly the same content.

(2) a. The squirrel popped $_{[v,\ manner]}$ out of $_{[p,\ path]}$ the tree. (English)

b. *kharja* *alsenjab* *min* *alshajerah.* (Arabic)
exited$_{[v,\ path]}$ the-squirrel from$_{[p,\ path]}$ the-tree.
'The squirrel exited the tree.'

Accordingly, acquisition of the expression of [path] that has presented in one way in the L1 and another way in the L2 and require reallocating onto different lexical items to the L2 specifications is expected to cause difficulty for L2 speakers (Stringer, 2012). The variability in the way English and Arabic express path of motion on two different lexical items are sufficient factors for L2 non-target like usage, and, hence, must crucially be taken into account in order to mitigate this negative impact and minimise flaws in L2 acquisition of spatial morphology.

[6] For Arabic alphabet and their transliterations see pages xiv and xv.

[7] Note that basic Arabic word order is Verb-Subject-Object (VSO).

As previously mentioned, English and Arabic have distinct and independent semantic and syntactic systems. The origins of these language systems are different. While English has West-Germanic roots and belongs to the Indo-European language family, Arabic constitutes a part of the Semitic language family (Hamdallah and Tushyeh, 1993). Thus, typologically, Arabic structures pattern differently from English structures (Aldwayan, 2013; Shoebottom, 2015). On the basis of many grammatical differences between Arabic and English, VPCs and, more specifically, particles have been identified as an area resulting in the most frequent non-target like forms in either the written or spoken English of Arabic speakers. Arabic learners of English face numerous challenges in their task to reach high-levels of L2 proficiency (Habash, 1982; Tahaineh, 2010).

By description, particles are words that convey association between two entities in an utterance, showing an association in space between one object and another (i.e. directional or locational), and/or in time between events (i.e. temporal), and/or abstract associations (Takahaski, 1969; Quirk and Greenbaum, 1993; Strumpf and Douglas, 2004). They can be categorized in relation to their meanings, forms and functions. In terms of forms, particles can be simple (i.e. one particle) such as *to*, or complex (i.e. two or three particles) such as *along with*. Simple particles are closed class (i.e., an original single particle cannot be invented). Nevertheless, complex particles are open class since a new assortment of particles could be invented (Grubic, 2004). Particles can occur with different parts of speech; particles can accompany verbs, or nouns. Particles are ‘connectors’; their function is to link nouns or pronouns (the so-called objects of the particles) to other elements in a structure (Alsharafi, 2014). According to Hamdallah and Tushyeh (1993), particles express how nouns or pronouns (i.e. objects) are linked with other elements (e.g., verbs). Accordingly, particles can never exist on their own as they must always be hosted by Prepositional Phrases (abbreviated PPs).[8]

Boers and Demecheleer (1998) have argued that particles are hard to acquire for L2 speakers for the reason that they may be literally accompanied by figurative

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[8] According to Hurford (2011), a prepositional phrase is a string of words consisting of a particle and a noun phrase (e.g, *behind the lace curtains*).

meanings. For this reason, "particles may affect the meanings of the words following them" (Al-Muhtaseb and Mellish, 1998: 2). For an L2 speaker, particles are puzzling and very difficult since this class of words has strong collocation links with other components of language such as verbs. English particles can be linked to verbs in order to form elements with dissimilar meanings. Different particles used with a single verb can convey, for instance, very different events or directions (e.g., *run to, run into, run away, run across, run out of, run after, run around, run up, run over*, etc) as Table 1 shows.

Table 1. Different particles might occur with the verb *run*.

Subject	Verb	Particle	Object
He	*ran*	*away from*	*the guards*
		up	*the stairs*
		into	*the shop*
		across	*the road*
		back to	*the school*
		down	*the stairs*
		towards	*the mosque*
		past	*the building*
		over	*the bridge*
		along	*the beach*
		to	*the gate*
		out of	*the room*
		around	*the lake*
		onto	*the ship*
		through	*the forest*

Particles are essential constituents of VPCs (also called phrasal verbs), i.e., complex predicates made of a verbal base and a modifying particle (Iacobini and Masini, 2007).Three classes of VPCs are suggested by Dehé *et al.* (2002), where a VPC can be compositional, idiomatic or aspectual, based on what sense it makes. In this study, regarding compositional VPCs I am interested in the sense of the construction determined by the literal meanings of the verb and the particle.[9] These VPCs

[9]Particles look like prepositions. However, they differ semantically and syntactically from each other. A particle accompanied by a verb creates a single semantic entity with a different meaning from the verb's meaning on its own. Prepositions are self-governing and do not alter the meanings of verbs they come with. Prepositions cannot move whilst a number of particles can. To differentiate between them, move the word (e.g., *up*) and words succeeding it to the front of the sentence. If it results in a

typically engage particles with temporal or spatial (i.e. locational or directional) meanings. The best known type of VPCs aside from idiomatic was discussed as early by Jackendoff (1973) are directional VPCs.

The difficulty of mastering VPCs emerges from the fact that selection of appropriate entries appears arbitrary and inconsistent, while learning VPCs engages a vast load of memorisation and storage of information (Rastal, 1994). For instance, native speakers of English would say *went home*, but *went to school*, *lie in bed*, but *on the sofa*, and *walk across the desert*, but *through the woods*, *swim under the ship*, but *below the surface of water*, *jump into the lak*e, but *onto the horseback*, etc.

Although English incorporates a relatively small number of particles as compared with the huge number of verbs, nouns and adjectives, (Capel, 1993), they constitute a significant and commonly used class (Daud and Abusa, 1999; Littlefield, 2006). Celce-Murcia and Larsen-Freeman (1999) have stated that particles are difficult in that they can play dissimilar roles, and the greatest difficulty encountered by L2 speakers who acquire English is the proper usage of these particles. Non-target like usage of a particle might alter the intended interpretation of the sentence completely. Moreover, verbs play a significant role in the misuse of these particles, including substitutions, additions, and deletions of particles, which increases L2 speakers' rates of non-target like use of VPCs (Habash, 1982).

The prepositional system in Arabic (or what is called *huruf al-jarr* 'particles of attraction') is very complex (Hamdallah and Tushyeh, 1993:184).[10] Each particle has numerous meanings and these vary according to where and how a given particle is

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meaningless sentence, then the word is tied with the verb and is a particle, not a preposition (Cappelle, 2004).

Up as a preposition: e.g., *the Chambers ran up the hills. *The Chambers ran the hill up*. (*run up* means running [upwards], it keeps the same meaning).

Up as a particle: e.g., *the Chambers ran up the bills. The Chambers ran the bills up.* (*run up* means to enlarge) (*ibid*).

Although this study is on motion constructions with directional prepositions, the word particles will used to refer to both forms (i.e. prepositions and particles) as the majority of studies on VPCs do not make distinction between them. For further reading on particles and prepositions in English see O'Dowd (1998).

[10] For more details on the nature of the Arabic particles refer to Abdel-Nasser (2013).

used in a sentence.[11] Within Arabic and English systems of particles, certain Arabic particles have direct alternatives to those in English (e.g., the English directional particle *to* has the Arabic equivalent 'ila'), while the greater number of them does not (Scott and Tucker, 1974). That is, not every English particle has a definite counterpart in Arabic. The number of particles in English is bigger than that in Arabic. Specifically, the twenty particles of Arabic (Abbas, 1961, 1985) can be contrasted with the fifty-seven particles of English (Hayden, 1956; Seidl, 1978).

Zughoul (1979) provided a list of the main sources of problems that Arab learners encounter with particles. One noticeable reason for this difficulty is the large number of possible meanings each particle expresses, which vary according to the context they occur in. Besides, some particles might occur in ambiguous contexts (e.g., *they swam under the bridge*).[12] The multiplicity of the semantic meanings that each particle might hold comes to play a role in increasing the difficulty; a single particle might carry multiple semantic meanings (e.g., the particle *at* can express point or time, e.g., *I waited at the bus stop* (point) and *I woke up at 7 o'clock* (time)) and multiple particles can hold the same meaning (e.g., the particles *to* and *towards* in English express the same directional meaning as in *the mouse pushes the cheese to/towards the wall*). Furthermore, the lack of formal written guides that show how these particles are used in context takes into account the learners' L1 system, as well as traditional methods of teaching, e.g., the commonly-adopted grammar-translation method leads L2 speakers to the option of translating in their minds from their L1 system (Alsharafi, 2014).[13] As far as VPCs are concerned, the main challenge for Arab speakers of English appears to be that there is no one-to-one mapping for all these forms. This confronts learners with the challenge of mapping English particles to those from their L1 system.[14]

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[11] For example, the Arabic particle *fii* 'in' has seven meanings (i.e. primary and secondary) such as causative, company, attachment, measurement, partitive, termination and elevation (Abdel-Nasser, 2013:77).

[12] This sentence is ambiguous as it might encode either a directional or a locational reading.

[13] For a contrasting account of some Arabic and English particles with some pedagogical implications refer to Hamdallah and Tushyeh (1993).

[14] For detailed discussion on the 'mapping problem' see section 2.4 from Chapter 2.

Previous research on Arab learners of English (e.g., Hussein, 1990; Abisamra, 2003; Shehata, 2008; Tahaineh, 2010; Abushihab, 2011; Albaqami, 2011) found evidence of ‘L1 interference’. Ellis (1997: 51) has described interference as ‘transfer’ which the scholar referred to as “the influence that the learner’s L1 exerts over the acquisition of an L2”. The previous research came to the same conclusion that Arabic speakers rely on their L1 and link the meaning and usage of L2 particles to the meaning and usage of different varieties of Arabic as it is the root of their former knowledge. In addition, the selection of transferable forms is decided on the basis of speakers’ perceptions of (dis)similarities between their L1s and L2s. While ‘positive transfer’ occurs when there are similarities between English and one of the Arabic varieties, this results in L2 speakers using target like constructions, ‘negative transfer’ that takes place whenever there are dissimilarities, which, consequently, in many cases, can result in non-target like constructions (Alsharafi, 2014).As a result, Arab learners do not sufficiently master English VPCs, and they commonly fall back on their L1 knowledge in an attempt to use the appropriate construction. Due to these issues, English VPCs usage tends to obstruct the way L2 speakers attain high accuracy in terms of the L2 grammar. The following section will go on and describe this learnability problem from a feature-based perspective.

1.3 Previous research on L2 acquisition of VPCs

In recent years, supporters of the feature-based approach (Domínguez *et al.*, 2011; Yaun and Zhao, 2011; Gil and Marsden, 2013; Hwang and Lardiere, 2013; Spinner, 2013; Cho and Slabakova, 2014, 2015) have examined the effects of features bundles developed in the learners’ L1 on L2 developments and argue for the predictive power of this approach. However, these studies are limited to a small number of languages and have only been applied to a limited range of syntactic areas. Moreover, to the best of my knowledge, there have been no studies in which feature reassembly was examined with regards to L2 learners’ knowledge of motion constructions apart from Stringer’s (2005, 2007, 2012) studies. In general, the experimental records on the FRH are, to a certain extent controversial, and there is no general agreement regarding the role of L1 feature configurations in L2 acquisition. There is a call for further evidence that L2 learners are chiefly challenged by reassembling their L1 features in order to successfully reach a complete acquisition of L2 constructions, particularly in the Arabic-English context.

Most studies on motion lexicalisations (e.g., Özyürek and Kita, 1999, Papafragou *et al.* 2002, 2006; Strömqvist and Verhoeven, 2004; Han and Cadierno, 2010) have been designed to empirically validate Talmy's (1985, 2000) typology of lexicalisation patterns within the cognitive linguistic framework. Nonetheless, a few studies attempted to account for the learnability tasks that challenge L2 learners in the realm of motion events (Pavesi, 1987; Inagaki, 2001, 2002; Navarro and Nicoladis, 2005; Stringer, 2005, 2007, 2012) and to the best of my knowledge, no study has so far explored the lexicalization of motion events in L2 Arabic. In this context, the present study is a first attempt to explore the cross-linguistic influence of semantic feature bundles developed in L1 on L2 acquisition of motion constructions in L2 English and Arabic.

In the past decades, much work has been dedicated to the study of VPCs with directional, locational, temporal, and even idiomatic meanings. Several studies have documented non-target like forms made by L2 speakers, and several attempts have been made to account for these forms. However, these non-target like constructions were not fully understood or systematically described in these studies, and the factors underlying these non-target like constructions in an L2 remain speculative.

To date, the L1 influence on L2 acquisition is inadequately understood in the realm of motion events. So far, there has been little research on the L2 acquisition on spatial morphology, specifically by adult Arabic speakers of English and English speakers of Arabic. The majority of L2 research on VPCs (e.g., Hasan and Ho Abdullah, 2009; Tahaineh, 2010) produced descriptions of Arabic learners' performance on English VPCs and have been restricted to limited comparisons of the L1 and the L2, and relied heavily on surface level approaches: contrastive analysis and error analysis.

Arab linguists acknowledged the critical role played by the learner's L1 in L2 development, and recent evidence available suggests that L2 speakers are likely to transfer forms and meanings from their L1 (e.g., Habash, 1982; Hussein, 1990; Abisamra, 2003; Zughoul and Abdul-Fattah, 2003; Farghal and Obiedant, 1995;

Shehata, 2008; Hasan and Ho Abdullah, 2009; Asma, 2010; Tahaineh, 2010; Abushihab, 2011, Albaqami, 2011). These studies concluded that forms that are different from the learners' L1 are more difficult to acquire. Nevertheless, there still exist inadequate data concerning the L2 acquisition of motion constructions by English speakers of Arabic. Furthermore, the aforementioned studies have paid little consideration to particles with directional rather than those with temporal and locative meanings.

As previously mentioned, the L2 acquisition of motion representations by L2 speakers has been broadly studied from a non-minimalist perspective. However, so far, the only study which discusses the issue from a minimalist perspective was by Stringer (2005, 2007, 2012).[15] He investigated the role of feature reassembly in L2 acquisition of motion events. He expanded feature reassembly in the L2 lexicon as proposed by Lardiere (2005, 2008, 2009) into the 'open-class lexicon', and, particularly, the area of the motion events. He found that variability in the lexicalisation of motion events within French at all stages of development is similar to variability found in other languages, and considers the feature-based account to be particularly illuminating. In this thesis, I extend his line of investigation to the Arabic-English context. The present study thus fills a gap in the literature by exploring how Arabic speakers of English and English speakers of Arabic and Arabic acquire motion constructions from a feature-based standpoint.

Very little is known about how L2 speakers of Arabic and English acquire motion constructions, and whether or not feature reassembly is a crucial process for acquiring them. This study will account for the variability observed in the way L2 learners' use motion constructions from this different angle. The study seeks to explain the learners' L2 knowledge and reanalyses their non-target like constructions from a feature-based viewpoint with the use of different sets of experimental tools in an attempt to obtain additional data with a view to closing discussed gaps in the literature. It is hoped that the findings of this study will provide information on why

[15] His study is a milestone in research on L2 acquisition of motion lexicalization from a feature-based prospective and will be reviewed in more details in Chapter 4 of this thesis.

motion constructions pose difficulties for language teachers, L2 learners, and textbook writers.

There are several important areas where this study makes an original contribution. However, the main contribution of this study is twofold. First, this study makes a major contribution to the research on L2 acquisition of spatial morphology in general by extending the research to an underexplored area and new context; Arabic. Arabic VPCs constitute a thought-provoking case, also, from a typological standpoint. I provide new data that show that Arabic post-verbal predicates contribute to VPCs, which can perhaps be regarded as evidence of their existence in the system. Besides confirming the availability of VPCs in Arabic, I aim to improve our knowledge of the semantic and surface properties of spatiality in Arabic-English context.

Second, and more essentially, the purpose of this study is to contribute to the growing body of research by exploring the value of feature bundles and the predictive power of the Feature Reassembly Hypothesis in accounting for variability in the L2 acquisition of motion constructions and exploring meaning-form relationships in Arabic and English context. Understanding the link between semantics and morphology will help us to develop a clearer picture of L2 development. This study provides an opportunity to advance our knowledge of what kind of learnability tasks confront L2 learners of Arabic and English and hence provides precise predictions for their attainments.

Studies like these can inform the development of minimalist models for L2 acquisition. Following Stringer's (2005, 2007, 2012) line of thought, I argue that an account that includes detailed description of how semantic features are encoded into surface elements highlighting syntactic variation and contributing significantly to our awareness of how languages differ in how they encode motion events. This study examines whether the minimalist feature-based account of L2 development offers much more varied predictions for variability in L2 acquisition of motion events than parameter resetting accounts as Stringer (2005, 2007, 2012) and other supporters of the feature-based account argue (e.g., Lardiere, 2000, 2005, 2009; Choi, 2009, Cho and Slabakova, 2014, 2015).

1.4 The present study

This study is an attempt to contribute to the aforementioned debate by exploring whether or not linguistic representations of motion events can be accounted for by the feature–based account. The purpose of this study is to test the validity of the FRH prediction for the L2 acquisition of motion constructions, an area of attested difficulty which requires L2 speakers to remap semantic concepts regarding the spatial status of events onto language-specific morpholexical configurations. There are many reasons for testing the predictions of the FRH within the field of spatial morphology.

Firstly, despite the amount of ink spent on VPCs in English (e.g., Dixon, 1982; den-Dikken, 1995, and Dehé *et al.*, 2002) and other Germanic languages, where these constructions are very ubiquitous and productive (Iacobini and Masini, 2007), there is still a substantial lack of consensus with respect to this syntactic construction in Semitic languages such as Arabic, especially as far as the L2 acquisition studies are concerned.

Secondly, the focus of this study is prepositional particles, i.e., directional, and this is owing to their high frequency in context and the problematic nature of their usage (Yuan, 2014). Lexicalisation of motion events offers both an empirically rich and amenable area in which variation across languages can be investigated as Stringer (2012) pointed out. According to Stringer (2012), motion constructions are rather interesting because they comprise one type of open-class elements, the verb root, alongside another type of closed-class element, ‘satellites’. These two surface entities are vehicles for a connected set of semantic components. Hence, this study addresses the underlying representations of motion constructions with directional meanings.

The present study systematically reviews the literature and data which are concerned with VPCs in Arabic and English. In doing so, I aim to provide a novel feature-based account of motion representations in these languages in which the relations between semantic elements and surface elements are systematically described. I test predictions built on the FRH concerning how learners map target forms of the L2 onto feature sets from their L1, and how they then reassemble these feature sets, if they do so, to better match the target configurations.

This research addresses how effectively a particular syntactic pattern can be acquired if it is present in a language-specific way in the speaker's L1. Specifically, I ask whether or not there are language-specific meaning-form constraints that influence how adult L2 speakers acquire L2 constructions and whether or not there is evidence of language-specific configurations. More precisely, this study is designed to examine the role of feature bundles developed in L1 in the L2 acquisition of motion constructions to ascertain whether or not the only meaning 'path' which requires a new semantic-morphology reconfiguration is difficult for L2 learners.[16]

Furthermore, It has been claimed that L2 learners are challenged by using appropriate constructions from L2 input that, in many cases, are not explicitly accessible (e.g., Bialystok, 1978; Krashen, 1982, 1985). This challenge becomes even more evident when the two languages vary in terms of how semantic components are bundled up together at the surface level. Hence, L2 learners have to 'reformulate' existing meaning-form representations from their L1 in order to integrate other patterns that might be different or even new (Lardiere, 2005, 2008, 2009).

Furthermore, according to Lado (1957: 2), who disagreed that interference of the L1 results in difficulties for L2 speakers, "... individuals tend to transfer the forms and meanings of their native language and culture to the foreign language and culture..." Based on the Contrastive Analysis Hypothesis (CAH), Lado (1957:2) suggests that "those elements that are similar to the learner's native language will be simple for him, and those areas that are different will be difficult." In view of this, transferring

[16] Observations made during my personal experience as an English Foreign Language (hereafter EFL) learner and teacher in Saudi Arabia have shown that VPCs received little attention from both syllabus designers and language teachers. In such situations, the focus of attention is limited to drilling individual words, particularly verbs. Accordingly, L2 learners usually encounter difficulties in communicating efficiently when using these constructions. My personal experience of learning and teaching particles has prompted this research. I have worked closely with EFL learners for many years, and have found that VPCs, including combining the appropriate verb with the appropriate particle, are one of the most problematic constructions for learners to master. I became deeply interested in the L2 acquisition of VPCs after I carried out a pilot study on the usage of particles by Saudi Arabic speakers of English for my masters (Albaqami, 2011).

L1 feature-based clusters into the target language might be the reasons behind the variability seen in L2 speakers' performance.[17]

There is a need to take into consideration both similarities and dissimilarities between L1 and L2 to better account for the most common non-target like constructions made by L2 speakers. Such comparison would bring light to the most problematic areas encountered by L2 learners. Undoubtedly, understanding these differences as primary difficulties in L2 learning would have practical applications, and "teaching should be directed at these structural differences" (Salim, 2013: 122). This direction is to be the major one for teachers in order to be capable of establishing strategies that eliminate non-target like forms whilst ensuring high-level of proficiency among L2 learners.[18]

The kind of comparison to be undertaken here leads to classifying feature configurations of motion constructions into two categories: L1-L2 matching and L1-L2 mismatching feature sets as examples (3a-b) and (4a-b) illustrate. In example (3a-b), both English and Arabic use corresponding particles (i.e. *around* 'ḥawla') to encode [path]. Whereas, in example (4a-b), English and Arabic differ in terms of selecting non-corresponding particles to encode [path] of motion; i.e. *above* in English is not equivalent to *9la* 'on' in Arabic.[19]

(3) a. The butterflies flew$_{\text{[v, manner]}}$ around$_{\text{[p, path]}}$ the tree. (English)

b. *ḥalaqat* *alfarshat* *ḥawal* *alshajrah.* (Arabic)
flew$_{\text{[v, manner]}}$ the-butterflies around$_{\text{[p, path]}}$ the-tree.

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[17] As far as learnability is concerned, this account appears to have a UG-based view of Contrastive Analysis (Lado, 1957), in which a communal representation between the L1 and L2 facilitates mastering L2 (i.e. positive transfer), whereas a different representation hinders it (i.e. negative transfer).With respect to this, Lado (1957: 2) states, "We assume that the student who comes in contact with a foreign language will find some features of it quite easy and others extremely difficult. Those elements that are similar to his native language will be simple for him/her, and those elements that are different will be difficult".

[18] In addition, classroom-based learners of Arabic are likely to have access to explicit instructions about the lack of one-to-one correspondence of such particles. I will return in Chapter 8 to the question of whether such instruction-derived meta-linguistic familiarity could facilitate restructuring the learner's L1 to better match the L2.

[19] For further examples and discussion on this point see Chapters 2 and 4.

‘The butterflies flew around the tree.’

‘L1-L2 matching feature set’

(4) a. The butterflies flew$_{[v, manner]}$ above$_{[px, path]}$ the tree. (English)

b. *ḥalaqat alfarshat 9la alshajrah.* (Arabic)
flew$_{[v, manner]}$the-butterflies on$_{[py, path]}$ the-tree.
‘The butterflies flew above the tree.’

‘L1-L2 mismatching feature set’

Furthermore, following Lardiere (2000, 2009), I classified feature reassembly (hereafter FR), a process which involves redistributions of the relevant semantic elements onto the target surface elements, into three subclasses based on what type of feature reassembly is needed to accommodate the target configurations: (1) to substitute, (2) to delete from, or (3) to add to the L1 feature set.[20]

As far as the experimental study is concerned, this investigation takes the form of a bidirectional case-study, with detailed analysis of responses collected from an experimental study conducted with both L1 and L2 speakers of Arabic and English in the United Kingdom. This study is exploratory in nature, and sets out to investigate how L2 speakers would perform on motion constructions with L1-L2 matching feature bundles compared to those with L1-L2 mismatching ones. The study attempts to examine the learnability tasks for L2 speakers to find out whether they engage feature reassembly (e.g., [PATH, LEX-L1] → [PATH, LEX-L2])[21], the trajectory meaning (that demands feature reassembly) will constitute a source of difficulty for

[20] For further discussion on the three types of feature reassembly, see section 4.4 from Chapter 4.

[21] To put it more simply, for instance, if [path] is mapped onto the particle *onto* in English as in ‘the frog jumped onto the lillypad’ and *9la* ‘on’ in Arabic as in *y’aqfiz alḍfda9 9la alwarqah* ‘the frog jumped on the lillypad’. *Onto* and *9la* ‘on’ are not equal in this context; they do not indicate the same meaning; i.e. the former encodes directional reading whilst the latter encodes locational reading. So, [path] here is mapped onto two different lexical items; LEX-L1= *onto* and LEX-L2=*9la* ‘on’. For further discussion on this point see Chapters 2 and 4.

L2 speakers.[22] That is, in the light of FRH, I argue that motion representations with matching F + matching LEX (3a-b) are easier to acquire compared to others with matching F + mismatching LEX (4a-b).[23]

In other words, the study seeks to answer the question of whether L2 speakers find L2 motion constructions with matching feature configurations to their L1 unproblematic (e.g. *fly around* 'y'uḥaliq ḥawla') in comparison to those with mismatching feature configurations to their L1 (e.g. *fly above* 'y'uḥaliq 9la').[24] The data is drawn from three main sources: acceptability judgment task and picture description task followed by a follow-up questionnaire on the acceptability judgment task.[25] The findings are anticipated to contribute to the debate regarding whether post-childhood learners of an L2 can acquire properties which are differently presented in their L1.

The results, which will be shown, suggest that success in the L2 acquisition of motion constructions appears to be largely established by whether or not [path] of motion can be reconfigured onto different lexical items to accommodate the L2 specifications. The findings are fundamentally compatible with the predictions of the FRH (Lardiere, 2005, 2008, 2009) and demonstrate that research that addresses the specific processes of first 'mapping' and then 'feature reassembly' promises to bring about a more descriptive account of L2 development which provides strong support to Lardiere's (2005, 2008, 2009) and Stringer's (2012) claims.

1.5 Limitations

Even though Talmy's (1975, 1985, 2000) typological framework of lexicalisation patterns can be profitable in exploring how adult L2 learners express motion events, this study does not engage in a detailed discussion of the classification of languages according to Talmy's two-way typology. It is beyond the scope of this study to

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[22] 'LEX' stands for lexicons and F stands for features. This abbreviation along with others will be described at the end of this chapter.

[23] These hypotheses are described in more details in Chapter 4.

[24] The experimental results of this dissertation confirm that L2 learners find L2 motion constructions with matching feature configurations to their L1 unproblematic in comparison to those with mismatching feature configurations. See Chapters 6 and 7.

[25] For detailed descriptions of the methodology see Chapter 5.

decide whether or not Arabic or English belong to one or another of the proposed typology. Likewise, full discussion of arguments and revisions made concerning Talmy's (1975, 1985, 2000) proposal lie beyond the scope of this study; debates on his typology are irrelevant to the main argument of this study.[26] This study is an empirical one. It compares and contrasts morpholexical constructions of the semantic components of motion events into two groups of speakers whose L1 and L2 are argued to represent two massively different patterns (Talmy, 1988). The reader should bear in mind that this study is mainly based on testing the predictions of the FRH in the context of L2 Arabic-English spatial morphology.

1.6 Terminology and abbreviations

Throughout this thesis, by 'lexicalisation of motion events' I mean motion constructions such as 'crawl to', 'jump out of', 'return', etc. The term 'motion constructions' will be used for both verb-particle constructions (e.g., *go out*) as well as bare verbs of motion (e.g., *exit*). In this thesis, the abbreviation 'p' will be used to refer to particles (e.g. *out*), whereas 'v' refers to verbs of motion (e.g., *go*). Furthermore, the abbreviation 'F' throughout this thesis will be used to refer to the semantic features either path or manner of motion, whereas 'LEX' will refer to lexicons either particles or verbs. The term 'FR' will be used to refer to feature reassembly.[27]

1.7 The structure of the thesis

The overall structure of the thesis takes the form of eight chapters, structured as follows. The thesis begins by introducing the study and highlighting the main issues addressed in it. In chapter 2, I present an overview of Talmy's typology of lexicalization patterns (1985, 2000) and I compare and contrast lexicalization of motion events in Arabic and English. Chapter 3 begins by laying out the theoretical dimensions that guide the present study (i.e., describing the Feature Reassembly Hypothesis, which attempts to explain the role of language-specific feature

[26] For more discussions on lexicalization of motion events across different languages from a cognitive-typological standpoint, refer to Özyürek and Kita (1999) in Turkish, Papafragou *et al.* (2002) in Modern Greek and Navarro and Nicoladis (2005) in Spanish.

[27] For the full list of abbreviations, see pages xi-xiii.

configurations in accounting for variability in L2). Then, in chapter 4, I move on to reviewing the existing and the most recent research on motion constructions, and VPCs in general and in Arabic and English. This is with the aim of identifying a knowledge gap in the relevant literature. Then, the chapter finally delves into the research questions addressed and highlights the main hypothesis formulated in the study.

The remaining chapters are then structured as follows. Chapter 5 is concerned with the methodology used for the empirical study, including descriptions of the participants, the experimental tasks, and data collection procedures. In Chapter 6, the results of the experiment are reported, and these are discussed in chapter 7, with special attention given to the main findings in relation to the research questions and the previous research. The predictions of this approach are examined, demonstrating that the adapted account yields systematic predictions for L2 patterns and, further, gives explanations for the variability observed in the acquisition of motion properties by adult L2 speakers. The key novel contribution is, hence, the investigation of spatial properties within the FRH, showing that the results of the empirical study confirm the predictions of this account. The final chapter summarises the major findings, and the author returns to the broader issues raised in the meaning-form relation debate. Finally, she concludes with notes on some pedagogical implications of the present study, its limitations, and directions for future research.

Chapter 2. On the Spatial Morphology of Arabic and English

2.1 Introduction

This study takes, as its point of departure, Talmy's (1985, 1991) typology of lexicalisation patterns regarding cross-linguistic semantics-to-syntax relationships. Talmy's proposal is a means of explaining characteristic patterns of form-meaning links, mainly with regards to the expression of path of motion. In this chapter, I undertake a brief overview of Talmy's typology by looking at the basis for his proposal to find out if Arabic and English belong to (dis)similar types. However, the discussion necessarily omits details of Talmy's hypothetical approach, as explained above, but considers that his typology is useful for cross-linguistic investigation of motion constructions.

Although English and Arabic have been argued to belong to different typological types, I provide some evidence that they have something in common. From a feature-based contrastive analysis, I identify areas of (dis)similarities, pinning down the basic morphological configurations in these languages. The main distinction appears to be how [path] of motion is commonly configured. Arabic commonly uses the root verb to carry [path], whilst English uses the so-called Satellite to carry this feature instead. However, the line of investigation developed in this chapter leads to multiple and more complex feature distributions, involving both L1-L2 matching and mismatching feature sets. This idea will be further developed in Chapter 4, which addresses the L2 acquisition research that influences this work, and from which the key hypothesis for this study stems. A full feature-based description has been offered here in this chapter for the study of the L2 acquisition of motion constructions.

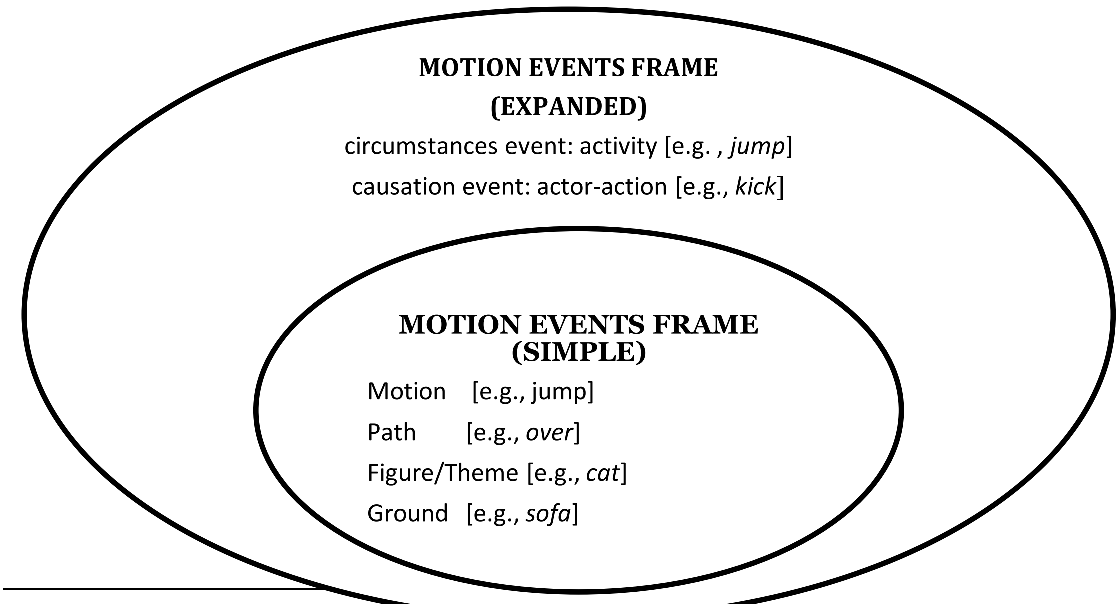
2.2 Talmy's typology of lexicalization patterns in motion events (1985, 1991, 2000)

Motion events involve an object that moves along a path in a definite manner (Johnson, 1987). Talmy (1985: 85) describes motion events as situations "containing movement or the maintenance of a stationary location" which are analysable into a set of semantic constituents. According to Talmy (2000), the word 'movement' indicates a 'directed' or 'translative' motion that causes a change of location, while 'location' indicates either a static condition or a restricted motion that causes no change of location (e.g., jumping up and down). In another context, Talmy (2000: 25) describes Motion thus: “the basic Motion event consists of one object (the Figure) moving or located with respect to another object (the reference object or Ground)”.

Another definition is offered by Frawley (1992: 170), whereby a motion event stands for “a situation that implies movement in space and during a time interval e.g., the Pink Panther chased the little bird”. In this study, I concern myself with the lexicalization of translational motion events, a rich and proper domain for testing the prediction of the FRH where more than one semantic element are in relation with more than one surface element, in L2 English and Arabic in order to determine what motion constructions L2 speakers would use to encode motion events that involve the movement of an object through space in a given context.

Talmy (1985) assumed that we can separate elements within the area of semantic constituents and the area of surface constituents. The surface components of motion are the verb, adposition, any subordinate clause, and what is described as a Satellite.[28] Motion, Manner, Path, and Place are the semantic features considered pertinent to motion events (Talmy, 1985; Pinker, 1989; Jackendoff, 1990; Stringer, 2012).

Figure 1 Simple and expanded frames of motion events (adapted from Aske, 1989: 1)



[28] These are cross linguistically maximal components.

According to Talmy (1985), the semantic constituents of a (dynamic) motion event are of two types: internal constituents (i.e., Motion, Path, Figure and Ground) and external co-event constituents (i.e., Manner and Cause) as Figure 1 illustrates. Talmy (1985, 1991) argues that there is a determinate set of semantic constituents that, characteristically, any motion event must have, the two vital participants in such an event being the Figure and the Ground.

The four internal constituents identified and described by Talmy (1985: 61) are as follows: Motion, which is the real indication of movement showing the main change of location of a Figure, Path, which is the route followed by the Figure with reference to a defined Ground object, Figure, which is the moving object and Ground (the reference point), which is defined as an entity to which the Figure is moving to. Talmy (1985) adds Manner and Cause as two external co-event constituents that offer supplementary semantic information about the motion involved.[29] Manner of motion expresses the way in which motion is performed, and it is considered that a particular movement may be the consequence of features, for instance, force (e.g., *knock*) or speediness (e.g., *pick up*). Cause of motion donates what initiates the motion itself (e.g., *kicked the football*). The semantic constituents of motion events can be straightforwardly recognized in the English example (5):

(5) The baby$_{[s,\ Figure]}$ crawled$_{[v,\ motion,\ manner]}$ into$_{[p,\ path]}$ the room$_{[o,\ ground]}$.[30]

Furthermore, the following sentences (6a-b) were given as examples by Talmy (2000: 26), with the use of the aforementioned semantic constituents in a basic motion event including Manner or Cause of motion.

(6) a. The pencil $_{[s,\ figure]}$ rolled$_{[v,\ motion,\ manner]}$ off$_{[p,\ path]}$ the table$_{[o,\ ground]}$.
b. The pencil$_{[s,\ figure]}$ blew$_{[v,\ motion,cause]}$ off$_{[p,\ path]}$ the table$_{[o,\ ground]}$.

[29] The main semantic features of interest here are [path] and [manner] whilst others are mentioned for clarification.

[30] S= subject, V= verb, P= particle, O= object.

In examples (6a-b), the Figure is 'the pencil', and 'the table' serves as the Ground. Path is encoded in the particle 'off'. With respect to the verbs, both of them show Motion; nevertheless, 'roll' suggests Manner, whilst 'blow' indicates Cause.

Talmy claims that the 'essential' constituent of a motion event is Path, which he describes (1985: 61) as "the course followed or site occupied by the Figure with respect to the Ground". It appears that Path and Manner are crucial for expressing motion events. According to Özçaliskan and Slobin (1999), manner of motion designates certain factors, e.g., the motorized pattern of the motion of the figure, its speed, and the amount of power involved, whereas path of motion designates the translational motion of an object which shifts from a source to a goal, going through one or multiple landmarks.

The basic semantic meaning to encode movement is Motion in the case of motion events as described by Talmy (1985, 1991, 2000).[31] The notion of motion exists in all the languages of the world. Nevertheless, the way in which motion is encoded in these languages – their lexicalization patterns – is not exactly the same. Lexicalization of motion events must be seen as the way meanings are combined into specified surface forms in language-specific ways. The way speakers express Manner and Path constituents of a motion event appears to vary across typologically different languages (*ibid*). The systematic relationship between semantic components (meanings) and surface morphemes (linguistic/surface elements) in Talmy's words (1985, 1991, 2000) is largely not a one-to-one relationship across languages. The mapping can be one-to-one, many-to-one, one-to-many...etc. That is, different languages may allow different packaging arrangements. Talmy (2000: 21) assumes:

> A combination of semantic elements can be expressed by a single surface element, or a single semantic element by a combination of surface elements. Or again, semantic elements of different types can be expressed by the same type of surface element, as well as the same type by several different ones.

[31] The word 'meaning' stands for the semantic elements such as motion, path, and manner that are presented as semantic features within the feature-based account. The word 'encoding' stands for expressing or lexicalizing these semantic elements (i.e. features) into linguistic elements or surface forms (i.e. lexicon) such as verbs, particles…etc. to form the following bonds e.g., [v, manner],[p, path]…etc. Feature-lexicon associations are described within the feature-based account as feature sets, bundles, clusters or configurations according to Lardiere's terminology (2000, 2005, 2009).

Indeed, this relationship might take on different configurations, with a combination of semantic components being encoded in one surface element, or a single semantic component being encoded in a set of surface elements. Hence, I focus here on the realm of motion events, for which there are compelling signs that different languages lexicalise motion events in dissimilar ways, assuming here that lexicalization is involved where a specific meaning component is found to be in a regular relation with a specific morpheme demonstrating a language-specific meaning-to-form representation (Talmy, 2000).[32]

A large amount of Talmy's (1985, 1991, 2000) work is based on the study of cross-linguistic lexicalization patterns, that is, the study of how the world's languages map surface elements onto semantic elements, and, more specifically, to the examination of how particular meaning constituents are frequently tied to particular morphemes across different languages. In his 1991 work, *Path to Realization: A Typology of Event Conflation*, Talmy presented an updated set of links that remains encouraging for constructing a cross-linguistic typology of verb schemes. Talmy (1985) suggested categorizations of the world's languages based on the verb vs. satellite-framing of an assortment of the core representations, including Path and Manner of motion.

Talmy (1985, 1991, 2000) examined the lexicalization of motion events in an attempt to analyse how meaning-form relations differ cross-linguistically. Nevertheless, languages do not seem to allow a wide variety of packaging schemes in the relations between semantic constituents and surface constituents. Talmy (1991, 2000) reduces the possible packing patterns to two basic configurations on the basis of how languages express the core meanings of the semantic domain in morpholexical constructions. He based this on language-specific lexicalization patterns that languages use with the purpose of packaging semantic components of motion events into linguistic entries. Talmy (1985, 1991, 2000), following this line of thought, has typologically classified the world's languages into binary, broad typological groups:

[32] There is a considerable debate among linguists surrounding the issue of whether VPCs such as *run across* assembled in the morphology and stored as independent and separate elements in the lexicon are linked by a syntactic rule (i.e. the verb 'run' + the particle 'across') or stored as a single lexical unit (i.e. 'to run across'). The underlying argument of the present study is in favor of the first view taking into account the real concept beyond the FRH; we can tease apart the lexical components of motion constructions. For further arguments on this debate see Cappelle *et al.* (2010).

Satellite-framed languages and Verb-framed languages on the basis of how the basic meaning of a specific semantic component is mapped onto syntactic and lexical representations, more specifically, on the basis of where Path of motion is lexicalised: either in the root verb, or in a satellite to the verb:

> [l]anguages that characteristically map …[path].. onto the verb will be said to have a framing verb and to be verb-framed languages…On the other hand, languages that characteristically map.. [path].. onto the satellite will be said to have a framing satellite and to be satellite-framed languages… (Talmy, 1991: 486)

According to Talmy (1985, 1991, 2000), the semantic element manner of motion signifies a form of distinctive movement that can be depicted by a verb (e.g., *walk, run, swim, fly, jump, crawl, roll, crash, drift, drop*), whereas the semantic element path of motion indicates the direction of that movement that can be internally encoded in a verb as a component of its core meaning (e.g., *enter, exit, ascend, descend*), or externally configured into a particle the so called Satellite (henceforth S) (e.g. *into, onto, up, down, around, though, after*) as exemplified below in Figure 2.

Figure 2. Binary distributions of two semantic constituents of motion events onto lexical items according to Talmy's (1985, 1991, 2000) typology.

[verb, path] [verb, manner] [particle, path]

e.g., *enter* e.g., *run into*

A **B**

The terms 'Verb-framed' and 'Satellite-framed' define the way languages encode path of motion (change of location) that is typically considered to be the core constituent of a motion event (Talmy, 1985, 2000). Verb-framed languages assign the core meanings to some other constituent, 'satellites', and not the verb, and typically offers speakers a set of locative particles forming VPCs (e.g., *run down*), as illustrated in example (7). Satellite-framed languages assign the core meaning to the main verb, (e.g., *descend*) as illustrated in example (8) offering speakers a set of different verbs for each change of location.

(7)The boy ran$_{[v,\ manner]}$ down$_{[p,\ path]}$ the stairs. (Satellite-framed pattern)

(8) The boy descended $_{[v,\ path]}$ the stairs running $_{[SUB,\ manner]}$. (Verb-framed pattern)

According to Talmy (1991: 486), Verb-framed languages (also called Path languages) encompass, among others, the Romance sub-group of the Indo-European languages (e.g., Spanish or French), the Semitic languages (e.g., Hebrew), Basque, Japanese, Tamil, Polynesian, and Modern Greek. On the other hand, according to Talmy (1991: 486) Satellite-framed languages (also called Manner languages) include most of the Indo-European family, e.g., Germanic and Slavic languages, while other Satellite-framed languages include Chinese, and the Finno-ugric family.

Papafragou *et al*. (2006) claim that manner languages are embodied by huge, enormously used and habitually developing (explicitly productive) manner verb lexicons, whilst manner in Path languages is less salient as a structuralised feature. These cross-linguistic distinctions have been supported in a number of studies on motion lexicalisation with both adults and children speakers (Choi and Bowerman, 1991; Sebastián and Slobin, 1994; Naigles *et al.*, 1998; Özçalışkan and Slobin, 1999, 2000; Papafragou *et al.*, 2002; Slobin, 1996; 2003).This distinction can be observed in the way English and Spanish lexicalise motion events. English and Spanish are two languages that can be regarded as classical examples for these two different typological classes, i.e., Satellite-framed languages and Verb-framed languages, respectively. In Talmy's (1985:487) classical example of a bottle floating out of a cave, Spanish and English differ in their preferences in encoding the semantic constituents of Motion.

Talmy (1985) suggests that the basic meaning of movement as previously mentioned is the motion of an object along a specific path in a specified trajectory. In English (a typical example of a Satellite-framed language), the verb does not express this information. The verb simultaneously encodes motion with manner, specifically, information about the manner in which a motion is actioned. That is, the manner of motion is encoded in verbs such as *swim, jump, sneak, run,* and *crawl*, while Path of motion is commonly encoded in a satellite such as *to, into, out* or *down,* as in *swim to, jump into, sneak out,* or *fly down.* Spanish (a typical example of a Verb-framed language), on the other hand, allows the opposite pattern in which path of motion is encoded in the verb, with manner of motion as optional information. Expressing the manner of motion is optional in Spanish, and, consequently, is encoded in a detached constituent such as *salir corriendo* 'go-out running'. That is, the core meaning is not encoded in a separate component, but is typically conflated with the verb, such as *bajar*,'go down', or *entrar*, 'go in' (Talmy, 1985). Speakers of English and Spanish would describe the same motion event – say, a bottle floating out of a cave - in a language-specific way, as in (9) and (10):

(9) *La botella* *salió* *flotando*. (Spanish)
The bottle exited$_{[path]}$ floating$_{[SUB,\ manner]}$.[33]

(10) The bottle floated$_{[v,\ manner]}$ out$_{[path].}$ (English)

(Talmy, 1985: 69-70)

The first main distinction seen in (9) and (10) relates to the lexicalisation of path of motion. In Spanish, the verb *salir* 'exit' encodes the core information about path of motion in a root verb, while, on the other hand, in English, it is a particle, or – in Talmy's words – a satellite to the verb, *out*, that expresses this information. The second difference relates to how the manner of motion is encoded. Because English does not express path in the main verb, this lexical slot is accessible for manner verbs (e.g., *float)*. In Spanish, in contrast, this slot is already engaged by path verbs, and manner of motion tends to be encoded in a separate entity (e.g., the gerund *flotando* 'floating').

Slobin (1996) claims that one of the core differences between English (a Satellite-framed language) and Spanish (a Verb-framed language) lies in the number and nature of motion verbs that these languages allow. The English lexicon has richer

[33] 'SUB' in the glosses indicates a subordinated manner verb (e.g., floating).

and more informative verbs of motion (e.g., *climb, crawl, creep, float, fly, hop, jump, land, limp, move, pop, push, race, rush, slip, splash, splat, sneak, swoop, tip, tumble, wander* (Berman and Slobin 1994: 153)) than Spanish (e.g., *acercarse* 'approach', *alcanzar* 'reach', *bajar(se)* 'descend', *caer(se)* 'fall', *correr* 'run', *entrar* 'enter', *escapar* 'escape', *huir* 'flee', *marchar(se)* 'go', *perseguir* 'chase', *regresar* 'return', *saltar* 'jump', *subir(se)* 'ascend', *venir* 'come', *volar(se)* 'fly' (Sebastián and Slobin 1994: 261).[34]

According to Sebastián and Slobin's (1994) data, the English set comprises 47 motion verbs, while the Spanish set comprises just 27. As initially stated by Talmy (1975), English can draw on a significant repository of manner verbs (*e.g., bounce, slide, swing, glide, etc.*), which can be easily tied to particles expressing path information (e.g., *into, away, onto, across, etc.*). English has a restrictedly distributed and small number of path verbs (e.g., *exit, enter, ascend, descend, etc.*). Spanish motion verbs do not have one-to-one literal equivalents for each of these English verbs. Thus, in most cases, Spanish speakers must figure out the separate elements to express these meanings.

Talmy (1985) offered a number of characteristics of motion patterns in order to classify a language as Verb-framed or Satellite-framed. This is relevant in assessing the status of Arabic. Any language which clearly demonstrates a specific characteristic and makes use of only one of these patterns for the verb would characterize it either to the Verb-framed or Satellite framed languages. Here, "characteristic" is best interpreted as: (a) 'colloquial' in style, rather than 'literary', or stilted (b) recurrent in speech, rather than infrequent, and (c) 'pervasive', rather than restricted (1985: 62; 2000: 27). By "characteristic", Talmy (1985: 62; 2000: 27) means that, in the case of Arabic, its characteristics would assign it to the Verb-framed family[35], as demonstrated in (11).

(11) *nām-tu* *āṭifl-ac* *ālā* *āsārir.*

[34] For more examples on the English and Spanish data refer to Berman and Slobin (1994) and Sebastián and Slobin (1994).

[35] For a brief account of the characteristics of Verb-framed vs. Satellite-framed languages, see Noguchi (2011: 34)

laid-down the-child on the-bed
'The child laid down onto the bed.' (Talmy, 1988: 88)[36]

Given that Arabic is classified amongst the Verb-framed languages like Spanish, I would expect the characteristics that are typical of Spanish to be valid for Arabic as well. That is, Arabic should have a smaller, more infrequently accessed, and relatively less expressive lexicon for manner of motion in comparison to other languages. Arabic describes the Ground only rarely, and not in detail, and is likely to direct most of the description to the settings of the scene.[37] As expected for Verb-framed languages, the motion verb *nām-tu* 'lay-down', in (11) conveys motion and path. Manner of motion might be expressed in a separate lexical item, an adverb. With respect to manner, Arabic supposedly behaves like Verb-framed languages such as Spanish in that the use of this constituent is sometimes restricted. However, as far as path of motion is concerned, Arabic can exhibit the opposite pattern. The descriptions and analyses of this semantic constituent, which is examined in the next section, are very rich, and are persuasive with reference to the idea that Arabic seems to be more similar to Satellite-framed languages such as English when it comes to certain motion verbs rather than to other typologically-related languages.

[36] Talmy (1988) has used an incorrect Arabic translation to the verb 'lay down'. The verb *nām-tu* has the meaning of sleeping not laying (you might sleep while you are sitting on a sofa!). It would have been better if he used *y'aḍṭje9 'lay-down.* Talmy (1988) may have been puzzled by the big number of forms that the same verb might take in Arabic. At this point, I would like to draw attention to the fact that some motion verbs might translate into more than one acceptable equivalent in Modern Standard Arabic (MSA), e.g., the verb *lay* can be translated to 'y'anḥany' or 'y'aḍṭje9', *fly* to 'yaṭir' or 'y'uḥaliq', *move* to 'y'ataḥarak' or 'y'antaqil', …etc. Also, al fuṣḥa Arabic or Classical Arabic (CA) is very rich with a variety of forms for the same verb. For example, there are more than 9 equivalents for the verb *go* used in the Holy Quran (i.e. y'a*ġdu, y'amshi, y'asluk, y'ujawz, y'aḏhab,y'ared,y'amḍi*, *y'asir* and *y'akhruj*) and 8 types of the verb *run* (i.e. *y'arkuḍu*, *y'as9a*, *y'afur*, *y'anṭaliq, y'asbeq, y'usre9, y'a9jel* and *y'azif*) (Shalabi, 2010:125-126). Other English motion constructions such as *walk around* might translate to *y'asir ḥawla* or *y'adwr ḥawla* 'circulate around' or another verb used specifically to describe the performance of a religious ceremony, *y'aṭuf ḥawla* as in *y'aṭuf alhujaj hawla alka9bah* 'Pilgrims circulate around the Kaaba' (For more examples, refer to Shalabi (2010)). Despite the huge variety of forms that the same verb might take, for the purpose of this thesis I have decided to choose one form for each verb and use it consistently throughout.

[37] This claim is challenged later in this section by a Substitute Feature-based Test. Nevertheless, for the purpose of the present study, the claim that Arabic allows more path verbs than manner verbs is assumed to hold.

To conclude, the main distinction between Satellite-framed and Verb-framed languages concerns the ‘conflation’ of manner and path of motion in the verb.[38] Languages with similar meaning-to-form patterns to those exhibited by Spanish are argued to be Verb-framed, while other languages with meaning-to-form patterns similar to the ones English has are argued to be Satellite-framed. This typological variation, we assume, has a number of consequences for the schematization of motion events in L2 acquisition of Arabic and English. In order to illustrate this point further and make these dissimilarities more evident, I will draw upon a robust number of examples contrasting Arabic with English data in the following section. The meaning-to-form relationships will be described using the feature-lexicon account from now on.

2.3 On the differences between Satellite-framed languages and Verb-framed languages: A closer look at Arabic path verbs and English path satellites

As we have seen above, on the basis of Talmy’s (1985, 2000) classification of spatial lexicalization patterns, there is variation in the way that languages encode the semantic constituents of motion events. Accordingly, languages are categorised into the aforementioned two broad categories; Satellite-framed languages and Verb-framed languages. This categorisation is based on how languages morpholexically express the semantic constituents of motion events (i.e., Manner and Path).

Talmy (1985) identifies two main lexicalization patterns for verbal roots in Indo-European languages: (1) Motion and Manner or Cause, and (2) Motion and Path. These two patterns typically relate to the Germanic and Romance languages respectively.[39] As previously discussed, Germanic languages are Satellite-framed languages, as they lexicalize the manner or cause of the motion event in the verb, and encode directional values by means of subordinate satellite elements - the so-called S (i.e. a particle). On the other hand, Romance languages are considered to be Verb-framed languages, as they lexicalize path of motion in the verbal root, and leave

[38] In Talmy's (1985:60) words, the word ‘conflation’ stands for cases where more than one semantic component (i.e. features) is lexicalized in a single surface component (i.e. morpheme).

[39] English and Spanish were used by Talmy (1988) as sample languages for the Germanic and Romance language types.

manner or cause specification to adjuncts. This classification is illustrated in Table 2 below.

Table 2 Typology of motion lexicalizations in two different language types (adapted from Talmy, 1985: 75)

Language family	The constituents of motion events typically encoded in the verb		
	Verb root	Satellite	SUB
Verb-framed languages	motion + path e.g., Arabic: *y'adkhul* '*enter'*	Path (*ila*)	Motion+ manner *running*
Satellite-framed languages	motion + manner or cause e.g., English: *to run*	path e.g. English: *into*	—

To illustrate the categorisation further, consider English and Arabic, two languages which are argued to belong to two different language families, Indo-European and Semitic, respectively (Hamdallah and Tushyeh, 1993). According to Talmy's (1985) typology, these languages are argued to belong to different language types: Satellite-framed and Verb-framed language, respectively. If this is correct, I would assume that these two languages configure spatial features in certain language-type-specific ways. Imagine the simple motion event of a hamster running into a cage. We would be entitled to predict that these languages would differ in the way they describe this scene in terms of a number of distinct, encodable elements.[40]

[40] From now on, the relevant semantic meanings of motion vents (i.e. Path and Manner) will be presented as features [path] and [manner]. See appendix 4A for examples.

Germanic languages (e.g., English, German and Swedish) are described as manner languages, and are classified as Satellite-framed languages according to Talmy's (1985) typology. The manner of motion is typically mapped onto the main verb, while [path] of motion is licensed in nonverbal entries such as PPs. English, an example of a Germanic language, typically configures [manner] of motion onto a verb called a manner of motion verb (e.g., *float, swing, sneak, glide, gallop, climb, bounce*, and *creep*). English usually uses complements, the so-called S, to bear [path] of motion (e.g., *into, onto, out, up, down, around, over, across,* and *past*). The examples (12a-b) illustrate this:

(12)	a. The hamster	ran $_{[v,\ manner]}$	into $_{[p,\ path]}$	the cage.
	b. The hamster	ran $_{[v,\ manner]}$	out of $_{[p,\ path]}$	the cage.

Nevertheless, according to Slobin (2008) this classification is a matter of tendency rather than an absolute variation. Other English verbs that host [path] of motion are available in the system, but they are comparatively infrequent (e.g., *enter, exit, ascend, descend, return, circle*). Frawley (1992) claims that the lexicalization of manner of motion is very common in colloquial English, while English speakers favor using more path verbs in formal speech such as *exit, enter, ascend, descend, cross,* and so on. According to Levin (1993), English verbs which contradict the Satellite-framed construction are not originally English but have foreign origins. Such verbs are borrowings from Romance languages, and are usually French or Latinate loanwords (Aske, 1989), as illustrated in examples (13a-b). For this reason, these borrowed verbs are configured according to the verb-framed configuration of the donor language as Verb-framed constructions.

(13)	a. The hamster	entered $_{[v,\ path]}$	the cage.
	b. The hamster	exited $_{[v,\ path]}$	the cage.

Even though Verb-framed languages allow [v, path] constructions, and Satellite-framed languages allow [v, manner] constructions, the favored means for lexicalization of motion events generally varies in the two language types. In fact, in a number of cases, the use of manner verbs in Verb-framed languages is lexically unlicensed (Aske 1989; Jackendoff, 1990; Slobin and Hoiting, 1994). For example, path verbs have different distributions in Arabic, which is known as a rich language for path verbs. Compare the motion construction pair of English and Arabic sentences in (14) and (15), respectively:

(14) The hamster ran $_{[v,\ manner]}$ into $_{[p,\ path]}$ the cage.

(15) *dakhal alqadad (ila) alqafaṣ (binma kana) rakiḍaan.*
entered $_{[v,path]}$ the-hamster (to) the-cage (while was-it) running$_{[SUB,manner]}$
'The hamster entered (to) the cage (while it was) running.'

In example (14), the manner of motion verb is linked with a directional particle encoding an unbound route with directionality.[41] In example (15), the same motion verb occurs with a particle-bound route. Both configurations are acceptable in English, while Arabic is assumed to license only the latter. According to Al-humari (2012), Arabic (and perhaps all Path languages) typically forbids the co-occurrence of a manner-of-motion verb with a path modifier when the motion event entails some kind of bound trajectory. The favored lexicalization of this type of motion event simply entails the lexicalization of [path] of motion on the verb.

In Verb-framed languages, the verb usually encodes [path] of motion, while [manner] of motion is externally expressed in other lexical slots, e.g., gerunds (e.g., *rakiḍaan* 'running'), or PPs, or neglected altogether. Arabic, for instance, a typical example of Verb-framed languages, configures [path] of motion onto a verb called a directed motion verb (e.g., *y'adkhul* 'enter', *y'akhruj* 'exit', *y'aṣ9ad* 'ascend', and *y'anzul* 'descend') rather than assembling [path] in the ad-positional domain (Al-humari, 2012) as illustrated in example (15) above.[42] This variation is illustrated in Figure 3 that shows the semantic-to-surface relationships in English as compared with that of Arabic.

Figure 3 How manner and path constituents of motion events are distributed onto lexical entries in English and Arabic

run *into*

(verb, manner) (satellite, path)

[41] The reader of the example (14) might find it difficult to distinguish between *run into* as in 'go inside', and *run into* as in 'run into the sidewall of', however, both meanings are directional but the intended meaning of the action is 'to go inside'.

[42] I will shortly argue that this assertion is not true.

English

	daxal	*rakiḍaan*
	enter	running
Arabic	verb, path	SUB, manner

This suggests that manner of motion does not have to be restricted to a single lexical item (i.e. verb). Manner of motion might be encoded in several different lexical items and constructions, or, using Sinha and Kuteva's words (1995), manner can be "distributed" over other constituents. Furthermore, manner can be also expressed by non-linguistic representations such as gestures (Özyürek and Kita, 1999; Kita and Özyürek, 2003).

According to Talmy (1988), Arabic appears to typically forbid the simultaneous presence of manner of motion verbs with path PPs within the same clause, especially when a motion event involves some kind of transformation of state, or a result. Thus, Arabic, unlike English, lacks the option of structurally lexicalising complex motion events in the compact manner shown in (16). According to Talmy (1988), Verb-framed languages do not configure spatial features onto different lexical items in a single-clause in the same way that Satellite-framed languages do. The latter allows [path] to be assembled onto different particles simultaneously within a single-clause. As many as four such trajectory predicates can occur at the same time as in example (16):

(16) Come *right back down out* from up in there!

(Articulated by a parent to a child who is in a tree house.) (Talmy, 1988:102)

As stated by Talmy (1988), Verb-framed languages use multiple motion verbs to carry the same feature in multiple-clauses and may omit the manner of motion in some cases. In Verb-framed languages such as Arabic, there are two or more boundary-crossing events and, therefore, two or more verbs. Satellite-framed languages such as English, on the other hand, have only one manner verb and two or more path constituents (*ibid*). According to Berman and Slobin (1994), Satellite-framed languages are described as ‘Tight-packing languages’ whilst Verb-framed languages are ‘Loose-packing languages’ as illustrated in (17) and (18), in English and Arabic, respectively.[43]

(17) The hamster ran $_{\text{[v, manner]}}$ away $_{\text{[p, path]}}$ into $_{\text{[p, path]}}$ the yellow box.

(18) *haraba alqadad wa dakhla alṣunduq alaṣfar*
escaped$_{\text{[v, path]}}$ the-hamster and entered$_{\text{[v, path]}}$ the-box the-yellow.
‘The hamster escaped and entered the yellow box.’[44]

Allowing [path] to be configured onto different particles simultaneously within a single clause, for instance, is expected to have a number of consequences for L2 acquisition of these forms. Arabic learners of English, in this case, would need to redistribute [path] from several verbs to several particles to accommodate the target patterns. English learners of Arabic, on the other hand, have to redistribute [path] from several particles to several verbs. This manifold adjustment might be complex for many learners, especially in their initial stages of L2 acquisition.

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[43] According to Berman and Slobin (1994), Satellite-framed languages are ‘Tight-packing language’ because it allows multiple particles to encode [path] of motion. On the other hand, Verb-framed languages are ‘Loose-packing language’ because it does not allow multiple particles to encode [path] of motion. In Berman and Slobin’s words (1994), Satellite-framed languages are tightly bundled as they provide manifold segments of a motion in a single clause, whereas Verb-framed languages are loosely bundled as they can only provide a single sub-route per clause. In view of that, sentences in Satellite-framed languages tend to be longer, with fewer clauses whilst in Verb-languages they tend to be shorter with more clauses (*ibid*).

[44] Stylistically and grammatically, the use of this pattern is acceptable in English but it is a matter of preference.

In English, some motion verbs occur with particles such as *up* and *down* to carry [path] of motion, while in Arabic, this feature might occasionally co-configured with [manner] of motion onto the same motion verb in the verbal domain. That is to say, the particle which is supposed to host [path] in Arabic is omitted when it is used with certain motion verbs that allow hosting of both [path] and [manner] of motion (see Table 3). In this case, English allows the so-called VPCs, whilst Arabic allows only bare verbs. Table 3 contains some examples of English motion constructions and their Arabic counterparts (i.e. bare verbs).

Table 3 Some Feature-to-lexicon associations of English displayed with their Arabic Counterparts.

	Arabic	*English*	
Semantic features (i.e. meanings)	*[path]/[path]+[manner]*	*[manner]/[path]*	*[path]*
Lexical elements (i.e. linguistics/surface forms)	*verb*	*verb*	*satellite*
examples	*y'aqif* 'stand-up'	*to stand*	*Up*
	y'ataslaq 'climb-up'	*to climb*	
	y'arf9 'pick-up'	*to pick*	
	y'aṣ9d 'rise-up'	*to rise*	
	y'arf9 'hoist-up'	*to hoist*	
	y'ajles 'sit-up'	*to sit*	*Down*
	y'asqṭ 'fall-down'	*to fall*	
	y'ark9 'kneel-down'	*to kneel*	
	y'aḍṭj9 'lie-down'	*to lie*	
	y'anḥani 'bend-down'	*to bend*	
	e.g., *eḍaj9 almuzar9* 'lay-down the farmer'	e.g., *the farmer lay down.*	

Note: English loanwords (e.g., *descend, ascend*,..etc) are not included in the table.

From a feature-based contrastive analysis, so far, there is one main feature configuration of motion constructions in Arabic and English which is of particular interest; [path] of motion is differently assembled in these languages. The semantic feature of motion [path] might be expressed onto the verb in the verbal domain in Arabic. Whereas, in English, [path] is distributed onto a particle in the adpositional domains. Overall, there are two main distinctions in the way English and Arabic configure the relevant semantic features. One distinction regards the way the languages configure [path]. English selects the so-called S to host [path]. Arabic, in contrast, uses the verb to host this feature instead. The other distinction concerns how [manner] is configured onto surface forms. In view of the fact that English disprefers configuring [path] onto a verb, this position is available for encoding [manner] of motion. In contrast, the verbal position in Arabic, as is widely assumed, is involved with [path] of motion. Hence, the feature of [manner] is not allowed to be configured onto a verb. This proposed set of contrasts between English and Arabic, respectively, is further illustrated in examples (19-22).

(19) a. The duck swam $_{\text{[v, manner]}}$ across $_{\text{[p, path]}}$ the river.

b. 9*brat* *albaṭah* *anahar* *(bynamahya)* *sabeḥataan.*
crossed$_{\text{[v, path]}}$ the-duck the-river (while it was) swimming $_{\text{[SUB, manner]}}$
'The duck crossed the river (while it was) swimming.'

(20) a. The hedgehog rolled $_{\text{[v, manner]}}$ into $_{\text{[p, path]}}$ the woods.

b. *waṣala* *alqunfuḏ* *alġabah* *(binma hwa)* *mutadaḥrijan*
reached$_{\text{[v, path]}}$ the-hedgehog the-woods (while it was) rolling$_{\text{[SUB, manner]}}$
'The hedgehog reached the woods (while it was) rolling.'

(21) a. The rat sneaked $_{\text{[v, manner]}}$ into $_{\text{[p, path]}}$ the house.

b. *dakhla* *alfʔr* *almanzil* *(binma hwa)* *mutasallan*
entered$_{\text{[v, path]}}$ the-rat the-house (while it was) sneaking$_{\text{[SUB, manner]}}$
'The rat entered the house (while it was) sneaking.'

(22) a. The paper boat floated $_{\text{[v, manner]}}$ out $_{\text{[p, path].}}$

b. *kharaja* *alqarb* *alwaraqi* *(binma kana)* *9ʕiman*
exited $_{\text{[v, path]}}$ the-boat the-paper (while it was) floating$_{\text{[SUB, manner]}}$
'The paper boat exited (while it was) floating.'

It has been argued that speakers from Verb-framed languages show a tendency to use [manner] of motion verbs less habitually than speakers from Satellite-framed languages (Slobin, 1996). Empirical evidence from studies on the translation of motion events across typologically different languages supports this claim (Özyürek and Kita, 1999; Papafragou *et al.*, 2002). Slobin (1996) claims that Satellite-framed translators tend to offer [manner] information, even in those cases where the original manuscript does not feature it, and that Verb-framed translators, in contrast, frequently leave out manner descriptions.

Recently, there has been an increasing number of works investigating motion events in several languages on the basis of Talmy's (1985, 1991, 2000) taxonomy, and a considerable number of experiments have been conducted to test his parametric proposal (e.g., Inagaki, 2001; Zubizarreta and Oh, 2007). Talmy's (1985, 1991, 2000) typology of lexicalisation patterns has been the subject of much criticism (e.g., Slobin, 2004). It has been argued that some languages do not fit into the typology, and that these present a mixed picture and form a type of their own. The majority of these works have claimed that Talmy's (1985, 1991, 2000) typology cannot capture all the lexicalization patterns available in languages such as Chinese (Slobin, 2000), Ewe (Ameka and Essegbey, 2013) or Thai (Zlatev and Yangklang, 2004). A number of proposed characteristics by Talmy (1985, 2000), particularly lexicalisation of the core constituent of motion with a verb and the description of the semantic constituents, have lead these scholars to suggest alternatives to the binary typology.

With the aim of better capturing typological variations, Talmy's (1985, 1991, 2000) typology was extended by Slobin (2004) and Zlatev and Yangklang (2004) by adding a third class, namely 'Equipollently-framed languages'. This supplementary type is argued to include languages in which both [manner] and [path] of motion are encoded in 'equipollent' way (*ibid*). Equipollently-framed languages are where "both manner and path are expressed by 'equipollent' elements—that is, elements that are equal in formal linguistic terms, and appear to be equal in force or significance."(Slobin, 2004: 226). Some languages include more than one of the suggested typological classes: that is a language may present both Verb-framed and Satellite-framed patterns, or if it permits Equipollent-framing, even all three types.[45] These languages might behave like Verb-framed languages with respect to some

[45] Huang and Tanangkingsing (2005) suggest a four-way typology on the basis of data from narratives in 6 Western Austronesian languages. Each of these languages normally has a preferred pattern for lexicalizing motion events and that each has a distinct style of narration.

verbs, and like Satellite-framed languages in terms of others. This new category does not only include the aforementioned serial verb languages (e.g., Thai, Akan, and Ewe), but, furthermore, bipartite verb languages (e.g., Hokan, Algonquian, and Athabaskan), as well as generic verb languages (e.g., Jaminjung) in which two (or more) verbs are needed to encode motion events (Slobin, 2004).

Evidence for Equipollently-framed languages can be seen in work by Chen and Guo (2009). Chen and Guo (2009) examined the status of Mandarin Chinese in the typology of motion lexicalisation through an investigation of motion event narrative descriptions in Chinese novels. They found that Chinese novelists neither structure their narrative descriptions of motion events as novelists of Satellite-framed languages, nor as novelists of Verb-framed languages. Chinese novelists, instead, utilise unique characteristic lexicalisations that result in the argument that Chinese is an Equipollently-framed Language as example (23) illustrates.

(23) 我跑出了厨房

Wǒ *pǎo chū* *le chúfáng*

I run exit PFV kitchen

'I ran out of the kitchen' (Chen and Guo, 2009: 1751)

Chen and Guo's (2009) findings challenge Talmy'(1985, 1991, 2000) framework as Chinese allows a serial verb construction that permits for no less than two verbs in one clause: one for the manner verb whilst the other for the path verb. Interestingly, there is no overt morphological marking to signpost which one of the two verbs is the main verb. The two verbs of motion construct a joined structural component that has the same syntactic marking (e.g. aspect). The example in (23) is made of a serial verb construction in which the first verb 跑 *pǎo* 'run' encodes [manner] of motion whereas [path] of motion is lexicalised in the second verb 出*chū* 'exit' and the aspectual marker了*le* encompasses both *pǎo* and *chū* (*ibid*).

Many studies have contributed to the revision of Talmy's typology (1985, 1991, 2000), and languages such as those mentioned above are now argued to be

Equipollently-framed languages assuming a three-way typology.[46] Nevertheless, it is beyond the scope of this study to assess any of these proposals of how languages are often classified into two groups with reference to the lexicalisation of motion. All that I attempt here, similar to other scholars (e.g., Ibarretxe-Antun˜ano, 2004), is to focus minds on the drawbacks of stereotyping languages into a restricted typological frame.

Turning back to our Arabic-English analysis, in order to investigate whether Arabic is indeed different from English and can be categorised as a pure Verb-framed language with no Satellite-framed patterns allowed, a Feature-based Substitute Test (henceforth, an FST) was developed by me. In this test, I substituted the semantic feature bundles of Verb-framed languages (i.e. [v, path]) with feature bundles of Satellite-framed languages (i.e. [v, manner] [p, path]) to see whether Arabic can configure [path] in a similar way to English. In comparison with example (19) reproduced below in (24), example (25) surprisingly, demonstrates that Arabic allows the opposite configurations to what is expected. Arabic might configure the relevant semantic features of motion events onto corresponding lexical items to those in English (i.e., either *sabeḥat ʕbra* 'swam across', with [v, manner] [p, path], or *ʔʕbrat sabeḥatan*, 'crossed swimming', with [v, path] [g, manner] as example (25) shows:

(24) 9*brat* *albaṭah* *anahar* *(bynamahya)* *sabeḥataan.*
crossed$_{\text{[v, path]}}$ the-duck the-river (while it was) swimming $_{\text{[SUB, manner]}}$
'The duck crossed the river (while it was) swimming.'

(25) *sabeḥat* *albaṭah* *9bra* *anahar.*
swam$_{\text{[v, manner]}}$ the duck across$_{\text{[p, path]}}$ the river
'The duck swam across the river.'

Despite the differences that many studies on spatial morphology of English and Arabic have identified, the test reveals that there are some matching configurations shared by the two languages. Both Arabic and English can use the verb *y'asbaḥ*

[46] Slobin (2004), for example, proposed that, instead of categorizing languages into a binary typology, there should be a "cline of manner salience", along which languages are grouped from "high-manner salience" to "low-manner salience".

'swim' to host [manner] of motion and, similarly, use corresponding particles *9bra* 'across' to host [path] of motion. The main function of Arabic post-verbal particles appears to be the addition of trajectory values to the verbs in a similar way to the English particles. Therefore, these particles function as real satellites to the verbs, just as they function in English and other Germanic languages. As such, I would claim that verbs are no longer the sole or the preferred means of realizing [path] of motion in Arabic. Table 4 contains some examples of English motion constructions and their Arabic counterparts, demonstrating that Arabic can allow both the Romance-like configuration and the Germanic-like configuration.

Table 4 Some English motion Vs/VPCs compared with their Arabic counterparts (Vs/VPCs)

English		Arabic	
Verb	Verb + Satellite	Verb	Verb + Satellite
to cross	*to swim across*	*y'a9br* 'to cross'	*y'asbaḥ 9bra* 'to swim across'
to enter	*to roll into*	*y'adkhul* 'to enter'	*y'atdahraj ila* 'to roll to'
to enter	*to sneak into*	*y'adkhul* 'to enter'	*y'atsalal ila* 'to sneak to'
to exit	*to float out*	*y'akhurj* 'to exit'	*y'a9um kharan min* 'to float out from'

Note: Although both English and Arabic allow VPCs, the particles in these constructions do not reflect the same semantic features combination, hence they are unequal (e.g., *roll into* in English does not correspond to *y'atdahraj ila* 'roll to' in Arabic).

It can be seen in the table above that both meaning-to-form configurations are available in both languages. This observation contradicts Talmy's (1985, 1991, 2000) classification in which it is assumed that Arabic does not have manner of motion verbs with path complements. Iacobini and Masini (2007), among other scholars (cf. Schwarze, 1995; Jezek, 2002; Jansen, 2004; Masini, 2006), have reached a similar conclusion: although VPCs are typically regarded as a characteristic of Germanic languages, VPCs also exist in some Romance languages such as Italian, as exemplified in (26).

(26) *venire* *giù lit.*
lit. come down
'to come down, to descend.' (Iacobini and Masini, 2007; 158)

The existence of both patterns in Arabic makes it a thought-provoking typological issue. One may argue that the existence of VPCs in Semitic as well as Romance languages contradicts Talmy's generalization about Verb-framed languages and Satellite-framed languages. However, classifying Arabic as a pure Verb-framed language in Talmy's (1985, 1991) original typology is not challenged by the data, as the original typological assertion was put forward in terms of general frequency of occurrence and 'characteristic' lexicalisation (Talmy, 1985: 62).

Talmy (2000: 66) labels this "parallel system of conflation" which is prompted by what he calls "colloquiability". Nevertheless, Maalej (2011) argues that Modern standard Arabic (MSA) is not colloquial; it is a high and formal variety of Arabic, however, there are a 22 dialects of the low varieties. MSA allows what Maalej (2011) labels "duality of patterning" by which the speaker prefers either for the Path (e.g., *y'adkhul rakiḍan* 'enter-X-running') or the Manner of Motion (e.g., *y'arkuḍ ila* 'run into'). Interestingly, this duality of patterns does not suggest that MSA would be either Verb-framed or Satellite-framed language, but as a Verb-framed and Satellite-framed language (*ibid*). With this respect, Maalej (2011: 22) claims:

> The V-S-framed distinction should be rethought, and the inclusion of families of languages under one or the other should receive more careful attention; as a Semitic language, for instance, Arabic is included as a verb-framed but not as a satellite-framed language (Talmy, 2000b: p. 222), which does not really do justice to research into these languages.

The FST supports a number of Arabic grammarians (e.g., Maalej, 2011) who argue that Arabic allows the patterns of both Verb-framed and Satellite framed languages. Arabic provides further evidence for Stringer (2012) who claims that all the world's languages permit both Verb-framed and Satellite-framed patterns. The cross-linguistic variations found only in terms of the frequency of occurrence for certain verbs and for satellites hosting the relevant semantic features, and this seems to be the case for Arabic and English.

Moreover, there are also some cases for which Talmy's classification seems to be on the right track-cases in which Arabic does not allow the English-like configuration. In such cases, it could be assumed that lexical constraints are in operation. The unselectability of a specific satellite in Arabic can be another factor. Across languages, a number of languages may exhibit a greater number of verbs that inherently host [path] of motion (e.g., *cross* in English, or *y'anzil*, 'go down' in Arabic), and some languages may have more particles that do so (e.g., *in* in English, and *taḥta*, 'under' in Arabic). A number of languages may have more path integrating verbs (e.g., *run* in English, and *y'aqfiz*, 'jump' in Arabic), and others may have particular particles featuring [path], permitting them to combine with non-path integrating verbs (e.g., *to* in English, and *bitijah*, 'towards' in Arabic). In a nutshell, Al-Qarny (2010:5) has identified some common characteristics of motion lexicalisation in Arabic which are as follow:

> (1) Conflation of Motion plus one additional semantic component, either Manner or Path, is the most characteristic lexicalization pattern of the Arabic motion verb lexicon; (2) Arabic has a full set of Path verbs which express different types of Path; (3) Manner-of-motion verbs in Arabic constitute a small set which differ from Manner verbs in languages like English. Their idiosyncrasy lies in their morphological structure since many of these Manner verbs conflate an additional semantic component which, sometimes, happens to be Path; and (4) Arabic motion verb lexicon is able to express various types of Paths and Manners just like any other language.

Turning back to the FST, the test interestingly revealed that some motion verbs of English appear to optionally omit particles hosting [path] of motion in a way quite similar to Arabic, as illustrated in examples (27a-h).

(27) a. The little boy fell$_{[v,\ path]}$ (down) on his face. (English)
b. The hungry child sat$_{[v,\ path]}$ (down) at the table.
d. The old woman leaned$_{[v,\ path,\ manner]}$ (down) across the back seat.
e. The ballerina bent$_{[v,\ path,\ manner]}$ (down) beside the wall.
f. The farmer lay$_{[v,\ path,\ manner]}$ (down) under a tree.
g. The blond girl stood$_{[v,\ path]}$ (up) and nodded.
h. The squirrel climbed$_{[v,\ path,\ manner]}$ (up) the ladder.

The English directional particles *up* and *down* are used to encode not only locational change (such as with the verbs *go* and *run*), but also postural changes (as with *sit*, *stand*, and *lie*) (Choi and Bowerman, 1991). Arabic, on the other hand, lexicalises postural changes with monomorphic verbs, for example, *y'ajlis* 'sit-down', *y'adaj9* 'lie-down', *y'aqif* 'stand-up', *y'aqum* 'get-up', *and y'arka9* 'kneel-down'.[47] When these posture verbs are headed by the directional verbs *y'artaf9*, 'ascend' and *y'anzil*, 'descend', the resulting expression does not have the same meaning as English *stand up, sit down,* etc. Instead, it is understood that the Figure first gets up/down onto a higher/lower surface, and, after, adopts the specified posture.

Examples (27a-h) suggest that some English verbs similarly assume that [path] of motion should be assembled onto only one specific particle with a single trajectory value (e.g., either *up* or *down*). Motion verbs indicting postural changes (e.g., *lay*) appear to occur with only one particle, 'down', to bear [path] of motion. Thus, English speakers occasionally omit some particles if [path] is allowed to be pre-assembled along with [manner] onto the verbal root. For further illustration, consider the following examples (28-30) that contrast different motion lexicalizations in English and Arabic, respectively.

(28) a. She stood $_{[v,\ path],}$ (up) and nodded.

b. *wagafa-t* *wa* *awma?-t.*
stood$_{[v,\ path]}$ –she and nodded–she.
'She stood, and nodded.'

(29) a. The police requested the thief to raise$_{[v,\ path]}$ his hands up$_{[p,\ path].}$

b. *amarat* *a-shurṭah* *al-leṣ* *an* *yarfʔˤ* *yadi-h.*
requested the police the thief to raise$_{[v,\ path]}$ hands-his.
'The police requested that the thief to raise his hands.'

(30) a. He knelt$_{[v,\ path].}$ down$_{[p,\ path]}$, and proposed to her.

b. *jatha* *wa* *ṭalaba-ha.*
knelt$_{[v,\ path]}$ –he and proposed-her.
'He knelt and proposed her.'

To sum up, examples (28-30) show that some English verbs similarly configure [path] of motion onto only one particle (e.g., either *up* or *down*) with a single

[47] The prefix-*ya* in the transcriptions of the MSA words is a present tense marker.

trajectory value*;* either [upwards] or [downwards]. Motion verbs such as *fall, lie* and *lean* appear to occur with only one lexical item (i.e., *down)* in order to bear [path]. In English, some motion verbs which occur with *up* such as, *fall up, lie up* or *lean up* seem bizarre because the particle conflicts semantically with the feature of [path] located on the verb. Thus, these motion verbs appear to occasionally omit those particles which carry [path] if they are already pre-configured onto the main verb and, so, it seems unnecessary to acknowledge them in both English and Arabic. It seems that optionality of the use of the particle has an effect on the difficulty of mastering it.[48] Furthermore, the FST, interestingly, reveals a further feature configuration.

(31) The monkey climbed$_{[v,\ manner]}$ (up/down$_{[p,\ path]}$) the tree.(English)

(32) a. *taslaqa*$_{[v,\ path,\ manner]}$ *alqerdu* *(9la)* *alshajarah.*[49] (Arabic)
climbed the-monkey (up) the-tree.
'The monkey climbed the tree.'

b. **taslaqa*$_{[v,\ manner,\ path]}$ *alqerdu* *asfal* $_{[p,\ path]}$ *alshajarah.*
climbed the-monkey down the-tree.

Examples (31-32) show how the motion verb *climb* is differently expressed in English and Arabic, respectively. The English verb *climb* has two meanings: either *climb up* or *climb down*. In English, *climb* typically occurs with one of two particles to carry [path] of motion: either *up* [upwards] or [downwards] *down*. Thus, the English verb *climb* typically occurs with particles to host [path] in order to show the specific directional value of the motion.[50]

On the other hand, the Arabic motion verb *y'ataslaq* 'climb-up' only has the meaning of 'climbing-up'. It seems that [path] of the motion verb *y'ataslaq* 'climb-

[48] Given that the use of some particles is not obligatory, optionality is often considered in relation to particular styles or levels of formality.

[49] The particle *a9la*, 'up' might be acceptable in Arabic with the motion verb *y'ataslaq*, 'climb', but it would indicate a different meaning - climbing only at the top, not climbing from the bottom to the top.

[50] However, the particle *up* might be deleted in English also in some contexts as in 'the former president stood and waved to the crowd'.

up' selects only one value, which could be [path: upwards].[51] Hence, Arabic can optionally use a single particle (i.e., *a9la* 'up' but not *asfel*, 'down') to carry the [path] of motion. The same sentence would be ungrammatical if the motion verb *climbing* occurs with the particle *asfel* 'down' as in (32b), since *asfel* 'down' is not acceptable in this context in Arabic. The [path] of motion is co-assembled onto the verbal root along with [manner]. Hence, in this case, there is no need to acknowledge exactly which directional value that motion has selected for in Arabic as adding *a9la*, 'up' in order to bear [path] seems superfluous and semantically redundant in Arabic, given that y*'ataslaq* 'climb-up' bears both [manner] and [path] of motion. Arabic tends to omit this redundant particle in light of the fact that the motion verb *y'ataslaq* 'climb-up' simultaneously carries both features. In cases where the particle is absent, [path] is interpreted as being incorporated into the English verb *climb*, too. This suggests that the two semantic features are not competing for a single lexical item as Al-humari (2012) claims.

Another justification for the presence and absence of particles with [path] is that it might depend on the nature of motion verbs. Some motion verbs appear to license the presence of both [path] and [manner], whereas others do not. It seems that Arabic motion verbs allow only one [path] value to be co-configured with [manner] onto them. However, when [manner] of motion selects multiple [path] values, the motion verb does not license [path] to be assembled onto it. Instead, [path] is independently configured onto particles.

(33)	a. The monkey	$\text{ran}_{[\text{v, manner}]}$	$\text{around}_{[\text{p, path}]}$	the tree.	(English)
	b. *The monkey	$\text{ran}_{[\text{v, manner}]}$		the tree.	

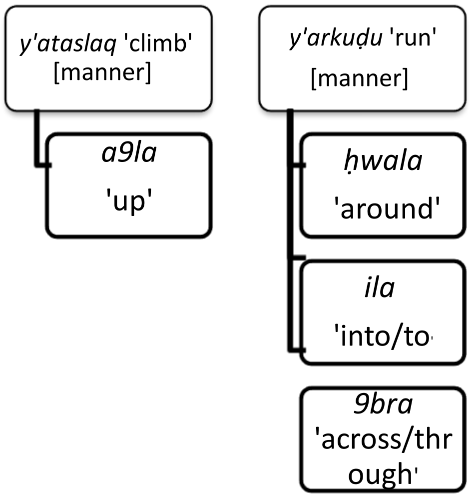
(34)	a. *rakaḍa*	*alqerdu*	*ḥwala*	*alshajarah*	(Arabic)
	$\text{ran}_{[\text{v, manner}]}$	the-monkey	$\text{around}_{[\text{p, path}]}$	the-tree.	
	'The monkey ran around the tree'.				

[51]These specific trajectory values (e.g., [path: top], [path: circle]) are to be developed throughout the present study. All particles discussed in this study hold [path] but differ in what type of value this feature is carrying. Sometimes, both Arabic and English motion verbs select particles with [path] but vary in the values these particles are holding. See Appendix 4A for examples of these trajectory representations in English and Arabic.

b. *rakaḍa* *al-qerdu* *al-shajarah.*
*ran$_{[v,\ manner]}$ the-monkey the-tree.
'The monkey ran the tree.'

Examples (33-34) demonstrate that Arabic and English behave in a similar way with respect to the verb *y'arkuḍu* 'run'. Unlike the motion verb *y'atsalaq* 'climb-up', *y'arkuḍu* 'ran' bears only [manner] of motion. The verb *y'arkuḍu* does not license [path] of motion to be co-hosted with [manner] on it. The verb *y'arkuḍu* might occur with different trajectory values such as [path: circle], [path: straight], [path: interior], and so on, being mapped onto different directional particles such as *ḥwala* 'around', *ila* 'into/to', or *9bra* 'across/through', for example (see Figure 4).

Figure 4 Two different motion verbs in Arabic might occur with either single or multiple particles to host [path] of motion.[52]



For this reason, [path] of motion is independently distributed onto a particle such as *ḥwala*, 'around' to show exactly which trajectory value that [manner] of motion has selected. Examples (33b-34b) are ungrammatical in both languages because the presence of the directional particle *ḥwala*, 'round' is obligatory with the given motion verbs. Such directional particles cannot be omitted, as they are the only vehicle allowed to carry [path] of motion given that the verb *y'arkuḍu*, 'run' does not allow the hosting of this feature with different possible values.

[52] The same verb *y'arkuḍu* 'run' can select different particles to indicate different directions not at the same time, e.g., *y'arkuḍu ḥawla* 'run around', *y'arkuḍu ila* 'run to', *etc.* Whereas the verb *y'atalaq* 'climb' only indicates one directional meaning [upwards]. It seems that the motion verb *y'atalaq* does not have feature requirements for a particle with [path] in Arabic.

To sum up, according to Talmy's (2009) typological proposal, motion verbs are classified into three subcategories: Path verbs (e.g., *y'adkhul,* 'to enter', *y'akhruj*, 'to exit'), Manner or Cause verbs (e.g., *y'aqfiz,* 'to jump', *y'arkud*, 'to run'), and Generic verbs (e.g., *y'adhab,* 'to go', *y'ada9,* 'to put'). Building on Talmy's (1985, 1991, 2000) proposal, a summary and an updated account of how motion is lexicalized cross linguistically is inspired from Özçaliskan and Slobin (2000: 4), in which the relevant semantic features might map onto lexical items according to two main configurations as follows:

1. Clustering the semantic features of motion events onto bare verbs (Vs):
   b) [v, path] (Path verbs) such as *exit, enter, descend.*
   c) [v, manner] (Manner verbs) such as *climb, swim, jump.*
   d) [v, manner-path] (Manner-path conflated verbs) such as *escape, chase.*
   e) [v, neutral] (Neutral verbs) such as *go, move*.
   f) [V, path]+[V, manner (SUB)] (path verb + subordinated manner verb) such as *enter running, exit rolling.*

2. Clustering the semantic features of motion events onto verb-particle constructions (VPCs):

   a) [V, manner]+[P, path] (manner verbs + directional particles) such as *sneak out, creep out, jump over, run away, fly out, roll into.*
   b) [V, neutral]+ [P, path] (neutral verbs + directional particles) such as *go into, go down.*

However, in this account, the two general morphological forms holding the relevant semantic features of motion events are of interest: VPCs and Vs. The question raised here is not about whether English allows the former configuration while Arabic allows the latter. Just because both languages allow both motion configurations does not suggest that these motion constructions are identical. English and Arabic might dissimilarly allow VPCs with some motion events and Vs with others. That is, the same motion event might be described by means of VPCs in English and Vs in Arabic and *vice versa*. Even when both languages use VPCs to express the same motion event, the separate elements that comprise the constructions might not be quite the same. English and Arabic might use unequal particles, which results in non-corresponding VPCs. This line of analysis further develops in the following section with an attempt to systemically spot areas of (dis)similarity in the way the two languages distribute the relevant semantic features of motion events onto lexical elements.

2.4 Feature-based classification of spatial lexicalization in Arabic and English

2.4.1 Matching vs. mismatching feature configurations

Although most studies on particles contain documented examples that show transfer from L1 (positive and negative), here, I present L1 transfer from a feature-based perspective. It is not only that Arabic and English are different in the way they map [path] of motion in English onto a particle, and onto a verb in Arabic. In fact, the line of investigation developed here has led to different and more complex feature configurations in both languages.

This section will show how Arabic and English map [path] of motion in (dis)similar ways with a variety of feature-lexicon distributions.[53] Following Lardiere's (2000, 2008, 2009) line of analysis, there may be one-to-one mapping (onto equal particles), one-to-one mapping (onto unequal particles), many-to-one, many-to-many mapping, none-to-one and, finally, one-to-none mapping. The overlapping in the way the two languages use particles is likely to be challenging for L2 learners (Lardiere, 2000, 2008, 2009).

2.4.1.1 Matching feature bundles between Arabic and English

Studies on L2 acquisition of particles have reported cases in which L2 learners have successfully acquired the target forms due to what is known as 'positive transfer'.[54] Some motion verbs behave similarly in Arabic and English, using identical particles which appear to be quite similar to one other. Example (35a-b) shows how the motion verbs behave similarly in English and Arabic, respectively. The motion verb

[53] Here, I follow one direction of feature-lexicon mapping 'Arabic-English' that can be reverse mapped 'English-Arabic'.
[54] For previous research on these constructions see Chapter 4.

y'arqus 'dance' might occur with corresponding particle *ḥawla* 'around' to reflect the same motion event in both languages.[55]

(35) a. They danced$_{[v,\ manner]}$ around$_{[p,\ path]}$ the fire.

b. *raqs-u* *ḥawla* *alnar*
danced $_{v,\ manner]}$-they around $_{p,\ path]}$ the-fire
'They danced around the fire.'

(36) a. Do you come from$_{[p,\ path]}$ York?

b. *hal* *ta?ti* *mim* *York?*
Do you-come from $_{[p,\ path]}$ *York*?

Similarly, the motion verb *y'a?ti* 'come' occurs with the same particle *min* 'from' in both languages as example (36a-b) illustrates. In these cases, L2 speakers might find these motion constructions much easier to acquire since there is a one-to-one relationship of the same semantic features onto corresponding lexical items, and all that is needed is a one-to-one simple mapping of these constructions with no feature reallocation required at all.

2.4.1.2 Mismatching feature bundles between Arabic and English

On the other hand, studies on L2 acquisition of particles have also reported cases in which L2 learners have unsuccessfully acquired the target forms due to what is referred to as "negative transfer".[56] A significant number of motion verbs behave differently in Arabic and English. Even though [path] of motion might be distributed onto particles in both languages, these particles might be incomparable. These languages might select different particles or other lexical items (i.e. verbs) to carry [path] of motion. It seems that what is encoded in a single element in one language obliges or is a counterpart to multiples in another (e.g., a number of VPCs in English

[55] It seems that the motion verb *dance* 'y'arqus' has no specific feature requirements for particles and therefore can be used with any (e.g., *along*, *around*, *under*, *through*,..etc.) based on the meaning which the speaker wants to convey.

[56]See Chapter 4 for some examples of these studies.

such as *break into* have a single verb equivalent in Arabic for them such as *y'aqtahim* 'break-into').

The following sections will illustrate the notion of the mismatching feature clusters by presenting examples that are deliberately ungrammatical in English if we follow the Arabic feature clusters without re-structuring the relevant semantic features onto the target specifications.[57]

2.4.1.2.1 One-to-one mapping (not identical morphemes)

Given that not all feature-lexicon mappings are one–to-one (onto equal morphemes), motion constructions with mismatching features set to the speakers' L1 are likely to be problematic as they require redistribution of the relevant features.

Although Arabic and English might allow VPCs, L2 speakers, in some cases, might find constructions with unequal morphemes much harder to acquire since they lack a one-to-one correspondence onto identical particles. Some English simple particles (i.e. single words) might translate to complex particles in Arabic (i.e. two words) such as *through* 'min khilal', *inside* 'fii aldakhil', *down* 'ila asfal', *below* 'aqal min', *along*, '9la ṭool', *towards*, 'bi-atijah'. Hence, simple mapping of these complex particles to English would result in non-target like forms, e.g., **from through, *in inside, *to down,*beside to,*below from,*on along* and **with towards*.

To illustrate further, consider examples (37-39) that show how some motion verbs behave in English and Arabic, respectively. The motion verb *y'arakuḍu* 'run' occurs with the particle *ba9idan min* 'away about' in Arabic, which is incompatible with *away from* in English, as illustrated in example (37). The particle *towards* in English is mapped onto *betijah* 'with towards' in Arabic, as in (38), and *along* in English is mapped onto *9la ṭawal*, 'on along' in Arabic as in exemplified in (39). If you look at the English translations of the Arabic particles in examples (37-39), e.g., '*away about', '*with towards' and '*on along', you will find that they do not work in

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[57] Hence, here I am presenting ungrammatical glosses in the English context for the Arabic transliterations.

English. So, Arabic learners of English are required to find the grammatical counterparts of these particles in English, e.g., *away from, towards* and *along*, otherwise the motion constructions produced will be non-target like.

(37) a. He ran$_{[v,\ manner]}$ away from$_{[p,\ path]}$ the lion.

b. *haraba* *b9idan 9an* *alasad*
ran $_{[v,\ manner]}$-he away about$_{[p,\ path]}$ the-lion
'He ran away from a lion.'

(38) a. The bird flew$_{[v,\ manner]}$ towards$_{[p,\ path]}$ the window.

b. *ṭara* *al9ṣfur* *bietijah* *alshubak*
flew $_{[v,\ manner]}$ the-bird with-toward$_{[p,\ path]}$ the-window
'The bird flew toward the window.'

(39) a. He strolled $_{[v,\ manner]}$ along$_{[path]}$ the beach.

b. *tanazah* *9latawal* *alshati*
strolled $_{[v,\ manner]}$-he on-along$_{[p,\ path]}$ the-beach.
'He strolled along the beach'.

2.4.1.2.2 <u>None-to-one mapping</u>

Some English motion verbs such as *arrive* occur with the particle *in* to carry [path] of motion, while, on the other hand, the Arabic equivalent *y'aṣil*, 'arrive' appears to omit it. That is, the English particle *in* is mapped onto a zero-particle (Ø) in Arabic as the verb is associated with [path]. Example (40a-b) shows this contrast in English and Arabic, respectively.

(40) a. Three pirates arrived in$_{[p,\ path]}$ the Seychelles.

b. *waṣla* *thalathat* *qaraṣena* *alseychelles.*
arrived$_{[v,path]}$ *three* *pirates* the-Seychelles
'Three pirates arrived in the Seychelles.'

(41) a. They hiked$_{[v,\ manner]}$ up$_{[p,\ path]}$ the mountain.

b. *tasalq-u* *aljabal.*
hiked$_{[v,\ manner\ path]}$-they the-mountain.

'They hiked up a mountain.'

Likewise, the English motion verb *hike* in example (41) has the option to either occur with the particle *up* or *down.* On the other hand, the equivalent Arabic motion verb *y'aṣad* 'hike' does not occur with any particle, so it is mapped onto a zero-particle because the motion verb simultaneously yields both [manner] and [path] features.[58]

2.4.1.2.3 <u>One-to-none mapping</u>

Although the majority of studies on particles in Arabic and English contexts have reported cases in which English uses VPCs while Arabic, in contrast, uses only bare verbs to express the same motion event, previously referred to as none-to-one mapping, there are other cases in which the opposite scenario occurs as example (42a-b) demonstrate how the verb *enter* 'y'adkhul' behave in English and Arabic, respectively.

(42) a. The knight entered $_{[p,\ path]}$ the castle.

b. *dakhla* *alfares* *(ila)* *alqaṣer.*
entered$_{[p,\ path]}$ the-knight (to$_{[p,\ path]}$) the-castle.
'The knight entered the castle.'

(43) a. The soldiers returned $_{[p,\ path]}$ home.

b. *9ada* *aljundu* *ila/9la* *mnazelhum.*
returned the-soldiers to/on home-their.
'The soldiers returned home.'

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[58]Another possibility of the misuse of some motion constructions would be the unfamiliarity of some manner verbs. VPCs with unfamiliar manner of motion verbs such as, *parachuting, skiing, ice skating, skating, sledding, snowboarding, surfboarding, surfing, scubdiving, waterskiing, windsurfing, kayaking , canoeing, rafting, rappelling, floating, ski diving,* are relatively new to the Arabic culture. Most of the Arabian Peninsula is desert with high temperature (up to 50 °C) that makes it bizarre to perform winter sports such as *skiing.* Hence, not all the aforementioned manner of motion verbs have Arabic counterparts. So, Arabic learners of English do not have L1 knowledge on these manner verbs to relate to and under these circumstances they do not know whether or not these manner of motion verbs require particles and if they do so what kind of particle do they need to be attached with (e.g., *down, around*).

Example (42a-b) shows that the motion verb *y'aḍkhul* 'enter' in Arabic may optionally occur with the directional particle *ila* 'to' to hold [path] of motion while the same motion verb in English does not need a particle at all - (Ø) as it allows path verbs hosting [path] of motion. Similarly, the verb *y'9udu* 'return' occurs with *ila* 'to' or *9la* 'on' in Arabic whereas it occurs with zero-particle in English as (43a-b) illustrates.

2.4.1.2.4 Many-to-many mappings

Copying feature-to-lexicon packages and transferring them as they are from the learners' L1 may result in non-target like motion constructions. A more complex feature-to-lexicon mapping in which several particles differently carry [path] of motion is anticipated. Although [path] is mapped onto particles in both languages, the particles are not quite the same. Some motion verbs make distinctions between directional particles in one language, but not in the other. English makes a distinction between some directional particles while Arabic does not. That is, in Arabic and English, [manner] and [path] of motion might, correspondingly, be configured onto VPCs in the verbal and adpositional domains, respectively. However, such comparable constructions may vary in the trajectory values the particles hold, e.g., [p, path: ±interior], [p, path: ±touch], [p, path: ±distinct], [p, path: ± transfer], etc.[59]

To illustrate, both languages use corresponding particles *to 'ila'* to bear [path: towards] of motion, and *in* 'fii' to host [path: inwards]. However, English might use different particles to carry language-specific trajectory values, e.g., [path: towards-inwards] is configured onto the directional particle *into* as well as other values, e.g., […directional, endpoint...] (See Table 5). In contrast, Arabic does not appear to license a single directional particle to bear this twofold value: i.e. [path: towards-inwards]. Arabic uses two distinct particles - *ila*, 'to' to bear [path: towards] of motion, and *fii*, 'in' to host [path: inwards], so each particle yields either [path: towards] or [path: inwards], but not both.

[59] [±] symbolizes either the existence [+] or non-existence [−] of the relevant value. Whereas, [=] symbolizes neutrality; that is, the existence or non-existence of the relevant value are equal.

Table 5 Some trajectory value combinations for four different English particles.

Language	Satellite	Trajectory Values				
		[towards]	[locational]	[inwards]	[onwards]	[endpoint]
English	*to*	+	−	−	−	+
		e.g., *the horse galloped to the hills.*				
	into	+	−	+	−	+
		e.g., *the bat flew into the cave.*				
	on	−	+	−	+	−
		e.g., *the crab walked on the beach.*				
	onto	+	−	−	+	+
		e.g., *the rooster flew onto the roof.*				

Although both languages allow VPCs, L2 speakers in these cases might find these constructions with non-corresponding particles much harder to acquire since they lack a one-to-one mapping onto identical particles.

In a similar vein, examples (44-46) show that some motion verbs behave in English and Arabic, respectively. The kind of contrast shown below suggest that some motion verbs might occur with particles that carry [path] with different values in English, while the same motion verbs in Arabic do not discriminate between them and it treats such values in a twofold way [±].

(44) a. The chickens ran through $_{[p,\ +interior]}$ the tunnel.
b.*The chickens ran across$_{[p,\ -interior]}$ the tunnel.

(45) a. The chickens ran across$_{[p,\ -interior]}$ the field.
b.*The chickens ran through$_{[p,\ +interior]}$ the field.

(46) a. *rakaḍa* *aldajaj* *khlal/9bra* *alnafaq.*
ran the-chickens across/through$_{[p,\ \pm interior]}$ the-tunnel
'The chickens ran through the tunnel.'

b. *rakaḍa* *aldajaj* *khlal/9bra* *alḥaqel.*

run the-chickens across/through [p, ±interior] the-field
'The chickens ran across the field.'

In English, the direction of the motion verb *run* changes based on which particle it occurs with. The direction of *run through* is different from *run across*. The first encodes [path:+interior] reading, whereas the latter encodes [path: −interior] reading. That is, Arabic does not discriminate between some particles (e.g., *khlal* 'through' and *9bra* 'cross') that host [path] of motion, while English does (e.g., either *through* or *cross*). Arabic tends to map [path] with neutral values onto similar particles: *khlal* 'through' and 9*bra* 'across'. That is, *khlal* 'through' and 9*bra* 'across' appear to be equivalent in Arabic. Thus, mapping [path] onto either *khlal* 'through' or 9*bra* 'across' in a random way will be grammatical, as the presence or absence of the values [+/− interior] does not appear to influence the lexical selection of particles in Arabic.[60] That is, unlike English, Arabic might use the same particle (e.g., *9bra* 'cross') along with its equivalents (e.g., *khlal* 'through') to carry both [+] and [−].

On the other hand, English seems to map [path] onto different particles, either *through* or *across*, respectively. That is, [path] is mapped onto a particle with either [path: + interior] or [path: − interior] values, respectively. Thus, in English, mapping [path] onto either a particle with [+] or [−] values in a random way would be ungrammatical. The presence or absence of those values appears to strongly influence the lexical selection of particles in English. In examples (44-46), the two particles seem to be antonyms, [+] vs. [−], in English, while they appear to be synonyms in Arabic (46a-b) both host [±] trajectory values. The verb *y'arkaḍu* 'run' would occur with the particles *khlal* and *9bra* interchangeably to indicate either meaning of *through* or *across*.

It seems that English is rich with distinctive particles that Arabic lacks. To illustrate further, consider the motion construction *swim under* which is different from *swim below* in English as example (47) shows. The first encodes [path: + touch], whereas the latter encodes [path: − touch]. Arabic, on the other hand, does not make a distinction between the two readings as (48-49) exemplify. The verb *y'asbaḥ* 'swim'

[60] Both particles are also acceptable in different varieties of Arabic (non-standard) and they do not seem to be less prestigious.

would occur with the particles *taḥta* or *asfal* interchangeably to indicate either meaning of *under* and *below*.

(47) a. The dolphin swam $\text{under}_{[p,\ +touch]}$ the ship.
b. The dolphin swam $\text{below}_{[p,\ -touch]}$ the surface of water.

(48) *sabaḥ* *aldolphin* *taḥta/asfal* *alsafinah.*
swam the-dolphin $\text{under/below}_{[p,\ \pm\ touch]}$ the-ship
'The dolphin swam under the ship.'

(49) *sabaḥ* *aldolphin* *taḥta/asfal* *saṭiḥ* *alma.*
swam the-dolphin $\text{under/below}_{[p,\ \pm\ touch]}$ surface the-water
'The dolphin swam below the surface of water.'

Likewise, examples (50-53) show how the motion verbs *y'aqfz*, 'jump' and the verb *y'arkud*, 'run' behave in English and Arabic, respectively. In English, the directional meanings of the motion verbs *jump* and *run* change based on what particles they occur with. The motion construction *jump over* is not equivalent to *jump above*; the first encodes a locational reading, whereas the latter encodes a directional reading. Similarly, *run between* does not correspond to *run among*; the first encodes [+ definite] whereas the later encodes [-definite] directional reading.

(50) a. The spider jumps $\text{over}_{[p,+touch]}$ the table.
b. The spider jumps $\text{above}_{[p,\ -touch]}$ the table.

(51) *yaqfiz* *al9ankabwt* *fwqa/9la* *alṭawlah.*
jumps the-spider $\text{over/above}_{[p,\ \pm touch]}$ the-table
'The spider jumps over the table.'

(52) a. The spider ran $\text{between}_{[p,+distinct]}$ the red and the blue pillow.
b. The spider ran $\text{among}_{[p,-distinct]}$ the pillows.

(53) *rakaḍa* *al9nkbut* *wasṭa/bina* *alwasa'd* *alhamra wa alzarqa.*
ran the-spider $\text{among/between}_{[p,\ \pm distinct]}$ the-pillow the-red and the-blue
'The spider ran between the red and blue pillows.'

Arabic, on the other hand, does not make a distinction between these directional meanings. The Arabic motion verb *y'aqfiz* 'jump' would occur with *fawqa* or *9la* interchangeably to indicate the meanings of both ‘over’ and ‘above’, and the verb *y’akaḍu* ‘run’ would occur with *bina* or *wasṭa* interchangeably to indicate the meanings of both *between* and *among*.[61] In the same way, *y’aqfz* ‘jump’ and *y’adf9* ‘push’ behave differently in English and Arabic, as examples (54-57) illustrate.

(54) a. The monkey jumped onto$_{\text{[p, directional]}}$ the horse’s back.
b. The monkey jumped on$_{\text{[p, LOC]}}$ the horse’s back.

(55)	*gafza*	*alqerdu*	*fawqa/9la*	*ẓaher*	*alḥusan.*
	jumped	the-monkey	onto/on$_{\text{[p, ±transfer]}}$	back	the-horse.

The monkey jumped onto the horse’s back.’

(56) a. The mouse pushes the cheese into$_{\text{[p,+interior]}}$ the hole.
b. The mouse pushes the cheese to/towards$_{\text{[p,-interior]}}$ the wall.

(57)	*dafa9*	*alfar*	*aljubun*	*naḥwa/ila*	*aljuḥer/ha’t.*
	pushed	the-mouse	the-cheese	towards/to$_{\text{[±interior]}}$	the-hole/wall.

‘The mouse pushes the cheese towards/to the hole/wall.’

In English, the meanings of the motion verbs *push* and *jump* change based on what particles they occur with. The motion construction *jump on* is not equivalent to *jump onto*; the first encodes a locational reading, whereas the latter encodes a directional reading. Similarly, *push to* does not correspond to *push into*; the first encodes [path: + towards], whereas the latter encodes [path: + towards-inwards] movement. Arabic, on the other hand, does not discriminate between the two meanings. The Arabic verb *y’aqfiz* ‘jump’ would occur with *fawqa* or *9la* interchangeably to indicate the meanings of both *onto* and *on*, and the verb *y’adf9* ‘push’ would occur with *naḥwa* or *ila* interchangeably to also indicate the meanings of both *to* and *into*.

On the basis of the aforementioned distinction, I could argue that adult L2 speakers might substitute the particles with [+] value with those with [−], or *vice versa*. They might map these two distinctive values of [path] onto any particle with neutral value [=], converging with their L1 feature sets. This leads me to suggest that L2 learners

[61] Literal translation, direct translation, or word-for-word translation of the Arabic sentences to English would result in ungrammatical sentences if *among* and *above* were used randomly.

are more likely to be challenged by splitting these binary values of [path] into two independent and distinctive particles with either [+] or [−] value.

2.4.2 Relevance of the aforementioned feature-based contrast

After identifying areas in which English and Arabic map the relevant semantic features of motion events onto lexical items in language-(non) specific ways, various questions are raised. Do the (dis)similarities in the way Arabic and English distribute the relevant semantic features of motion events onto lexical items facilitate or impede L2 acquisition of the target motion constructions? Do L2 speakers find motion constructions with L1-L2 matching feature bundles (e.g., *the helicopter flew around the camp*) easy to master in comparison with other constructions with L1-L2 mismatching feature bundles to their L1 (e.g., *a helicopter flew over the camp*)? Finally, and perhaps most interestingly, we must ask what exactly is required in order to accommodate the target motion constructions.

The existence of non-target like motion constructions is predictable due to the anticipated feature bundles overlapping across languages. And, because these constructions are not randomly produced, L2 speakers are expected to be greatly influenced by the form-meaning distributions of the semantic features of motion events their L1s (Lardiere, 2005, 2008, 2009). The feature-bundles developed in the learners' L1 might come to play a role in the L2 acquisition of Arabic and English motion constructions. From a feature-based perspective, I can argue that the ease or the difficulty of approaching an L2 syntax is likely to depend on how close the L1 and L2 are in the way they distribute the sematic features of an event onto surface forms. The closer two languages are, the greater the areas of similarity in terms of feature-lexicon distributions, the fewer are the feature redistributions that are required, and the smaller the difficulties are that these should pose. The most problematic property to acquire is likely to be only that requiring semantic-morphology remapping, [path], as it tends to have different and complex configurations in both Arabic and English.

Taken together, as previously mentioned, variation among languages is argued to be due to variation in feature bundles, or, basically, due to how the relevant semantic features are bundled up together onto lexical items in a language-specific way

(Lardiere, 2005, 2008, 2009). Due to overlapping in the way the same motion verbs might occur with particles in each language, and the strategy of a one-to-one literal mapping, which many L2 speakers frequently fall back on, will result in non-target like constructions in the form of cases of substituted, omitted or added lexical items that do not fit in the target feature set.

The set of contrasts explored in this chapter demonstrated that Arabic and English select similar features with regard to the directional status of an event, but they tend to distribute these features onto language-specific morpholexical configurations. Different feature bundles have been identified in this chapter - both L1-L2 matching vs. L1-L2 mismatching. To summarize, first, both Arabic and English can similarly use identical motion constructions with matching feature bundles mapped onto them, such that both languages can permit the following distributions: [v, manner] and [p, path] onto corresponding lexical items with some motion constructions to express the same motion event as illustrated in (58a-b) below.

(58) a. The helicopter flew $_{[v,\ manner]}$ around $_{[px,\ path]}$ the camp. (English)

b. *ḥalaqat almaruḥeh ḥawla almu9askar.* (Arabic)
flew $_{[v,\ manner]}$ the-helicopter around $_{[px,\ path]}$ the-camp.
'The helicopter flew around the camp.'

Second, Arabic and English might use different lexical items to carry the same feature that expresses the same motion event as illustrated in (59a-b).

(59) a. The helicopter flew $_{[v,\ manner]}$ over $_{[px,\ path]}$ the camp. (English)

b. *ḥalaqat almaruḥeh 9la almu9askar.* (Arabic)
flew $_{[v,\ manner]}$ the-helicopter on $_{[py,\ path]}$ the-camp.
'The helicopter flew over the camp.'

As far as learnability tasks are concerned in view of Lardiere's (2005, 2008, 2009) account, learners have to perceive similarities between the semantic meanings of motion events mapped onto the lexical elements of the target language and the lexical elements of their L1. This correspondence leads to initial mapping of the whole feature set of the L1 lexical items onto the L2 lexical items. That is to say, learners might use any one of the L1 lexical items to indicate [path] of motion regardless of any specific value of the L2 features set.

The next phase, according to Lardiere (2005, 2008, 2009), is to notice the dissimilarities between the L1 and L2 lexical items. The L2 learners will need to discriminate that [path] of motion is realized onto distinct lexical items in the L2. The strategy of one-to-one direct mapping, which most L2 speakers commonly rely on, would result in non-target like constructions in the form of cases of swapped, deleted, or added lexical items. In these cases, L2 speakers might find motion constructions that do not have a one-to-one mapping much harder to acquire if restructuring of the relevant features does not occur in advance by reason of negative evidence. This is delivered by the L2 input that the L1's lexical items are no longer suitable in the target context. [62] From the feature-based analysis attuned here, the 'feature reassembly' can systematically take different forms; substituting an L1 lexical item with an L2 item, deleting a superfluous lexical item or adding a required item and then reallocating the relevant semantic feature onto a different lexical item to approach the L2 specifications.These processes will be described in much greater detail in Chapter 4 of this thesis.

2.5 Conclusion

The main outcome of this chapter is establishing that the semantic elements (i.e. features) and surface elements (i.e. lexical items) in a language relate to each other in definite configurations. Initially, the chapter explains the presence of certain semantic features, e.g., [path] and [manner] along with certain lexical elements, e.g., verbs and particles. Secondly, examination of feature-lexicon relationships has been extended beyond treating a single semantic feature at a time to treating a set of features that are bundles up together onto different range of lexical items. Thus, the study here has not just taken up the argumentation form: semantic feature [A] is encoded in lexical item 'X' in language '1', and in lexical item 'Y' in language '2'. Rather, argumentation has also taken the form: with semantic feature [A] encoding in the lexical item 'X' in language '1', the semantically related feature [B] encoding in

[62] Negative evidence is described as information about the unfeasibility of an expression (Schwartz and Gubala-Ryzak, 1992).

the lexical element ‘Y’, whereas language ‘2’ exhibits a different surface arrangement of the same full feature set. That is, this study is concerned with whole representations of feature-lexicon relationships.

Bringing all elements together, this chapter describes feature-lexicon associations by showing how the semantic features of motion events are distributed over lexical items. It uncovers the basic feature distributions seen in Arabic and English motion constructions. The main distinction identified between these language is how [path] of motion is typically configured onto (dis)similar lexical items. It has been argued that Arabic typically uses verbs to carry [path] of motion, whilst English uses particles to hold the same feature instead. However, I identified further (dis)similar feature configurations in Arabic and English. Building on the Feature Reassembly Hypothesis (Lardiere, 2005, 2008, 2009) and Stringer’s (2012) feature-based analysis of motion constructions, feature bundles that have been developed in L1 are likely to impact the way L2 speakers acquire motion constructions. I argue that variability in the learner’s interlanguage stems from the fact that the relevant semantic features are distributed onto lexical items in a language-specific way in Arabic and English.

Following this line of thinking, this chapter drew attention to the possible learnability challenges that L2 speakers may confront in acquiring L2 motion constructions. By paying special attention to the overlapping between feature clusters in Arabic and English, I conclude from this new set of contrasts that L2 speakers might find motion constructions with matching feature bundles to their L1 unproblematic in contrast to other motion constructions with mismatching feature bundles. This idea will be further developed in Chapter 4, which covers the L2 acquisition research that influences this work and from which the key hypothesis stems. The following chapter will describe the Feature Reassembly Hypothesis (Lardiere, 2005, 2008, 2009) in greater detail.

Chapter 3. Feature Reassembly Hypothesis

3.1 Introduction

Within minimalist syntax, the phonological, semantic and syntactic features are distributed onto morpholexical items can arguably explain the observed morphsyntactic variation across languages (Chomsky, 1995, 2000). In minimalist terminology, White (2003: 276) in his research defines features as "the smallest structural unit expressing grammatical properties. There are phonetic (e.g., ± voice), (morpho-) syntactic (e.g., ± past), and semantic features (e.g., ± animate)".

This set of formal features is classified into interpretable and uninterpretable feature. According to Slabakova (2008: 9), "Features that makes an essential contribution to meanings (i.e., plural, human, gender, or aspect) are interpretable, whereas those that are purely grammatical and only relevant to the morpho-syntax (i.e. case or agreement) are uninterpretable". In this particular study, features of interest are the interpretable semantic features. Semantic features are invisible, whereas syntactic features are visible. The surface linguistic elements (i.e. expressions) of motion events that are visible encode invisible semantic elements (i.e. concepts) that are in minimalist terminology are referred to as semantic features. Semantic features contribute to the meaning or concept of the expression, simply they are what the expression means (e.g., direction of movement as in *he rides* ***towards***$_{\textit{[path]}}$ *the pyramids*), whereas syntactic features stand for the actual expression, or how the language functions (e.g., *he ride****s*** $_{\text{[subject-verb agreement inflection]}}$). Crystal (2008: 427) describes semantic feature as "a minimal contrastive element of a word's meaning". Motion events entail more than one semantic feature: e.g., [motion], [path], [manner]. However, the feature of interest, in this study, is [path] of motion as the majority of previous research presents evidence that L2 learners commonly encounter difficulties with particles expressing [path] of motion.

Even when languages have a particular functional category in common, the relevant features linked with these functional categories may slightly differ.[63] This is primarily because, under the assumptions of the MP, the pool of features differs cross-linguistically on the basis of how they are morpholexically distributed (Chomsky, 1995, 2000). A number of academic researchers and scholars including Lardiere (2005, 2008, 2009), Choi (2009), Domínguez *et al*. (2011), Yuan and Zhao (2011), Hwang and Lardiere (2013), Spinner (2013), and Cho and Slabakova (2014, 2015) support this line of thought, arguing that languages have different underlying morphosyntactic configurations, as primitive formal features are differently distributed onto them. However, the persistent divergence in distributing surface forms onto formal features is commonly linked to L1 impact in terms of dissimilar re-settings of certain parameters. Following this line of argument, this particular chapter explains the shift in how to account for variability in light of the Feature Reassembly proposal compared to other parameter resetting models. It presents the theoretical background underlying this research to establish the theoretical basis upon which the research is built, i.e. testing the predictions of Lardiere's (2005, 2008, 2009) Feature Reassembly Hypothesis within L2 acquisition of spatial morphology.

3.2 Feature Reassembly - An Alternative Account to Parameter Resetting

It is commonly agreed that, in L1 acquisition, the child is presented with primary linguistic data (hereafter PLD) derived from Universal Grammar (hereafter UG) from which he or she selects functional categories and the relevant features essential to parse the grammar (Chomsky, 1965).[64] Even though the acquisition task for adult L2 learners is not vastly different from that of the L1 learner, previous linguistic knowledge, and dissimilar cognitive skills, may result in a less-straightforward acquisitional development (*ibid*).

In minimalist accounts (Chomsky, 1995, 1998, 2000), the linguistic faculty includes (1) a universal computational scheme and (2) lexicon made from definite clusters of

[63] Functional Categories are parts of speech that offer grammatical information such as determiners, auxiliary verbs and particles (Carnie, 2013).

[64] UG is a linguistic term coined by Chomsky (1976) and stands for the genetic scheme of grammar.

formal phonological, syntactic and semantic features. These features belong to a universal inventory, made accessible by UG, and accessed throughout L1 acquisition. Chomsky (2000, 2001, and 2004) in his research emphasizes that L1 acquisition involves two main processes: (1) feature selection, and (2) feature assembly into specific lexical items. These are natural single-time processes in L1 acquisition, activated by exposure to PLD. Chomsky (1995, 1998, and 2000) claims that these process are accessible when feature realisations are selected and activated by accessible inputs which trigger selecting certain features and configuring certain lexical items in each language.

Within the MP, variations among languages can then be argued to be defined by variations in both the way features are selected and the way they are configured onto lexical items. Whether these processes can be iterated i.e., feature reselection and feature reassembly, all the way through a lifetime upon exposure to a new PLD and whether the universal pool of features is still accessible after a language selects its definite feature sets is hotly debatable. Hence, the learnability issues in L2 acquisition arise from the (im)probability of reselection or reconfiguration of features into the target specifications (Chomsky, 1998, 2000).

As far as the syntax–semantic divergence is concerned, generative-oriented L2 research has explored the extent to which cross-linguistic variation in the features selected by each language form the basis of interlanguage divergence and an enduring non-target like usage for L2 speakers (Hawkins and Chan, 1997; Hawkins, 2005; Lardiere, 2006, 2009). A wide number of academic researchers have also examined the variability in L2 acquisition (Dekydtspotter *et al.*, 1997; Slabakova, 2003; Montrul and Slabakova, 2002; Hawkins and Hattori, 2006). There is a consensus among the researchers that L2 speakers often vary from native speakers in their usage of L2 morphosyntax, even following substantial exposure to an L2, despite the fact that L2 structures are UG constrained. In particular, there are cases where advanced L2 speakers are not successful in attaining target-like morphology (Hawkins and Chan, 1997; Prévost and White, 2000; Hawkins, 2000; Hawkins and Liszka, 2003: Lardiere, 1998, 2000, 2007).

Syntax–semantic divergence obtains when some universal conceptual meanings (e.g., spatiality) find lexical representation in one way in the L1 (e.g., lexicalised in verbs) and in another way (e.g., lexicalised in particles) in the L2. Although L2 speakers debatably have access to the entire store of universal meanings, they must acquire how to convey the same meanings in the L2. New or different lexical representations of the same meaning might be needed making L2 acquisition tasks much harder (Lardiere, 2000, 2007).

3.3 Partial Access vs. Full Access Debate

Contemporary views of persistent L2 acquisition difficulties normally fall into two distinctive camps primarily depending on perceived sources of variability and predictions for ultimate attainment. One of the viewpoints is held by those asserting that there is a 'critical period', occurring during childhood, beyond which the full feature package is no longer available for new learning ('Partial Access' view). On the other hand, the second viewpoint is held by those arguing that UG remains completely available all the way through the individual's lifetime ('Full Access' view). The former view is shared by Hawkins and Chan (1997), Hawkins (2000), Franceschina (2002), Franceschina and Hawkins (2003), Hawkins and Liszka (2003) and Hawkins and Casillas (2008) assign the impairment to the computational system itself owing to unfeasibility of L2 feature acquisition beyond the critical period. These researchers claim that features not selected in the L1 are inaccessible for L2 learners, and, theoretically, it is impossible for post-childhood L2 learners to master native-like syntactic realizations if this includes the acquisition of structural properties not present in their L1.

On the other hand, the second viewpoint is shared by Gavruseva and Lardiere, (1996), Haznednar and Schwartz (1997), Prévost and White (2000), Goad and White (2004), McCarthy (2008) and Lardiere (1998, 2007, 2009) claiming that adult L2 learners might possibly show target-like representations, and that any observed divergence must be attributable to issues 'post-syntax'. These researchers claim that all features are available in the L2 but other factors such as communicative pressures cause morphological divergence. They assign the impairment to the level of syntactic knowledge mapping onto other morpholexical representations.

According to Domínguez *et al.* (2011), the second viewpoint allows for the probability of impaired structures even if L2 feature knowledge is non-target like, raising the possibility that L2 acquisition of lexicons not features underpins the L2 acquisition difficulties. Lardiere (2000, 2005, 2008, and 2009) in her research has addressed for such a possibility in the Feature Reassembly Hypothesis, in which she endeavours to explain variability in terms of morpholexical competency. Rather than considering whether specific functional categories exist in the target grammar and whether the relevant parameters are reset to their target-like values in the L2, Lardiere (2000, 2005, 2008, and 2009) proposes considering how features are morpholexically clustered in an L1 and L2.

Furthermore, Lardiere (2009) claims that mastering an L2 structure is not an issue of (un)accessibility of features and she argues that L2 acquisition includes a more complex process than parameter (re)setting. Her account assumes that complete L2 acquisition is achieved by successfully acquiring new features and reconfiguring L2 features already present in the L1 into different functional categories and lexical items. As a result, attainment is linked to the possibility L1 features have matching morpholexical representations in the L2, and the possibility learners can successfully redistribute others that do not match.

Following Brown's (2000) feature-based account of phonology, Lardiere (2009) argues that L1 form-meaning configurations function as filters in L2 development which must be tackled by learners. The task of properly incorporating new feature bundles poses a greater difficulty (Lardiere, 2005; Choi and Lardiere, 2006). According to Lardiere (2008, 2009), parametric resetting accounts have little to say about any potential learning issues, given that a new parametric feature is not present. The feature reassembly approach, on the other hand, proposes that learning necessitates restructuring complex lexical entries for the target language; "the contexts in which [a certain form] can or cannot or must appear and restrictions on its use must all be painstakingly acquired and are part of the learner's developing morphological competence" (Lardiere, 2008: 236). Mastering an L2 necessitates learners' to work out how the relevant features are bundled together into lexical elements and under which language-specific conditions they are explicitly realized in the L2. These learning issues are not straightforwardly captured by ‘parameter resetting’ (*ibid*).

The vast majority of existing L2 acquisition studies are based on the (im)possibility of feature reselection, on the basis whether the learning task is a matter of the (non-) existence of the L2 features. Nevertheless, L2 acquisition studies should also consider the (im)possibility of feature reassembly account may be accurate. According to Lardiere (2008, 2009), variability results from the failure to reconfigure feature sets into L2 specific configurations which also present in the L1, but with different morpholexical arrangements. Lardiere (2008: 235) clearly explains this assertion as follows:

> [A]cquiring an L2 grammar is not just a matter of learners determining whether features are still available for selection from a universal inventory and are, in fact, selected. In particular, we need to consider how they are assembled or bundled together into lexical items (or functional categories), and then we must further consider the particular language-specific conditions under which they are phonologically realized.

Lardiere (2000, 2005, 2008, and 2009) argues there is no obstruction to late L2 acquirers of all the morphosyntactic properties of an L2, but that this knowledge is not consistently morpho-phonologically realized. Divergence from native speakers’ structures may emerge from L2 speakers having difficulties with mapping their entire feature-specified clusters onto surface morphological representations, making English learners of Arabic, for instance, as in the case of the present study use a bare verb to carry [path] of motion (e.g.,* *y’aqtarib* ‘approach’) where a satellite particle should be attached to the verb in the L2 (e.g., *y’aqtarib min/ ila* ‘approach from/to’). According to Lardiere’s account (2000, 2005, 2008), post-childhood L2 learners are not syntactically non-target like, and have the possibility of completely acquiring the target syntax, but may have issues with constructing morpholexical representations of the L2 they have apparently learned.

Variability in adult L2 grammars usually persists in advanced levels of L2 development (Lardiere, 2000, 2007; Sorace, 2005, 2006), demonstrating an adult speakers’ use of non-target like forms even if exposed extensively to the target structures. Lardiere’s (2007) claims are primarily based on an advanced Chinese speaker's (*Patty*) spontaneous L2 English oral and written production over a period of 8.5 years, as it exemplifies adult L2 acquisition difficulties resulting from language-specific matrices of the relevant features. *Patty* exhibited non-target like command of the L2 despite the fact she was exposed to a rich English-speaking environment for 18 years and, furthermore, she did not show progress over time (Lardiere, 1998, 2005, 2007, 2009).

Furthermore, Lardiere (1998, 2000, 2007) explains that *Patty*'s L1 (i.e. Mandarin Chinese) and L2 (i.e. English) have dissimilar ways of lexicalising [past], and that [past] feature encourages marking verbs with phonological reflexes which it would be superfluous in Mandarin Chinese. Deletion of agreement morphology might be as a result of the phonological impact of *Patty*'s L1 (Lardiere, 2007). *Patty*'s L1 does licenses word-ending consonant clusters (e.g. *swim*(*s*)) that are commonly realized in inflected verbs in the target language (i.e. English). The outcome could be linked with the fact that L1 English speakers show the tendency to maintain the suffix *–t/d* in past tense markings (e.g. **passed/past*) and a long contact with native speakers may perhaps have brought about a considerable amount of *–t/d* omission. These reasons may have influenced *Patty*'s production of the past tense–*ed* inflection and made her creates bare verbs rather than the target inflected verbs as Lardiere (2007) explains.

Lardiere (2007) also claims that the non-appearance of surface morpho-phonological reflexes (e.g., past tense–*ed* inflection) in *Patty*'s constructions may not evidence deficits in underlying structural competency, and she claimed despite the fact that *Patty* produces target like verb morphology in low rates, other linguistic properties are highly produced in a target like manner (e.g., word order). Lardiere (1998, 2000, 2007) argues that *Patty*'s use of morphology lessens the syntactic familiarity, hence, syntactic familiarity and the relevant morpholexical representations should be treated independently, "the development of syntactic phrase structure in second language acquisition is not contingent on the acquisition of morphological paradigms" (Lardiere, 2000: 120). Lardiere (2007) suggests that the fact that *Patty* does not form the past tense–*ed* inflection does not indicate that her syntax lacks the [past] feature. Based on the analysis of Lardiere (2007), *Patty*'s avoidance of the morpho-phonological reflexes of tense is claimed to be attributable to some sort of failure in the morpholexical representations.

(60) *I left it to get ^ Irbid. [65] (Tahaineh, 2010: 96)

As far as the current research is concerned, omission of functional morphemes such as the directional particles *to* in example (60) in the productions of an adult Jordanian Arabic learner of English does not also indicate that his/her syntax lacks the [path] feature in the same way *Patty*'s production does. The fact that L2 learners do not produce morphemes may be due to computational difficulty instead of the nonexistence of features as the supporters of the Missing Surface Inflection Hypothesis (Prévost and White, 2000) argue. Lardiere (2000: 121) claims that *Patty* and other late L2 learners are challenged by determining how and whether to spell out morphologically the categories they already have syntactically (the mapping problem). Lardiere (2000: 121) suggests that post-childhood L2 learners may struggle with "a decreasing ability to construct the mapping from feature to form as easily as child language acquirers do".

3.4 FRH Builds on Full Transfer/Full Access Model

Lardiere (2000, 2007, 2009) build on the research of Schwartz and Sprouse's (1994, 1996, 2000) Full Transfer/Full Access (hereafter FT/FA) model to the FRH, claims that learners came to the L2 acquisition task with a system of a set of formal features, already selected and arranged into their L1 lexicons. Following Schwartz and Sprouse's FT/FA model, Lardiere (2000, 2005, 2008, and 2009) suggests that since the development of an L2 system starts from the speakers' L1, the developmental stages vary from those of L1 acquisition. L2 acquisition begins with a full set of fixed parameters, whereas L1 acquisition begins with a full set of unspecified parameters. Hence, speakers from a variety of different languages learning the same L2 are thus likely to behave differently in the course of development of the L2 grammar as their L1s vary.[66] When the L2 input suggests that

[65] The symbol ^ stands for a place where an obligatory particle was omitted in the L2 learner's production.

[66] For examples of different learnability tasks and predications of attainments for speakers from different L1 backgrounds see Chapter 4.

the L1 representations are not appropriate, L2 learners are required to revise their L1 to better match the L2 representation. Furthermore, Lardiere (2000, 2005, 2008, and 2009) claims that if positive L2 input does not confirm that the L1 structures are inappropriate, the L1 grammar remains unrevised.

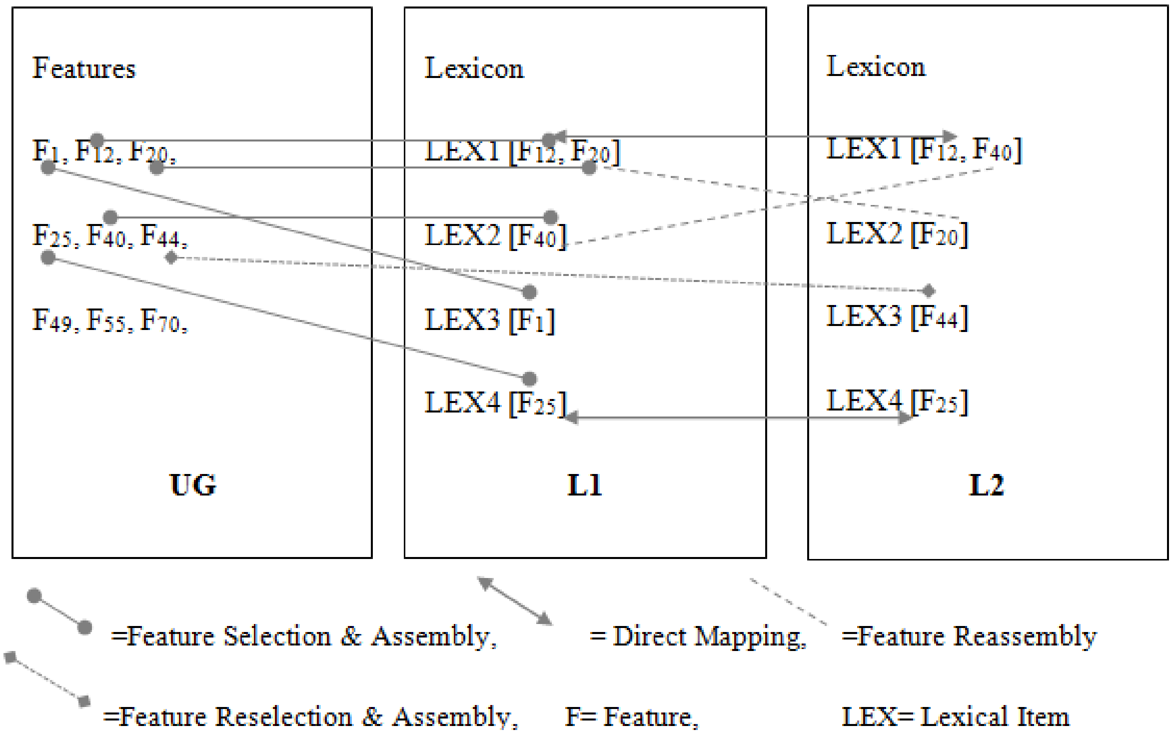
Within the Feature Reassembly account and in line with the FT/FA model, L1 knowledge plays an essential role in distributing existing features and the lexical elements of the L2. This appears to better account for L1 impacts than accounts of L1 fixed parameters. On the parameter resetting view, the (non-)existence of a specific feature in the L1 is claimed to guarantee that all L2 speakers will experience ease or difficulty with the relevant properties based on whether the same feature is present or absent in the L2. In parameter resetting accounts, a specific morphological entity is assumed to represent a specific feature generating a corresponding functional category (Hawkins, 2001; Hawkins and Liszka, 2003). Nevertheless, the feature reassembly account in line with the Distributed Morphology model (Halle and Marantz, 1993), suggests that the distributed features are distinguished from morphological entities. Lexicon (i.e. morphemes or words) that spell out matrices of formal features results from a separate process filling in representations with phonological information after syntax. This suggests that the non-existence of a particular morpheme does not necessarily indicate the non-existence of a particular feature and its related functional category in that language; they might be encoded differently in a language specific way.

Even though the FT/FA model offers a clear account for a UG-based restructuring in L2 grammar developmental stages, some scholars (e.g., Choi, 2009) argues that the FT/FA model does offer predications on the exact stages (aside from the initial state) that adult L2 learners might go through when acquiring L2, or more crucially, why non-target-like properties are persistent even though rich positive evidence is available.

3.5 Feature (re)selection and (re)assembling

The FRH (Lardiere, 2000, 2007, 2009) holds that lexicons are representations of features. Despite the fact that features are universal, languages differs in how these features are distributed into lexical items. Feature (re)assembly in L1 and L2 acquisition can be demonstrated in Figure 5, adapted from Gallego (2011: 548), and Shimanskaya (2015: 5).[67] The below mentioned Figure 5 makes reference to a hypothetical set of UG features, and two hypothetical languages that configure some of the features onto lexical items in ways specific to each language.

Figure 5 Features (re)selection and (re)assembly onto lexical heads in L1 and L2 acquisition.



Gallego (2011) and Shimanskaya (2015) in their research illustrate how features set made available by UG must be accessed during the process of language acquisition. As far as L1 acquisitional tasks are concerned, a child has to select from the universal pool of features that are realized in the L1 based on the accessibility of PLD. When the required features have been selected, particular functional categories and lexical items can be clustered. Unselected features in the L1 are ignored

[67] Gallego (2011) and Shimanskaya (2015) did not make the distinction between the different learnability tasks in their figures. The original figures had only one type of line that makes them more puzzling to understand. I revised the figures by making that distinction in Figure 5; each line of the four represents a specific learnability task.

(Chomsky, 2001). In the case of L1 acquisition, F12 and F20 in Figure 5, for instance, are realised on LEX1. On the other hand, F44, for instance, is not encoded lexically in the L1. In the case of L2 acquisition, learners start the acquisitional tasks with features that have been selected and distributed into their L1 clusters, which makes the process much harder. The learners recognize that F12 and F20 in the target language are separately hosted on non-corresponding lexical items; LEX1 and LEX2, respectively. Accordingly, the learners are required to reassemble F20 from its existing bundle of their L1, LEX1 [F_{12}, F_{20}] to the L2 configuration onto different lexical item, LEX2 [F_{20}]. Furthermore, F44 is required to be added from UG as the L1 does not encode it lexically.

Returning to the discussion on how to account for morphosyntactic variability, if we hold the former's view (e.g., Hawkins 2003; Hawkins and Hattori, 2006) who claim that admission to the featural inventory is conditional on a critical period, which suggests that not all features are acquirable in the L2. This suggests that the set of L2 features not existing in the L1 cannot be acquired. The final, predictable output only includes those features which are selected in both the L1 and L2. LEX3, for instance, is mapped onto F44 that does not exist in the L1 are likely to be problematic and must be combined in the target set of features. However, features not shared by the two languages are outside the scope of the present study. Here, I do not discuss feature (re)selection and whether attainments depend on existing (dis)similarities between the features selected in L1 and the target grammars. Nevertheless, features selected by both languages but with similar or different morpholexical configurations are of interest.

Even though it is evident that the semantic feature [path] is accessible to all speakers of all languages, the distinction lies in how it is encoded cross-linguistically. As in this particular study, Arabic verbs of motion might hold [path] whilst English might lexicalise [path] onto a different lexical item (i.e. particle) as illustrated in Chapter 2. Arabic learners of English and English learners of Arabic will not need to unselect features, since the L2 encodes the same feature lexically. However, they may have to return back to UG and add the distinction (review values not features) not existing in their L1. When F25 is mapped onto a corresponding lexical item LEX4 in both the L1 and L2, this representation is not likely to pose difficulty as it does not require reassembling for successful acquisition as pointed out by Domínguez *et al*. (2011). F12 and F20 which exist in both languages but constructed onto non-corresponding lexical items seem puzzling as they must be reconfigured to better match the target set. According to Lardiere (2005) and Choi and Lardiere (2006), linguistic competency, essentially relies on the possibility of the L1 and L2 sharing corresponding morpholexical properties or the possibility of L2 speakers to efficiently review and redistribute existing features into the L2 specifications.

3.6 Initial Mapping and Feature Reassembly

Within the feature reassembly account, variations across languages are not a matter of how specific features are selected, but also how they are bundled up onto lexical items in a language-specific way. On this view, learnability issue emerges not from the selection of new features but from the requirement to reassemble the selected features into the target lexical items (Lardiere, 2009). Given how the same features are assembled in the L1, L2 speakers may encounter challenges whilst allocating a new configuration in the L2 to a feature that presents in their L1 with a different configuration.

The learning tasks in light of the FRH (Lardiere, 2008, 2009) include the reassembly of feature bundles onto new morphololexical components. The process primarily comprises of two main phases. The initial phase 'mapping' concerns perceiving likenesses between the meanings of L2 morpholexical items and L1 morpholexical items. These likenesses result in initial mapping of the whole feature set of the L1 item onto the L2 item; there may be one-to-one, one-to-many, many-to-one, or many-to-many mappings for the lexical items that is perceived to be corresponding (*ibid*). Lardiere (2009: 191) claims that L2 learners will tend to "look for morpholexical correspondences in the L2 to those in their L1, presumably on the basis of semantic meaning or grammatical function (the phonetic matrices will obviously differ)". As mentioned in the preceding section, the process begins with L1 feature sets, once the preliminary mapping is completed, the subsequent step, 'feature reassembly', can occur; features can be substituted, added or deleted, gradually refining the L2 feature set in line with meaning and usage motivated by evidence emerging from the L2 input or instruction. That is, if the initial phase of direct mapping fails, learners are required to revise and modify the feature arrangements they copied from their L1 and redistribute existing features with dissimilar bundles in the L1 and the target language.

According to Gil and Marsden (2013) feature reassembly can be slow or may not take place at all if the evidence for the relevant features is infrequent or inconsistent in the L2 input. L2 speakers might encounter problems when such knowledge is not accessible (Chomsky’s Poverty of the Stimulus, 1965). Hence, if clear evidence in the input is not available, L1-based configurations remain unchanged. This suggests that feature clusters that had been developed in L1 acquisition might be hard to reconfigure, particularly for adult L2 learners and especially in early acquisition stages. Nevertheless, this tendency might eventually lessen as L2 speakers reach advanced proficiency levels with more exposure to the L2 input; however, a complete attainment to the target representations is not always guaranteed (Lardiere, 2008, 2009).

3.7 Earlier Research Testing the Predications of the FRH

The FRH has been investigated in different L2 learnability tasks across different languages: e.g., L2 acquisition of existential quantifiers in L2 English, Chinese, Korean and Japanese (Gil and Marsden, 2013), L2 acquisition of Spanish aspect morphology by native speakers of English (Domínguez *et. al*., 2011), L2 acquisition of expressions of definiteness in Russian by native speakers of English and Korean (Cho and Slabakova, 2014), and L2 acquisition of French pronouns by native speakers of English (Shimanskaya, 2015). The findings of these studies confirm the predictions of the FRH. These four studies will be briefly reviewed in this section.

To start with, Gil and Marsden (2013) in their research examined the L2 acquisition of polarity form *any* in English, and its counterparts (i.e. *wh*-existentials) in Japanese, Mandarin Chinese and Korean. Gil and Marsden (2013) apply the FRH to earlier research on the L2 acquisition of existential quantifiers (i.e. L2 Studies of ‘any’ in L2 Korean by Choi (2009), L2 Chinese by Yuan (2010), L2 English by Gil and Marsden (2010) and Gil *et al.* (2011, 2013)). Gil and Marsden (2013) argue that L1 English and Japanese learners of L2 Mandarin Chinese and Korean have to find out that *wh*-forms can be interpreted as both existentials and interrogatives. Nevertheless, Japanese learners of Mandarin Chinese, have to find out that existentials and interrogatives expressions are morphologically associated. Accordingly, Gil and Marsden (2013) anticipate that English learners of Mandarin Chinese will encounter more challenges than Japanese learners of Mandarin Chinese, as there is no morphological association between existentials and interrogatives in their L1 (i.e. English).

The results suggest that the learners find mapping the L2 Chinese and Korean forms onto existing feature sets in L1 English was more straightforward than mapping L2 English forms onto existing features sets in L1 Chinese or Korean. English and Japanese learners of Mandarin Chinese and Korean mapped L2 *wh*-forms to interrogatives, as it is the case in their L1s (i.e. English and Japanese), and they did not interpret L2 *wh*-forms as *wh*-existentials as they must do to approach the L2 target. Nonetheless, Gil and Marsden (2013) did not find evidence for the expected ease influence for Japanese learners of Mandarin Chinese. This supports Gil and Marsden's (2013) claim about the importance of factors such as meaning and grammatical function to establish the initial mapping. The results suggest that the reassembly task was less straightforward. Gil and Marsden (2013) argue that English and Japanese learners of Mandarin Chinese have dissimilar acquisitional tasks as English and Japanese have dissimilar constraints on the usage of existential quantifiers. Gil and Marsden (2013: 141) drew the following conclusion on the basis of their findings, "the predictions about mapping – the first step of the Feature Reassembly process – were largely confirmed".

Domínguez *et al.* (2011) also examined L2 acquisition of Spanish aspect morphology by native speakers of English. Domínguez *et al.* (2011) examined the L2 acquisition of three imperfective meanings lexicalised by Spanish aspectual imperfective morphology: progressive, habitual and continuous. Whilst Spanish has the same morphological reflex to encode the three interpretations of the imperfect, English, on the other hand, uses periphrases to encode the progressive, the habitual and the past tense to encode the continuous meaning. Despite the fact that both the English and Spanish grammatically express aspect, English makes use of distinctive morphology for progressive and habitual, however it uses the same past form for both perfective (e.g. *He was sick all day*) and continuous imperfect (e.g. *He was sick when I saw* *him*) (p.7). Spanish, on the other hand, shows a morphological distinction between the two aspects: perfect and continuous imperfect, respectively (e.g., *El estuvo enfermo todo el dia vs. El estaba enfermo cuando lo vi*) (p.7). A context/sentence matching task was administered to a total of 60 English learners of Spanish (i.e. beginners (*n*=20), intermediate (*n*=20) and advanced (*n*=20)) and a control group of native speakers of Spanish (*n*=15).

The results of Domínguez *et al.* (2011) suggest the continuous meaning demanding feature reassembly was challenging even for the advanced group. This suggests that feature reassembly is more challenging than the initial mapping of L1 expressions to the target corresponding. However, despite their different proficiency levels, the L2 learners performed in a target like manner on the progressive and the habitual meanings that perhaps were directly mapped from their L1 (i.e. English). The findings of Domínguez *et al.* (2011) provide empirical evidence of the existence of the initial phase (i.e. mapping) throughout L1 transfer and hence, strongly support the prediction of the FRH. Domínguez *et al*. (2011: 12) drew the following conclusions:

> [W]e argue that this result can be better explained by the differences in the way that the native and the target grammars express each of the three aspectual meanings morphologically than by the availability of a particular syntactic feature. We also argue that these results, and in particular the results of the advanced group, are difficult to explain by a feature-selection account since the continuous meaning, which receives significantly lower scores, is also available in the learners' L1. The persistent problems observed in the advanced group do not seem to be determined by feature selection (use of two out of three meanings associated with the imperfect are targetlike) but by whether features are assembled into morphological configurations in a different way in both languages.

Cho and Slabakova (2014) also carried out an extensive research to examine the L2 acquisition of definiteness in Russian by English and Korean native speakers. Russian does not encode definiteness morphologically hence, it does not have articles. In Russian, definiteness is indirectly encoded by means of word order and adjectival possessors. Two groups of L2 learners participated in the experiment: L1 Korean learners of Russian (*n*= 53) and L1 English learners of Russian (*n*= 49), as well as a control group of native speakers of Russian (*n*= 56). Just like Russian, Korean does not encode definiteness morphologically; it does not have articles also. English lexicalises definiteness with the use of articles in contrast to Russian and Korean. Participants were invited to evaluate the acceptability of a set of sentences given in context.

Cho and Slabakova (2014) argue that reconstructing features that are encoded overtly in the learners' L1 and mapping these features onto those that are covertly or indirectly encoded in the target language will pose more difficulty than redistributing features in the reverse acquisition route. The results suggest that Korean learners even at the advanced level did not show target-like performance. Their performance on word order suggests that the most difficult acquisition task is to remap a covertly encoded feature in both the L1 and L2 as it necessitates reassembly. Findings of the research suggest that it is difficult to acquire representation for a feature when it is encoded overtly in the learners' L1 but covertly in the target language rather than when a feature is encoded morphologically in both languages. Furthermore, the findings put forward that the most difficult acquisition task is when a feature is marked indirectly in both the L1 and the target language but feature reassembly is essential.

Recently, Shimanskaya (2015) carried out a study on the L2 acquisition of four 3rd person singular French object pronouns (i.e. *le, la, prep + lui, prep + elle* (p. 69)) by native speakers of English. English lexicalizes the feature of [±Human] and semantic gender, French, on the other hand, lexicalizes grammatical gender, but not [±Human]. Despite the fact that both languages lexicalize the feature of grammatical case, French lexicalizes more case values than English. The experimental tasks were a grammaticality judgment task with correction, a self-paced reading task and a picture selection task. A group of L2 learners of French (*n*=87) living and studying in the United States as well as a control group of native speakers of English (*n*=43) living and studying in France participated in the experiment.

Shimanskaya (2015) claims that [±Human] feature of the learners' L1 (i.e. English) would be transmitted into the L2 (i.e. French) on the basis of the semantic distinction between clitic and strong pronouns. To approach target like representations of the French pronouns, English learners of French are required to review the structure of the pronominal scheme in their L1. The results provide evidence for the initial mapping between the learners’ L1 and the target pronouns. The reassembly that followed the mapping stage involved signs of addition for L2 case values and grammatical gender. Moreover, the results suggest that they were able to add in grammatical gender into the L2. Shimanskaya’s (2015) findings provide ample support to the FRH that puts forward specific predictions with regard to L1 transfer.

The aforementioned studies concluded that the FRH (Lardiere, 2000, 2007, 2009) appear to be a promising account for explaining variability in morphosyntactic domain. The findings of these studies strongly suggest that the FRH explains L2 speakers’ divergent performance in terms of feature-reassembly, rather than parameter resetting. Recently, Cho and Slabakova (2015: 20) state that “unlike the theories of L2 development (i.e. the Interpretability Hypothesis, the Missing Surface Inflection Hypothesis, the Interface Hypothesis), the Feature Reassembly model allows us to formulate the L2 learning task and make precise predictions for how the learner’s L1 plays out in L2 grammatical feature acquisition”. Within generative accounts of L2 acquisition, adult L2 speakers’ divergence from an L2 grammar is accounted for in terms of a speaker’s failure to switch from the L1 value of a given parameter to the L2 value. Nevertheless, as indicated by Lardiere (2005, 2007, 2008), because parameter resetting should encompass unexpected changes in a speaker’s internal grammar, persistent variability in stable stages of L2 acquisition is hard to explain through the ‘parameter resetting’.

Taken together, if learnability issues in L2 acquisition are peripheral to the computational system, the question of whether variability in L2 grammars can be adequately explained by a feature availability account must be intensively investigated using a wide range of structures as evidence. According to Stringer (2012), even though less consideration has been given to variability in the open-class lexicon, it is evident from studies by Jackendoff (1990) and Pinker (1989),that syntactic realisation are established by meaning-form relationships, which are subject to cross-linguistic variation. Consistent with the minimalist account of the semantic features, and an extension of work by Stringer (2005, 2007, 2012), I argue that variation in the grammar of motion events in L2 English and Arabic originates from the dissimilar ways in which the semantic features are morphololexically realised.

Hence, following the lines of experimental studies carried out by Stringer (2012), the present study tests the predictive power of the FRH and offers further evidence from the L2 acquisition of Arabic and English spatial morphology. This area appears ideal for investigating the role of feature reassembly in L2 acquisition, as knowledge of spatial morphology requires L2 speakers to remap semantic notions in terms of the directional status of events onto different and language specific morpholexical configurations.

3.8 Conclusion

This chapter outlined the key theoretical concepts upon which the research is constructed. It has extensively reviewed the Feature Reassembly Hypothesis articulated by Lardiere (2005, 2008, and 2009). Compared to other parameter resetting approaches, FRH appears to offer a better account of persistent variability in interlanguage structures, particularly where both the L1 and L2 share the same features.

However, Lardiere’s insights also raise significant questions regarding the value of feature-bundles in L2 acquisition. One question that must be addressed is to what extent variation in L2 syntax can be explained by a feature-based accessibility description, which must be intensively investigated using a different range of language properties. Cross-linguistic variations in the lexicalization of motion events identified in Chapter 2, present a fruitful field for examining L2 acquisition of these constructions from a feature-based standpoint. This account suggests that L2 speakers of Arabic and English might be challenged with reallocating the relevant features related to the semantic components in their L1 onto different surface elements in the L2. The following chapter will review the available research on L2 acquisition of motion constructions.

Chapter 4. Investigating the L2 Acquisition of VPCs: Previous Research

4.1 Introduction

A considerable amount of literature has been published on the L2 acquisition of VPCs with temporal, locative, directional and even idiomatic meanings. Smith (1925: 255), in his comment on English VPCs, states that “it would almost seem as if these particles and verbs of action took the place in our northern speech of the gestures in which our intercourse is lacking, but which are so vivid an accompaniment to the speech of the Latin peoples, whose languages are poor in the emphatic use of particles”. Much of the previous research on the L2 acquisition of VPCs is mostly in contrastive cognitive analysis, and some is from a generative perspective as used by the present study. Evidence from both contrastive research and generative research that looked into the L2 acquisition of VPCs suggests that L1 transfer plays an important role in L2 development.

This chapter includes a review of the available academic resources addressing the topic within the current field of interest. The review begins with some studies on the L2 acquisition of motion constructions before discussing the Arabic-English situation. The chapter ends by looking at the research questions that drove this study, and by outlining the theoretical assumptions that are empirically tested in the latter chapters of this thesis. Furthermore, there is a specific emphasis on the main contribution of the study, i.e., the examination of the underlying representation of English and Arabic spatial properties in the L2 acquisition context.

4.1.1 On the L2 acquisition of motion constructions

As discussed in Chapter 2, languages vary widely with respect to the expression of motion in events. In some languages (e.g., English), manner of motion is expressed in verbs, whilst path of motion is expressed in particles. In other languages (e.g., Arabic), however, the verb typically carries path, while manner is expressed in other lexical slots (e.g., gerunds).

As far as L2 acquisition studies are concerned, there is some evidence that speakers of Verb-framed languages may struggle to acquire the relevant semantic meanings of

Satellite-framed languages - English motion VPCs, for example. Bo (2011), for instance, investigated Chinese and English differences in the lexicalization of motion events, and observed the impact of these differences on Chinese speakers' use of VPCs based on corpus data. This contrastive research demonstrated that the L2 speakers' use of VPCs was low compared to that of the native speakers. The results suggest that, in general, the non-target like usage rate for the L2 speakers' use of VPCs was high. Overall, the highly significant impact of English-Chinese differences on lexicalization patterns of motion events was evident in the Chinese speakers' use of English VPCs. This impact appeared to lessen with an increase in the speakers' proficiency levels, however.

Motion lexicalizations have been investigated in different L2 learnability tasks across different languages: e.g., L2 acquisition of English motion constructions by Italian and Japanese learners (Pavesi, 1987; Inagaki, 2001, 2002), L2 acquisition of Spanish motion constructions by English learners (Navarro and Nicoladis, 2005) and L2 acquisition of Japanese motion constructions by English learners (Stringer, 2012). The following sections in this chapter will describe the aforementioned studies on the L2 acquisition of motion lexicalization across different languages before I move on to the Arabic-English context.[68]

4.1.1.1 Pavesi (1987) and Inagaki (2001, 2002)

Learners from different linguistic backgrounds learning the same L2 may encounter different acquisition tasks in order to accommodate the target motion constructions. Two interesting studies to be discussed here are that of Pavesi (1987) and Inagaki (2001, 2002). Both works addressed the L2 acquisition of English motion constructions and examined participants who were native speakers of Verb-framed languages (Italian and Japanese, respectively).

Pavesi (1987) investigated the difference between English and Italian with respect to the use of particles that indicate directional and/or locational readings. Italian does not discriminate between locational and directional particles. The Italian counterpart

[68] Studies are reviewed in chronological order (from oldest to most recent).

to the English particle *in* holds both the two meanings (i.e. locational and directional), typically located on the verb (*ibid*.). Pavesi (1987) investigated the construction of nine English spatial predicates by Italian speakers of English. The results indicated that the particle *in* was overused by the Italian learners of English, and, thus, the Italian learners used the particle *in* in both locational and directional contexts. Pavesi (1987) suggests that due to the variety of uses of *in* in their L1, and since they have probably encountered much informal English input with the particle *in* in both locational and directional contexts, learners do not recognize that the English particle *in* cannot occur in both situations. Pavesi (1987) claims that, since inappropriate use of the particle *in* in directional contexts will infrequently impede perception, correction by native speakers of English is uncommon. As a result, learners would need negative evidence to stop using *in* in directional contexts. The author concludes that what Italian learners must learn is that the English particle *in* cannot occur in both contexts.

In another study, Inagaki (2002) investigated the difference between English and Japanese in relation to the allocation of manner verbs (e.g., *swim*) with directional/locational particles (e.g., *under*) and directed motion verbs (e.g., *go*) in directional constructions. Inagaki (2002) assessed whether Japanese speakers could distinguish between two meanings (i.e. locational and directional); the directional reading of manner verbs in English (e.g., *swim*) with locational/directional particles (e.g., *under*), as in *John swam under the bridge*, where it can be either locational or directional (2002: 3). On the other hand, the Japanese equivalent of the same verb allows only a locational reading, since Japanese seems more constrained than English in permitting only directed motion verbs (e.g., *go*) to occur with a phrase encoding a goal. This means that, in English, both forms can occur in a directional context, whilst only the directed motion verbs can occur in Japanese.

Inagaki (2002) argues that the L2 acquisition task requires the modification of a 'subset' to a 'superset' structure, assuming that English has a more comprehensive variety of motion verbs than Japanese does. Inagaki (2002) argues that Japanese learners of English would find some particles difficult to master as they can be ambiguous, indicating both directional and locative meanings (e.g., *behind* and *under, in* and *on*). They would find a sentence like *John swam under the bridge*

(2002:15) ambiguous in its meaning. Inagaki (2002) claims that Japanese learners of English will have difficulty with the directional meanings as a result of their failure to notice positive evidence in the L2 input.

In Inagaki's study, a total of 35 intermediate Japanese learners of English at Osaka Prefecture University, and 23 native speakers of English were tested with the use of a written picture-matching task. In the test items were English sentences including manner verbs with particles that were ambiguous between directional and locational readings. Each test sentence was paired with two pictures - one depicts a locational context, whilst the other details a directional context. The results demonstrate that, in contrast to native speakers of English, Japanese speakers of English were consistently unsuccessful at recognizing the directional reading. Inagaki (2002: 3) proposes "positive evidence need not only be available but also be frequent and clear in order to be used by L2 learners to broaden their interlanguage grammar". The results, as expected, suggested that the Japanese learners found these particles ambiguous as either locational or directional in 67% of cases. Accordingly, Inagaki (2002: 21) argues that the learners may have "failed to notice positive evidence for target properties and thus to broaden their interlanguage grammar".

In one more study by Inagaki (2001:17) that included more advanced participants and a different task, it was found that the speakers' wide acceptance of the manner of motion V+PPs, e.g., *John walked to school*, indicated that they could acquire this construction as a result of the obtainability of positive evidence from L2 input for the target form, although these are deemed unacceptable in their L1. Inagaki (2001: 18) claims that the learners' apparent attainment in mastering these constructions supports the assertion that "L2 acquisition of argument structure is not difficult when the L2 is a superset of the L1, due to the availability of positive evidence". Inagaki (2001) also claims that Japanese learners' accommodation to the target patterns will increase with more exposure to these kinds of sentences. The L2 acquisition tasks given to the Japanese learners here are exactly the reverse of those given to the Italian learners in Pavesi's (1987) study.[69]

The studies mentioned above are thought-provoking in the sense that they make dissimilar predictions with regards to what L2 speakers will initially assume about a target construction, and what it is that they essentially must acquire based on the nature of their L1.[70] The dissimilar speculation concerning the speakers' use of particles may stem from differences in the constructions of the speakers' L1s: Japanese and Italian. Pavesi (1987) claims that Italian learners will maintain that the English particle *in* can occur in both contexts, as is the case in their L1. Inagaki (2001, 2002), on the other hand, claims that Japanese learners will speculate that the English particle *in* can only occur in locative contexts, as is the case in their L1. Inagaki (2001, 2002) also claims that Japanese learners who hypothesise that the particle *in* and other 'ambiguous' particles can occur in locative contexts must learn that it can occur in both locative and directional contexts. For Inagaki (2001, 2002), it seems that the acceptance of the particle *in* in directional contexts would suggest acquisition of the English constructions. Pavesi (1987), in contrast, assumes that the Italian speakers will hypothesise that the particle *in* can be used in both directional and locative contexts in their L1, and, hence, must learn that this particle can only occur in directional contexts.

To summarise, Pavesi (1987) claims that Italian learners will judge that the particle *in* is ambiguous, just as it is in their L1, and must know that it is not in the target language. Inagaki (2001, 2002), on the other hand, claims that Japanese learners will speculate that *in* is not ambiguous, as it is only indicative of one meaning (i.e., locational) in their L1. Therefore, they need to know that it might encode locational

[69] Part of the L2 acquisition tasks of the Arabic learners of English in this study are similar to those of the Italian learners in Pavesi's (1987) study, whereas part of the L2 acquisition tasks for the English learners of Arabic are similar to those for the Japanese learners in Inagaki (2001, 2002) studies. For discussion, see Chapter 7.
[70] These two tasks are 'initial mapping' and 'feature reassembly', and they will be described later in this chapter.

or directional meaning. What both kinds of L2 learners are required to do in order to accommodate the target structure is referred to as 'restructuring'.[71]

4.1.1.2 Navarro and Nicoladis (2005)

In line with Talmy (1985, 2000), English and Spanish exhibit dissimilar patterns for motion events. This variation makes it highly interesting to investigate whether L2 Spanish learners at an advanced level of proficiency in English express motion events which are influenced by their L1 patterns. Navarro and Nicoladis (2005) empirically compared motion descriptions (oral production) generated by children and adults in two different languages, Spanish and English. They carried out a study on ten L1 English-L2 proficient Spanish speakers at the University of Alberta to investigate whether advanced L2 Spanish speakers lexicalize motion events using the same templates as their L1. The participants were invited to watch two videos and then asked to narrate the cartoon stories verbally in Spanish to a native speaker of Spanish. The prompting strategy was two video scenes from the Pink Panther cartoon (each 2 minutes long), presented in order. The first story was about the Pink Panther coping with a cuckoo clock that he had purchased to wake him up in the morning. The second story portrayed the Panther attempting to take over a jet plane.

The results suggest that the L2 Spanish speakers had almost fully attained the L1 Spanish pattern for the lexicalization of motion events. They described the videos emphasizing the most salient facet of motion in Spanish (i.e., path). Around 69% of the 316 L2 verbs formed were path verbs. The results for the target post-verbal phrases were consistent with previous findings that showed that L1 Spanish speakers tended to use these constructions to convey locational or directional meanings. The L2 learners, however, produced fewer post-verbal manner forms than the L1 group. Navarro and Nicoladis's (2005) results suggest that they produced this dissimilarity by constructing more manner verbs. Interestingly, the L1 speakers produced exactly the reverse patterns. They constructed fewer manner verbs, but they adjusted well to this by producing a large number of post-verbal adverbials and gerundives.

[71] The word 'restructuring' stands for reallocating meanings onto forms, the so-called feature reassembly in Lardiere's (2000, 2005, 2009) words.

Navarro and Nicoladis (2005) suggest that, although there are still some hints of English in these L2 Spanish descriptions (e.g., forming path intransitive verbs heading a postverbal phrase, unlike the native speakers who form bare path intransitive verbs), these learners showed a tendency towards the complete acquisition of Spanish lexicalizations of motion events. The authors also suggest that this opinion is highly relevant, having taken into consideration that motion verbs are not formally accessible to the L2 learners as part of the L2 Spanish curriculum. Hence, L2 learners are implicitly exposed to this form of input by communication with their instructors or with native speakers of Spanish in naturalistic conditions. Considering that motion is a common theme in daily communication (Talmy, 1985, 2000), Navarro and Nicoladis (2005) suggest that the L2 learners have several opportunities for negotiation of meanings that involve movement. Consequently, the L2 meaning becomes clear and understandable for the learners. This allows them to naturally master the structural mapping which expresses this meaning at the surface level (Schmidt, 1990). Navarro and Nicoladis' (2005) study provided evidence of an L2 acquisition process that involves "reformulation" of the meaning-in-form configuration (Talmy, 2000).[72]

4.1.1.3 Stringer (2005, 2007, 2012)

L2 acquisition of motion VPCs by adult learners has been broadly studied from surface level perspectives. However, of all the investigations that have been conducted so far, the only study which discusses spatial morphology from a generative perspective is by Stringer (2012). The author investigated the role of spatial feature reassembly in L2 acquisition. The Feature Reassembly Hypothesis had been considered only in relation to 'closed-class lexicon' items previously. Stringer (2012) expanded (re)assembly in the L1/L2 lexicon, as proposed by Lardiere (2009), into the open-class morphology and motion events in particular. He conducted an experimental study on thirty-one French subjects, split into two groups of children of different ages so as to track any potential developmental configurations with respect to parameter-setting, and a third group of seven adults functioned as a control group. Participants were monolingual and inhabitants of Brittany, France.

[72] See footnote 70.

In Stringer's (2012) study, responses with directional particles were prompted with the use of picture-book showing motions event in a narrative with two semantic constituents, Manner and Path. The narrative depicted a monkey moving through a number of different spatial settings. The story began with a monkey sitting in a tree-house with a banana; a parrot stole the banana and took to flight, upon which the monkey chases the parrot. In all scenes, the monkey tracks a specific path of motion (e.g., *up, down, under, over, below,* etc.), tackling the hurdles he comes across, and displaying a specific manner of motion (e.g., *jumping over a rock, running under a bridge,* etc.).

Stringer (2012) adopted a prompting method (e.g., for the productions of directional predicates) if participants did not give a description of the path of motion that the monkey followed and instead described the manner of motion (e.g., *the monkey jumps over the rock*), or described the monkey's feelings (the *monkey is very cross*) (Stringer, 2012: 263). Stringer's (2012) stimulating method varied from much earlier research on motion events, which concentrated on narrative methods (e.g., Berman and Slobin, 1994). According to Stringer (2012), such methods would be unsuitable for narrative studies due to the recurrent disruptions in the narrations. Nevertheless, this kind of stimulus allows for the systematic attempting of specific lexical and syntactic forms, with the aim of each stimulus prompting, as a minimum, a single directional particle from each participant.

Stringer's (2012) results showed that French presents both a Satellite-framed pattern along with a Verb-framed syntax in spite of Zubizarreta and Oh (2007) claiming that French is a Verb-framed language. Such variations make it hard to categorize French as either a Verb-framed language or a Satellite-framed language. From a feature-based standpoint, Stringer's findings stress the significance of the lexicon in explanations of syntactic divergence. He demonstrates that syntactic divergence of motion events in French at all phases of development corresponds to variations cross-linguistically.

As far as L2 acquisition research is concerned, Inagaki (2001) claims that English allows both Satellite-framed and Verb-framed patterns; on the other hand, Japanese permits only Verb-framed patterns, thus representing a subset issue of learnability.

Stringer's (2012) claims are more compatible with Pavesi's (1987) claims with respect to the underlying presentation of English particles on the basis of their usage in directional contexts. According to Stringer (2012), English learners of Japanese will accept sentences like that in (61) below, and will never encounter positive evidence that could possibly lead them to rearrange the structure.

(61) **John ga gakko ni aruita.*
John NOM school P[LOC] walked
'John walked to school.' (Stringer, 2012: 267)

Nevertheless, if the feature-based account of motion patterns that is suggested by Stringer (2012) is on the right track, the L2 implications indicate a learnability challenge. According to Stringer (2012), the French data provide evidence that parameter settings cannot account for cross-linguistic variability in the realm of motion lexicalisation. According to Stringer (2012: 267):

> [W]hat these English-speaking learners of Japanese must come to know is not the simple setting of a parametric switch for the whole language, but the particular lexical semantics of all the verbs, adpositions and locative nouns that might be combined in the expression of motion events.

Stringer (2007) argues that L2 learners' non-rejection of sentences of the same type as (61) may perhaps be a sign of 'lexical transfer'. English learners of Japanese assume that the Japanese verb *aruku* directly parallels the English verb 'walk', and that the Japanese morpheme *ni* directly parallels the English predicate 'to'. According to Stringer (2012), the proposed correspondence in both cases is incorrect. The English verb *walk* is 'Path-incorporating', [v, manner, path], and English *to* is directional [v, path], whereas the Japanese verb *aruku* is 'non-Path incorporating', [v, manner], and the Japanese morpheme *ni* holds [p, locative], which only encodes directionality when joined with specific verbs of motion.[73] According to Stringer (2012), a non-Path-incorporating manner of motion verb cannot connect with predicates [p, locative] to reflect a directional reading. Stringer (2012) explains L2

[73] The presentation for feature-lexicon clusters, e.g., <V, [MANNER] __ (PATH)> used by Stringer (2012) for his example has been amended to be consistent and to match the other ones used in this thesis.

non-rejection of sentences such as (61) through its occurrence in the input. Stringer (2012) claims that not all manner of motion verbs are of the same kind. Hence, L2 learners might over-generalize based on those manner of motion verbs in the input which do acceptably join with locative particles for a directional reading. Stringer (2012: 268) furthermore provides evidence from the Japanese data (2005, 2007) in which 68 arrangements of this kind were evident in monolingual speakers' production (e.g., *korogaru* 'roll', *hashiru* 'run', and *tobu* 'fly') as example (62) demonstrates.

(62) *yama no ue kara korogatta*
mountain GEN top from rolled
'He rolled from the top of the mountain.' (Stringer, 2012: 268)

According to Stringer (2012), L2 learners have to gain the relevant knowledge that, although Japanese verbs of motion such as *korogaru* 'roll' are Path-incorporating and reflect the feature specification [v, manner, path] in the same way their English equivalents do, other Japanese verbs such as *aruku* 'walk' are non-Path-incorporating: [v, motion, manner]. Furthermore, learners must identify that the Japanese morpheme *ni* in (62) above is a locative adposition with [p, location] that is used as an equivalent to both English *at* [p, place] and *to* [p, path]; it does not reflect their L2 feature specification. Stringer (2012) argues that the semantic features of motion events must be reconfigured before learners figure out how particles may be grammatically joined with verbs.

Stringer (2012) draws out two main implications of transfer of lexicons and the morpho-syntactic feature reassembly account for L2 acquisition. Firstly, the structure of motion events is linked with lexical acquisition; independently, acquistion of these properties is expected to take several years. Secondly, there is no recognized parameter resetting in L2 acquisition. Consequently, no subset difficulty is involved. Stringer (2012) argues that, in contrast to earlier claims, L2 learners might adjust the meaning of the target lexical items and approach the patterns of motion events in the target language.

To conclude, the aforementioned studies (Pavesi, 1987; Inagaki, 2001, 2002: Navarro and Nicoladis, 2005; Stringer, 2005, 2007, 2012) address the underlying presentations of motion lexicalisations, and outline the learnability of tasks that L2 learners are likely to encounter. The studies also provide predictions in terms of learners' final attainment. The research sheds light on a different lexicalist account in which all [path] representations are established at the level of single lexical elements. Additionally, these studies further emphasized the role of both positive and negative evidence in L2 input and/or explicit instruction in their accounts of L2 learners' knowledge.

4.2 Lexicalization of motion events: the Case of Arabic

In Chapter 2, the asymmetry between Arabic and English was discussed; English speakers are more likely to overwhelmingly make use of manner of motion than Arabic speakers whilst describing motion events (e.g., *run*). It can be argued that Arabic speakers use more path verbs (e.g., *y'akhruj* 'exit'). Nevertheless, Chapter 2 has also shown that, with a number of motion events, Arabic speakers strongly tend to use manner verbs in a similar way to English speakers.

Motion constructions are a fairly neglected issue in the Arabic context. To the author's knowledge, to date, there are no L2 acquisition studies that address the constructions of motion events, or attempt to anticipate acquisition tasks challenging Arabic learners of English, or formulate predictions for their attainment from a feature-based standpoint in a way similar to those found in studies on other kinds of learners (e.g., Pavesi, 1987; Inagaki, 2001, 2002; Stringer, 2005, 2007, 2012). The present study, then, takes the first step to anticipating learnability tasks that might challenge Arabic learners of English and English learners of Arabic, and, hence, formulating predictions for their attainment from a feature-based perspective. This study investigates whether L2 speakers and native speakers demonstrate dissimilar constructions of motion events, and whether variability in the realm of motion lexicalization in the Arabic-English context can be captured by the feature-based account. The following section reviews some studies on the L2 acquisition of VPCs of all types due to the lack of specific research on motion events with directional meanings by Arabic learners of English and English learners of Arabic.[74] No studies of English learners of Arabic are included because there are no currently existing studies.

4.2.1 The most common non target-like constructions made by Arab speakers of English: The findings for precursors in the area

For many years, Arab linguists have examined countless problems encountered by Arabic speakers of English, especially with an emphasis on the L2 lexical, phonological, and syntactic knowledge of speakers of this origin (e.g., Abdul Haq, 1982; Zughoul and Taminian, 1984; Abbad, 1988; Wahba, 1998; Rabab'ah, 2003; Mourtaga, 2004, amongst many others). Moreover, a number of linguists, such as Abdul Haq (1982), Abbad (1988), and Wahba (1998) have pointed out that Arabic speakers of English are challenged with respect to both oral and written forms. Mukattash (1983), Suleiman (1983) and Zughoul (1983) have agreed on a number of causes that they believe underlie the problems faced by Arab speakers of English. They have attributed non-target like forms to the inappropriateness of English curricula, a lack of proper learning environments, and the unproductivity of teaching methodology. Obeidat (1986) has explored syntactic and semantic non-target like forms in the written production of Arab speakers of English and found that the sample revealed interlingual (L1) impact, especially regarding non target-like usage of determiners and particles, word order, and verbs.

Arab linguists agreed that the majority of Arab learners' non-target like forms observed in writing mostly fall into the category of grammar (Tahaineh, 2010). Hashim (1996) reviewed and analysed several studies carried out on Arab learners' non target-like syntactic usage, and pointed out that they can be classified into the following syntactic subclasses: particles, verbs, articles, and conjunctions, etc. Kharma and Hajjaj (1997) conducted a study that supports the previous findings, and demonstrates that Arab learners' non target-like forms observed in writing are syntactic, and errors occur particularly with particles. Many recent studies examining Arab learners' non target-like syntactic production provide evidence that verbs and

[74] For studies on motion events in Arabic from a cognitive-typological viewpoint, refer to the works of Al-Qarny (2010), Maalej (2011), and Al-humari (2012).

particles are the most challenging areas for learners (Mourtaga, 2004; Mohammed, 2005; Zahid, 2006). Furthermore, Khan (2011) carried out a study to explore the problems that Saudi Arabic university undergraduate students encounter when learning English, and concluded that they are challenged by a number of issues in grammar (e.g., doubling of particles, among others) and attributed the non-target like usage of these forms to L1 interference.

Diab (1997), likewise, found evidence of negative transfer of the L1 in 73 written compositions from Arab Lebanese learners of English. AbiSamra (2003), on a similar note, analysed non target-like forms observed in ten essays written in English by Arab Lebanese students in the ninth grade, and found that one of the most common non target-like forms they produced is in the domain of particles, which the scholar also attributed to negative transfer from the learners' L1. Habash (1982) also analysed common errors in the use of English particles in the written production of United Nations Relief and Works Agency (UNRWA) students at the end of the preliminary cycle in the Jerusalem area. The author found that the majority of non-target like forms was a result of the interference of L1 (Arabic). However, Stenström (1975) argued that an assessment of the non-target like forms made by Arab learners of English indicated that most of these forms did not influence comprehension or communication of a message.[75]

Drawing upon Corder (1974, 1975) and Brown (2000), the majority of studies on the L2 acquisition of English VPCs (e.g., Scott and Tucker, 1974; Hamdallah, 1988, amongst others) have classified L2 speakers' non target-like forms into three types: (1) particle-substitution, (2) particle-addition, and, (3) particle-omission.[76] Arabic learners of English produce non target-like constructions that result from swapping a particular particle with another one that is unacceptable, or that involve the addition

[75] However, there are some cases where the Arabic learners' use of the L2 construction might lead to a misunderstanding in a similar way to Pavesi's (1987) Italian learners if Arabic learners overuse the same particle in different contexts. For example, they might overuse the particle *on* in both locational and directional contexts. For further clarification, see examples (78-79) in section 4.4.1.

[76] According to Scot and Tucker (1974), substitution errors are cases where the wrong particle has been used, addition errors represent cases where unnecessary particles (one or more) have been used in unnecessary positions, and omission errors indicate cases where required particles have been deleted where otherwise they would be necessary.

of a superfluous particle to the construction, or that involve leaving a particle off the construction. The following sections report, in more detail, studies on L2 acquisition of English VPCs by Arabic learners that have been carried out in order to explore lexical transfer from Arabic to English.

4.2.1.1 Hasan and Ho Abdullah (2009)

Hasan and Ho Abdullah (2009) carried out a study in order to identify problems related to the use of particles which Arab learners may encounter when translating into English or vice versa. A total of 20 Arab Iraqi male students at the University of Putra, Malaysia were randomly selected and invited to answer some questions and translate prepared texts from Arabic to English. Hasan and Ho Abdullah (2009) found that Arab learners showed a tendency to unconsciously impose L1 patterns when they expressed themselves in spoken or written English. Hasan and Ho Abdullah (2009) argue that Arab learners always fall back on a one-to-one literal translation before they form VPCs.[77] Consequently, non-target like constructions result from L1 interference. Furthermore, recalling the differences between English and Arabic constructions shown in Chapter 2, these differences make it more problematic to choose the correct particle.

Hasan and Ho Abdullah (2009) claimed that Arab learners might translate an English particle into a similar particle, a dissimilar particle, or a zero-particle (Ø). For example, the Arabic particle *ila* ‘to’ designates movement of an object in the direction of a specific point. It thus has both the meaning and the range of usage of its English counterpart *to* as illustrated in example (63):

(63) Bassam went to the seashore. (Hasan and Ho Abdullah 2009: 9)

On the other hand, the Arabic particle *min* ‘from’ has several different English counterparts. It designates a separation from a point and it might be translated by the following English particles: *from, away from, out of* and *off* (Hasan and Ho Abdullah, 2009). The authors claim that, when Arabic learners translate from Arabic into English, their L2 productions appear to be in line with the Arabic structural

[77] This procedure is called ‘initial mapping’ according to Lardiere’s (2000, 2005, 2009) terminology.

system. They argue that Arab speakers of English are likely to find similar difficulties in the use of English particles because, although Arabic and English particles share some characteristics, they vary in both number and usage. Hasan and Ho Abdullah (2009) state that there are only twenty particles in Arabic, just as Abbas (1961) claims, whereas there are one hundred fifty particles in English, according to Josef (2012).

Hasan and Ho Abdullah (2009) concluded that the main problem for Arab learners of English emerges from the fact that not every Arabic particle has a particular counterpart in English and *vice versa*. Moreover, every English and Arabic particle has a fixed meaning and distribution, specifying only temporal or spatial meaning, or, following or preceding a definite lexical item. For instance, the Arabic particle *fii* 'in' is commonly used in English as a counterpart to the following particles: *in, into, at, on, during,* and *inside,* and also has a zero equivalent (Ø). Thus, this particular particle has great semantic power in both Standard and Colloquial Arabic language use (*ibid*.). Hasan and Ho Abdullah (2009) claim that the particle *fii* is the 'filter' through which all these English counterparts must go. It can be used to represent temporal as well as spatial meaning, and occurs with several different Arabic words in abstract and figurative usages. However, along with other Arabic particles, it might impede the choice and use of English particles as (64) show.

(64) a. I slept in bed.[78]
b.*Spring begins in the first of March. (on)
c.*In the end of the journey we bought fruit. (at)
d.*In my last holiday I did many different things. (during)
e.*I went home in happily. (Ø)
f.*The plane is flying into the sky. (in)

(Hasan and Ho Abdullah, 2009: 3)

According to Hasan and Ho Abdullah (2009), the first English particle that is likely to be produced as the counterpart of *fii* is 'in', as exemplified in (64a) where it is appropriately used. Nevertheless, it is often inaccurately used instead of *on, at,*

[78] I tried my best to pick examples with motion events from earlier research on general VPCs. However, given that there were only few examples with directional particles in these studies, I reported other examples in this section that include particles with locational, temporal or figurative meanings to explain a similar issue.

during, Ø and *into* as in examples (64b-f). Arab speakers of English may use the particle *fii* 'in' and all its other counterparts interchangeably (i.e., as a free-choice particle). Another issue is that Arab speakers of English might use or delete certain English particles according to the Arabic system when translating literally. Therefore, as a result of literal translation, when the Arabic context requires a particle (or requires none), Arab speakers of English may generate inappropriate responses as demonstrated in example (65):

(65)*The boy enjoyed in/from/with the film.

(Hasan and Ho Abdullah 2009: 4)

Hasan and Ho Abdullah (2009) explained that the literal translation of sentence (65) is either 'the boy enjoyed the film'. They indicated that, in Arabic, it is essential to add a particle to form a relationship between the enjoyment and the film. Without such a particle, the Arabic sentence makes no sense. Consequently, Arab learners of English are likely to add superfluous particles when they express themselves in English (*ibid*.). However, they may also delete essential particles as shown in example (66):

(66) a.*When we arrived ^ Jericho we bought fruit. (*in*)
b.*I must stay at the university ^ eight years. (*for*)
c.*I saw the dome ^ the rock. (*of*)

(Hasan and Ho Abdullah 2009: 4)

Based on the examples in (66), according to Hasan and Ho Abdullah (2009), the particles *in*, *for*, and *of* must be inserted to create an association between the action and the object. Without these particles, the sentences make no sense in English. However, the literal one-to-one translations of these sentences do not require such particles because the link occurs without them in Arabic (*ibid*).

Hasan and Ho Abdullah (2009) pointed out that the Arabic particle *9la* is used as a counterpart in place of the following English particles *on, over, above, at* and *onto.* Arab learners of English think that these particles have the same meaning and usage as their English counterparts. They commonly fail to differentiate between them (*ibid*.). They might just use the particle *on*, as shown in the examples (67).

(67) a. I saw a football match on TV.

b.*The bird is flying on my head. (*above*)
c. *He jumped on the wall. (*over*)
d. *We sat on the table. (*at*)
e. *I will come on seven o'clock. (*at*)
f. *The crab was washed up on the shore. (*up onto*)

(Hasan and Ho Abdullah, 2009: 6)

As shown in example (67a), the first English particle that is often used as the counterpart of the Arabic particle *9la* is 'on'. It is inaccurately used instead of the particles *over, onto, above* and *at,* as in examples (67b-f). The English counterparts to the Arabic particle *9la* are 'on', 'over', 'above' and 'onto', then. The particle *on* indicates a locative surface and is commonly used to denote an association between two objects that can touch it; one object is higher than the other. Unlike *on, above* and *over* are used also to indicate an association between two things but does not touch it. The particles *onto* and *on* designate surface locatives, whereas the particle *to* designates a directional movement (Hasan and Ho Abdullah, 2009).[79]

4.2.1.2 Asma (2010)

On a similar note, Asma (2010) has investigated whether Algerian learners of English transfer particles from standard Arabic into English. A total of 30 students from the third year in the English department, Mentouri University, Constantine, Algeria were invited to participate in the experiment. The test contained 20 sentences and the participants were asked to fill in the gaps with suitable particles that express spatial (i.e., locational or directional) or temporal meanings. The results suggested that Algerian learners transferred particles not only from MSA, but also from Algerian Arabic and French.

Asma (2010) claimed that, when there are similarities between English and one of the Arabic varieties positive transfer occurs, however, negative transfer takes place whenever there are dissimilarities. She also found that learners transfer positively from MSA and French more than from Algerian Arabic, which resulted in target-like usage of English particles. It was also found that the participants transferred

[79] For critical comments on Hasan and Ho Abdullah's (2009) study, along with other studies reviewed in this section, see section 4.4.

negatively from MSA more than from French and Algerian Arabic. Consequently, the participants produced non target-like constructions while using these particles.

Learners attempt to relate the meanings and usages of English particles to the varieties mentioned above as sources of their prior knowledge. According to Asma (2010), there are dissimilarities between each one of these varieties and English particles usage. Particle usage has an association with the specification of each variety. Hence, not every single English particle has a specific counterpart in each one of these varieties. Therefore, learners do not satisfactorily use English particles, and they depend on their knowledge from MSA, Algerian Arabic and French to use the particles accurately.

Asma (2010) concluded that when English and one of these varieties use the same particles, learners sufficiently use the target particles. Nevertheless, non-target like usage is expected when the two varieties use different particles. Asma (2010) also placed problems that Algerian learners have with English particles into three categories: usage of different particles, usage of superfluous particles, and non-usage of obligatory particles.

(68) *I went to home happily. (Ø) (Asma, 2010: 41)

Asma (2010) reported cases in which particles have been inserted into sentences that do not require any particle, 'Ø', as in example (68). According to Asma (2010), the speakers' non target-like responses are traced back to MSA, since in their L1, it is obligatory to insert the particle *ila* 'to'. This could account for why they inserted the English particle *to,* which is the equivalent of *ila*, and which was inserted as both words convey the meaning of the act of motion of an object towards a particular point. Asma (2010) attributed this kind of non-target like usage to negative transfer either from Algerian Arabic (e.g., *rejaat leddar*), or from French (e.g., *Je suis revenu à la maison heureusement*) where *l* and *à* also (respectively) encode directional readings similar to the English particle *to*. A possible reason for learners' adding the particle *at* is also the impact of Algerian Arabic (e.g., *rejaat addar*) (Asma, 2010:

42).[80] Nevertheless, the usage of the particle *at* in this sentence is non target-like as it conveys the image of the home as a mere point (i.e., dimensionless location), and not a three-dimensional physical object. Therefore, learners transferred negatively from both Algerian Arabic and French, which resulted in a non-target like usage of the particle in English.

(69) *The bird is flying on my head. (*above*) (Asma, 2010: 46)

Asma (2010) also reported cases in which learners substituted a particle with another; in example (69), the particles *on* or *over* are used instead of *above*. Asma (2010: 47) found that some speakers did successfully use the correct particle *above*, which is the equivalent of the MSA particle *fawka* (e.g., *el osforo yorafrifo fawka raasi*), however. According to Asma (2010), some learners transferred this particle positively from MSA. Their behaviour also provides evidence of the effect of Algerian Arabic (*Lfarkh gaad ytir fug rasi*). Other speakers who chose the particle *over* rather than *above* must hypothesise that it is like either MSA *fawka*, or Algerian Arabic *fug*. Yet, their behavior is unacceptable because the two English particles are different: the particle *over* designates a straight vertical association or spatial closeness, whereas *above* simply designates a lower or higher level (*ibid*.). According to Asma (2010: 47), the incorrect usage of the particle *on* is also a result of the influence of Standard Arabic *fawka* or Algerian Arabic *fug*. Nevertheless, *on* as a particle has two meanings: attached to (e.g., *the apples on the tree*) and on top of (e.g., *Humpty Dumpty sat on the wall*) (*ibid*).

(70) *When we arrived ^/to Jericho we bought fruit. (*in*) (Asma, 2010: 48)

Asma (2010) claims that it is essential to insert the particle *in* in English, as in example (70), to form a relationship between the action and the place. However, this sentence in MSA does not require such a particle since the relationship occurs without it (e.g., *lama wasalna jericho ichtarayna el fakihata*) (*ibid*.). This clarifies the speakers' behaviour by omitting the particle instead of using the particle *in*, which Asma (2010) also attributed to negative transfer from the learners' L1. One

[80]All examples along with their transliterations are drawn from the same studies reported in this chapter.

explanation for the other speakers who substituted the particle *in* with *to* is the impact of either Algerian Arabic (e.g., *Ki wsalna ljericho chrina lfakha*) or French (e.g., *Lorsqu'on est arrivé à Jericho on a acheté des fruits*) (Asma, 2010: 48). On the other hand, Asma (2010) also argues that cases in which speakers were accurate with the use of particles were also a result of the influence of Algerian Arabic or French.

4.2.1.3 Tahaineh (2010)

Tahaineh (2010) examined a random sample of free-writing pieces by 162 Arab Jordanian first, second, and third year university students across different levels of proficiency to ascertain the sorts of non-target like forms they produce whilst attempting particles (e.g., *in, on, to, with,* and *of*). Inappropriate use of particles was noticeable among Arab learners even at advanced stages. The study provides evidence that Arab Jordanian learners encounter challenges in using appropriate particles in their writing. Tahaineh (2010) argues the majority of L2 learners rely on their L1, particularly in L2 classroom situations where a few hours of instruction L2 is undertaken. The comparison of learners from three proficiency levels demonstrated that learners tended to transfer from their L1 in a way that was representative of their proficiency level. The results showed that the L1 was the main source of errors, and accounted for 58% of total errors (1323 of 2290 total errors attributed to L1 interference). Nevertheless, patterns of L2 developmental strategies were likewise identified, and formed a high percentage of the errors (42% of total errors, 967 out of 2290 total errors).

According to Tahaineh (2010), Arab Jordanian learners used appropriate particles provided that counterparts were available in their L1. However, Similar to Asma (2010), and Hasan and Ho Abdullah (2009), Tahaineh (2010) did not report the percentage of participant accuracy on this type. One of the limitations of this particular study is that the use of error analysis for interpretation of the results was heavily relied upon. The author reported three sub-categories of non-target like forms (i.e., substitution, omission and addition of particles), and ignored cases in which they were accurate because the target structures were similar to those in the L1. Tahaineh (2010) reported that Arab Jordanian learners used the inappropriate particles if counterparts were not used in their L1 (78% = 1783 out of 2290 total errors). For example:

(71) *He was hidden between the trees. (*among*) (Tahaineh, 2010: 93)

In example (71), a number of the participants used the particle *between* in place of *among*. The particles *between* and *among* share a similar meaning; *between* typically engages two entities, and occasionally engages more than two, when a definite number has been established. Hence, *between* was used, e.g., 'Jordan lies between Palestine, Syria, Saudi Arabia and Iraq' (Tahaineh, 2010: 93). On the other hand, the particle *among* always engages more than two entities. As the particle *between* is more commonly used than *among*, it is overgeneralized by the L2 speakers such that it comes to carry the meaning of *among* also (*ibid*).

Tahaineh (2010), similarly, attributed such non target-like usage to L1 interference. He explained that the L1 was the reason for the observed non target-like usage because Arabic allows two dissimilar forms interchangeably. English, on the other hand, allows the two forms with selectional constraints, which resulted in this type of non target-like usage. For instance, in Arabic, the two forms of the particles *bayna* 'between' as in *bayna ?alašjaar* 'between the trees' and *wasaṭ* 'between' as in *wasaṭ ?alašjaar* 'into among the trees' might be used interchangeably to convey the meaning 'in the middle of'. On the other hand, English allows the two forms with selectional constraints, and, thus, learners transferred the use of the Arabic particles to their use of the English particle 'among'. This negative transfer occurred by means of literal translation. For instance, (71) translates into Arabic as follows: * *kaana muxtabi? bayna/wasaṭ ?alašjaar* (*he was hidden between the trees,* he was hidden between / among the trees or he was hidden among the trees) (Tahaineh, 2010: 93).

According to Tahaineh (2010), Arab Jordanian learners of English also omit particles if counterparts are not required by their L1. This happened in approximately 7% of the errors (153 of 2290 total errors) in which particles were omitted from places where they were required as shown in example (72).

(72) *When you get ^ Mecca you will notice the difference. (*to*)

(Tahaineh, 2010: 96)

Like Asma (2010) and Hasan and Ho Abdullah (2009), Tahaineh (2010) also attributed the omission of some particles to L1 interference. The Arabic equivalent of the verb ‘get’ in the above example is *y’aṣil*. The speakers perhaps omitted the particle because the verb *y’aṣil* ‘get’ in the above context (72) can be used with or without the particle *ila* or *li* ‘to’ in Arabic (*ibid*.). The participants might have translated the verb *get* as ‘y’aṣil’ without using a particle. Thus, the English sentence in (72) could be translated as *?indamaa taṣilu Mecca satulaaḥiẓ ?alfarq* (**When you got Mecca you will notice the difference* or *When you get to Mecca you notice the difference*) (Tahaineh, 2010: 96). Tahaineh (2010) also reported that Arab Jordanian speakers of English added particles if counterparts were required in their L1. In about 15%, that is, 354 of the cases, particles were added where they were not needed, as shown in example (73).

(73) *Aqaba is near from Ma'an in the south of Jordan. (Ø)
(Tahaineh, 2010: 95)

According to Tahaineh (2010), the non-target like usage in example (73) is again due to L1 transfer. The particle *from* in the sentence is simply a one-to-one direct translation of the Arabic particle *min*, which has the meaning of *?altaqriib* ‘proximity’. The sentence (73) will have the following Arabic equivalent: *Al-Aqaba qariiba min ?im9aan fii januub?laurdon* ‘*Aqaba near from Ma9aan in South of Jordan’ or ‘Aqaba is near Ma'an in the South of Jordan’ (Tahaineh, 2010: 95).

4.2.1.4 Albaqami (2011)

Recently, Albaqami (2011) carried out a research study on 20 Saudi Arab students studying in the United Kingdom in which the participants assessed the acceptability of a set of sentences including the three English particles: *in*, *on* and *at* holding locational, directional and temporal meanings.

The results indicated that the main source of non-target-like responses is likely to be due to copying feature bundles from the L1 (60% of errors). The results suggest that Arab Saudi students made errors of substitution, followed by errors of omission, and then errors of addition of particles. Nevertheless, evidence of L2 developmental strategies was found (40% of errors). The findings showed that learners were likely to use appropriate particles when the semantic feature was mapped onto the same particle as their L1.

According to Albaqami (2011), the data showed two kinds of substitutions: the learners either substituted the correct particles with incorrect particles (54.9%) or the correct particles with other correct particles (45.1%). The learners made a substitution with an appropriate L2 particle if the feature under examination was mapped onto different particles from their L1. Albaqami (2011) mostly attributed substitution cases to overlapping in the way that the two languages map particles; it commonly takes place in cases where features are mapped onto one particle in Arabic and others in English, as in example (74).

(74) *He lived in a farm. (*on*) (Albaqami, 2011: 26)

In example (74) above, English uses the particle *on* '9la' to indicate location of living, [locative], while Arabic uses *fii* 'in' to carry the same feature instead. Albaqami (2011) also reported cases in which the participants deleted obligatory particles if the relevant feature mapped onto particles in their L2, but not their L1, as in example (75).

(75) *We arrived ^ London. (in) (Albaqami, 2011: 28)

In example (75), it is obligatory to use the English particle *in* 'fii' to form a relationship between the action and the place. In Arabic, however, no particle is needed to express the same meaning. Albaqami (2011), likewise, reported cases in which the participants add a superfluous particle if the relevant feature maps onto a particle in their L1, but not their L2, as in example (76) below.

(76) *We enjoyed in the holiday. (Ø) (Albaqami, 2011: 29)

According to Albaqami (2011), Arab Saudi learners have been taught that some particles are equivalent to others (e.g., *9la* is equivalent to 'on') with respect to the usage of particles, and seem to use this direct mapping scheme in production. When they are required to map a particle in a new context, they are likely to use their L1 clusters (e.g., they do not recognize that *9la* is equivalent to 'at' rather than 'on' in the context, e.g., 'he laughs at me') (Albaqami, 2011: 27). The findings suggest that

Arab Saudi learners of English encounter difficulties when the same feature is mapped differently onto particles in their two systems. This finding appears to support the FRH proposed by Lardiere (2005, 2009), and also the ideas put forward in this thesis.

4.2.2 Summary of previous L1-Arabic/L2-English studies

To conclude, particles as essential components of VPCs are small words. However, huge numbers of Arab learners are challenged by the proper utilisation of particles with target verbs, as a number of particles in English have counterparts in Arabic, while others do not. Consequently, when learners have to cope with this class of words, lexical transfer may occur. Transferring L1 forms results in non-target like usage observed in writing, or spoken English. In other words, the assumption is that those L2 learners will tend to transfer the formal feature sets of their L1 to their L2. That is, they tend to transfer the distribution of forms and meanings from their L1 to their L2.When L2 speakers use English particles, they frequently turn to the forms of L1 particles (with which they are mostly familiar as having only a single English equivalent). In some cases, Arabic and English particles may share matching meanings and uses. It appears that L2 speakers adopt this as a general rule (Scott and Tucker, 1974), however.

The results of earlier research carried out on Arabic speakers of English (e.g., Zughoul, 1979; Lakkis and Abdel-Malak, 2000; Hasan and Ho Abdullah, 2009; Asma, 2010; Tahaineh, 2010; Temime, 2010; Albaqami, 2011; Al Yaari and Almaflehi, 2013; Mohammed and Abu Humeid, 2013)[81] have suggested that learners are non-target like with their VPCs. According to these studies, even advanced speakers are likely to fall back on their L1 knowledge when using VPCs that are commonly different from their L2 knowledge. This results in the observed morpholexical variability.

[81]A number of other studies on Error Analysis in general that have been done on Arabic speakers of English included sections on particles (e.g., Habash, 1982; Obeidat, 1986; Hamdallah, 1988; Hussein, 1990; Farghal and Obiedant, 1995; Diab, 1997; Mahmoud, 2002; Zughoul and Abdul-Fattah, 2003; Mourtaga, 2004; Shehata, 2008; Abushihab, 2011).

Taken altogether, the previous studies on Arab learners reviewed in this chapter fall into two main categories in terms of the base analysis they adopt: comparative studies, and studies drawing on error analysis. The reviewed studies (e.g., Hasan and Ho Abdullah, 2009; Asma, 2010; Tahaineh, 2010; Albaqami, 2011) reported similar learners' behaviour of transferring L1 forms for speakers of the different varieties of Arabic (e.g., Iraqi Arabic, MSA and Algerian Arabic, Jordanian Arabic, and Saudi Arabic, respectively). Most studies of L2 acquisition of VPCs have only been carried out in the realm of error analysis for the forms the Arab learners produced. The majority of the studies reviewed here provide evidence that non target-like usage was caused mainly by interlingual influence. They reached similar conclusions in terms of the types of errors Arab learners of English make with the use of VPCs as a result of L1 interference. They concluded that most of the non-target like constructions made by Arab speakers of English were the result of three subcategories of non-target like usage: substitution, omission, and the addition of particles.

Although the previous research attempted to account for variability in the Arab learners' interlanguage, especially Hasan and Ho Abdullah (2009) and Albaqami (2010), who attribute the learners' non target-like use of particles to direct 'mapping' from their L1, these studies did not outline how Arabic learners would acquire a particular form. That is, although the previous research attempted to account for the difficulties Arab speakers of English have with particles through comparative studies of the Arabic and the English prepositional system, they did not show what kind of learnability tasks Arab learners are likely to encounter, or provide any predictions in terms of their attainment in the same way as Pavesi (1987), Inagaki (2001, 2002), and, more recently, Stringer (2005, 2007, 2012) did in their research on the interlanguage of learners from other L1 backgrounds. Studies on Arab learners have sufficiently offered descriptions of spatial (i.e., locational and directional) and non-spatial meanings. However, Arab scholars did not offer suggestions in terms of the learning process of mapping or reallocating these meanings onto different lexical items to better match L2 patterns.

The majority of current studies on L2 acquisition mostly agree that an L1 is highly influential when it comes to L2 knowledge, and it is assumed that L2 forms that are equivalent to L1 constructions are relatively easier to learn than those that are not.

Studies on Arab learners have relied heavily on error analysis, and have given little attention to cases in which the L2 learners were accurate with their L2 because their L1 forms and the target forms were identical.[82] A drawback of previous research (e.g., Asma, 2010; Tahaineh, 2010; Albaqami, 2011) is that it did not report the percentage of the participants' accuracy with VPCs that behave similarly in both L1 and L2. Although extensive research has been carried out on L2 acquisition of VPCs, no single study exists in which L2 learners' knowledge was examined from a feature-based perspective within the Arabic-English and English-Arabic spatial contexts. Hence, one criticism of much of the reviewed literature is that they do not fully account for L2 developments. A much more comprehensive and systematic approach would include both types of constructions and predict how L2 learners would perform on constructions that directly correspond to their L1. This would be in comparison to others that do not, as the feature reassembly account appears to do so.

Furthermore, previous research on Arab learners' L2 knowledge made no attempt to refer to the role of positive or negative evidence in the L2 input, nor were there any explicit explanations in their accounts for the learners' interlanguage, in contrast to other studies such as Inagaki (2002) and Navarro and Nicoladis (2005). Another major drawback of these studies is that they did not include a control group of native speakers of English in order to compare their performance with the L2 group, and to find out whether their underlying knowledge differs from that of the learners. Moreover, a part from Tahaineh's (2010) study, the reviewed research did not take into account the proficiency levels of the L2 learners in order to find out whether the performance of learners from different proficiency levels would vary.

Given the fact that other approaches are too general in their essence and target L2 acquisition as a holistic process, there is a need to identify a more focused theoretical approach that would be appropriate for the outlined research direction. In this respect, the idea of feature reassembly with respect to L2 acquisition of motion events, which has been well reasoned by Stringer (2012), was chosen as the centrepiece of the present research. Through the feature reassembly hypothesis,

[82]For further discussions of the knowledge gaps identified in the studies reviewed, see section 4.3.

Stringer (2012) has emphasised the significance of lexical elements as a proper way to account for possible variations in syntactic domains.

4.3 Relevance of the current enquiry

The previous research put forward descriptions of Arab learners' prepositional knowledge of English. However, many questions remain, including what kind of learnability tasks Arab learners are likely to encounter whilst acquiring motion constructions and how these constructions would be acquired.

The current study differs from the earlier research described in section 4.2.1 in a number of respects. After reviewing the aforementioned studies (e.g., Hasan and Ho Abdullah, 2009; Asma, 2010; Tahaineh, 2010; Albaqami, 2011), a number of decisions were made in order to advance the aims of the present study.

Firstly, and most essentially, this study seeks to contribute to an emerging body of linguistic research by anticipating the learnability tasks Arab learners of English are likely to encounter whilst acquiring motion constructions. This study also looks to provide predictions in terms of their attainment using a similar approach to Stringer (2005, 2007, 2012), who did take into account the learners' interlanguage from other L1 backgrounds. This study identifies which aspect of the L1 is being transferred from a feature-based viewpoint within the domain of spatial morphology in L2 Arabic and L2 English. This research is furthermore designed to find out whether Arabic speakers of English and English speakers of Arabic encounter challenges whilst reassembling the relevant semantic feature set of their L1 to better match that of the L2. Specifically, it is intended to find out whether or not L2 learners would find difficulty in adjusting to L2 specifications. Secondly, the present study attempts to refer to the role of positive and/or negative evidence in the L2 input and/or explicit instruction in the same way as previous research on L2 knowledge by Inagaki (2001, 2002), Navarro and Nicoladis (2005), and Stringer (2005, 2007, 2012).

Thirdly, two key questions are involved in the present study.[83] One question addresses L2 constructions with matching feature clusters to the learners' L1, an area

[83] The research questions and hypothesis are reported in section 4.4.2 and section 4.4.3 of this chapter.

under-represented in the aforementioned studies. The other question addresses L2 motion constructions with mismatching feature clusters to the learners' L1, and allows for comparison with previous research.[84] Of topics addressed by the two different questions, it was hypothesized that the former would be easier to deal with and acquired earlier than the latter. Therefore, the design of the current study includes both types of motion constructions –corresponding and non-corresponding constructions. This study considers whether or not the feature reassembly research appears to allow a full description of numerous properties of the constructions under investigation, and is able to account for what, on the basis of the experimental study to be reported here, L2 learners seem to have learned about the underlying representations of L2 motion constructions.

Fourthly, given that no research has been carried out on the topic of L2 acquisition of motion constructions by English learners of Arabic to date, this study aims to include both Arabic learners of English and English learners of Arabic. Fifthly, given that not all of the previous studies (e.g., Hasan and Ho Abdullah, 2009; Asma, 2010; Tahaineh, 2010) included control groups, the current study observes data from control groups of native speakers of English and Arabic, and that allows for further comparisons and more reliable data. The research will consist of three groups of Arabic learners, and each of which will have different levels of proficiency. Low-level learners will be used to observe any possible L2 development. It is predicted that the L2 group and the control group would demonstrate similar behaviour on L2 motion constructions that correspond exactly to those of the learners' L1. However, those participants could vary on L2 motion constructions that do not have one-to-one correspondences to those of the learners' L1. Furthermore, it is hypothesized that the most advanced speakers would perform better on motion constructions of both types more often than the intermediate speakers, and that the intermediate speakers would perform better on them than the elementary learners. It is also thought that none of the L2 learners would perform in a native like manner like the control group of native speakers, especially on motion constructions that require restructuring. In general, the hypothesis is that the L2 learners with the lowest L2 proficiency would

[84] Since this study is bidirectional, 'L2 learners' indicates both Arabic speakers of English and English speakers of Arabic.

demonstrate non target-like constructions more often than the higher proficiency learners. This research is predominantly interested in what advanced, intermediate and elementary L2 learners who are native speakers of a verb-framed language seem to have learned about motion constructions of the supposed opposite language typology.

Sixth, not too much consideration has been paid to VPCs with particles holding [directional] meaning rather than those carrying [temporal] and [locative] meanings. L2 acquisition of motion constructions is a well-known area of difficulty for L2 speakers (Berman and Slobin, 1994). According to Levin and Rappaport Hovav (1992), spatial morphology seems a rich domain for investigating the lexical semantics of motion events and the relationships between semantic meanings and surface forms. In this respect, the present study builds on earlier studies by Stringer (2005, 2007, 2012) that call for investigation of the role of feature sets in L2 acquisition, since knowledge of these motion constructions involves L2 learners redistributing the semantic notions concerning the spatial status of events from their L1 onto the L2's specific morpholexical representations.

Although [manner] plays a role in the construction of motion events and this has been explained in the background chapters on the structural differences between Arabic and English, the empirical study mainly focuses on [path] for two main reasons. First, evidence of the misuse of particles that hold [path] of motion was found in the studies reviewed in chapter 4. The findings of these studies suggest that L2 learners mostly misuse the L2 particle not verbs. L2 acquisition of particles presents a variety of learnability problems; due to the considerable cross-linguistic variation in this domain. Learners encounter difficulties with particles expressing [path] of motion not [manner]. Second, to accommodate the L2 pattern, learners have to initially adjust the way [path] is encoded not [manner]. In this case, feature reassembly is mainly for particles that always hold [path] of motion not [manner].

Finally, the data is gathered from an experimental study rather than from corpus data, which the majority of previous research has relied on. This has the further advantage of showing what learners consider to be ungrammatical. Furthermore, in order to effectively test the L2 acquisition of motion constructions, this study attempts to include a different set of experimental materials as alternatives to the ones in past studies (Inagaki, 2001, 2002) that were deemed unsuitable for the examined phenomenon. As such, the instruments for this study were an acceptability judgment task and a series of animated pictures to describe, paired with gap filling task.[85]

To conclude, assuming that there is morpholexical variability in the way Arabic and English configure the semantic features of motion events onto language-specific morpholexical items, this study tests the possibility of native-like morpholexical representations in the L2 acquisition of spatial morphology. It explores the effect of feature clusters developed in the learners' L1 on the L2 acquisition of motion constructions, and looks to find out whether the feature configurations developed in an L1 constrain the acquisition of those in an L2. The feature-based model presented in section 4.4 suggests different learnability tasks to these motion constructions.

4.4 Testing the predictions of the Feature Reassembly Hypothesis: Evidence from the L2 acquisition of spatial morphology

In the present study, I examine the L2 acquisition of Arabic and English motion constructions that include different distribution of the semantic feature: [path]. Arising from the shortcomings of previous accounts of L2 learners' knowledge, the FRH was suggested as an alternative by Lardiere (2000, 2006, 2008, 2009), whereby non-target like constructions are predictable due to the anticipated overlapping among feature clusters across different languages.

As previously mentioned in Chapter 2, variation among languages is argued to be due to variation among feature bundles - basically how features are bundled up together onto lexical items. Chapter 2 puts forward some evidence that Arabic and English select the same semantic features with respect to lexicalisation of motion events, yet they tend to distribute them onto language-specific morphological configurations. Hence, I can argue that the relevant feature sets are not randomly clustered by L2 learners, as they are expected to be largely influenced by their L1 form-meaning distributions. Feature bundles developed in an L1 appear to play a major role in L2 acquisition (Lardiere, 2000, 2005, 2009).

[85] For more details on the experimental materials used in this study, see section 5.7.1 and section 5.7.2 in Chapter 5.

In light of the Feature Reassembly account (Lardiere, 2008, 2009), the L2 learning task comprises two separate phases which may present different levels of difficulty and, accordingly, take different amounts of time to master appropriately: (1) Mapping and (2) Feature Reassembly, as already mentioned in Chapter 3. Some morpholexical items can pose more difficulty for mapping, whereas others pose more challenges for feature reassembly (Gil and Marsden, 2013).

The first phase of this process, mapping, is linked to observing similarities among the functional meanings of the morpholexical items within an L2 to the learners' L1 - initial mapping of the whole feature set of the L1 lexical items onto the L2 lexical items. As soon as some preliminary mappings are undertaken, the subsequent phase, feature reassembly, might take place. The relevant features can be substituted, added or deleted, gradually modifying the L1-based feature set in response to the evidence for meaning and usage emerging from the L2 input (Lardiere, 2006, 2009). On a similar note, Cho and Slabakova (2015: 3) recently stated "…the complexity in L2 acquisition involves reassembling features for each target functional item by disassembling, deleting features from the L1 feature set, and/or adding new features, then reassembling again on (possibly) new carrier morphemes". Feature reassembly might be slow taking place or may perhaps not happen at all if the evidence for the semantic feature is infrequent or inconsistent in the L2 input (Lardiere, 2000, 2006, 2008, 2009).

4.4.1 Learning tasks from the feature-based perspective

Chapter 2 shows that there is an asymmetry between Arabic and English regarding the L2 learning task. To decide whether these languages in a super/sub set relationship with respect to motion-related features, we should consider both the semantic and syntactic facets of the construction. Syntactically and semantically, a language A is a subset of a language B if every meaning and pattern that is available in language A is also available in language B, whereas, supersets comprise all the semantic and syntactic elements of another set, though they may have additional elements. When it comes to expressing motion events, we could say that semantically English is a superset to Arabic and Arabic is a subset to English. English has all the trajectory values of [path] that exist in Arabic, such as [path:

towards] and [path: inwards], and has additional values that Arabic lacks, such as the twofold values: [path: towards-inwards] and [path: towards-onwards] (See chapter 2 for more examples).

Syntactically, Arabic and English are in equal position since both languages allow V and VPC to express motion events, although they are not necessary equivalent in every context. So, syntactically, it is not clear-cut which language is a super/sub set of the other. Arabic might allow VPC to encode [path] in a certain context (e.g., *y'aqtarib min* 'approach from'), whereas, English in the same context allows a V (e.g. *approach*). On the contrary, English might allow VPC to encode [path] in a certain context (e.g., *arrive in*), whereas, Arabic in the same context allows a V (e.g. *y'aṣil* 'arrive').

This complex relationship at the semantic and syntactic levels has some consequences for L2 acquisition in this domain. Structurally, learners would need to figure out that forming a target like representation is not a matter of simply adding a particle to form a VPC or deleting a particle to have only a V in all contexts that express motion events. Yet, it is a matter of figuring out how [path] is specifically encoded in each context; is it on a particle or a verb? Is the construction corresponding to that of their L1 or not? For instance, they should not apply VPC to all contexts, assuming that in English expressing [path] would always require adding particles. Besides, whilst constructing these surface representations, learners would need to consider the semantic components of an event. Learners, for instance, would need to figure out whether expressing motion events by VPCs in both languages means that these constructions are semantically quite the same. The underlying semantic elements might be different; the trajectory values of [path] might not be the same which would result in a non-corresponding construction, e.g. *run across* vs. *run through* as explained in chapter 2.

Taking into consideration the semantic and syntactic similarities and dissimilarities between Arabic and English with regard to the feature distributions each motion construction reflects, I next determine learning tasks and, hence, formulate the relevant predictions for L2 developments. Since the initial and the most vital phase process is to determine the similarities and dissimilarities between the L1 and the L2 morphemes, I next deliver a descriptive account of motion constructions in the L2 language (e.g., English) in comparison with morphemes that indicate spatiality (i.e., directionality) in the learners' L1 (e.g., Arabic).

In the spirit of the FRH, motion constructions with feature sets that do not require reconfiguration are likely to be unproblematic as illustrated in (77) below. Here, both Arabic and English share exactly the same feature configurations to express the same motion event, e.g., [v, manner] and [p, path]. That is, [manner] of motion is hosted on the verb *drive* 'y'aqudu' and [path] of motion on the particle *to* 'ila' in both languages.

(77)	*qada*	*siarat-hu*	*ila*	*London.*	(Arabic)
	drove$_{[v,\ manner]}$-he	car- his	to $_{[p,\ path]}$	London.	
	'He drove his car to London'.			(Arabic & English)	

In contrast, the most problematic property is likely to be the one that requires semantic-morphology remapping, [path], as it tends to have different configurations in the two languages. For instance, Arabic verbs typically host [path] of motion, whereas, in English, this feature is licensed on a satellite to the verb as it is exemplified in (78-79). The feature [path] is mapped onto the particle *onto* in English, as in (78) below, and *9la* 'on' in Arabic, as in (79). The particles *onto* and *9la* 'on' are not equal; they do not indicate the same meaning - the former encodes a directional reading, whilst the latter encodes a locational reading. So, [path] of motion here is mapped onto two different lexical items: LEX-L1= *9la* 'on' and LEX-L2= *onto,* as described in Chapter 2.

(78) The frog jumped $_{[v,\ manner]}$ onto$_{[px,\ path]}$ the lily pad. (English)

(79)	*qafaza*	*alḍfda9*	*9la*	*alwarqah.*	(Arabic)
	jumped $_{[v,\ manner]}$	the-frog	on$_{[py,\ path]}$	the-lily pad.[86]	
	'The frog jumped onto the lily pad'.				

[86] It is unacceptable as equivalent to (78) in the sense that it conveys a different meaning from the intended one in (79), i.e., the frog was jumping on the same lily pad (i.e., locational reading), not from a lily pad to another (i.e., directional reading). The sentence sounds ambiguous, as English discriminates between the two meanings whilst Arabic does not.

In more detail, English and Arabic have corresponding morphemes, English *to* and Arabic ‘ila’, that encode the exact feature of [path]. Since *to* and ‘ila’ encode the exact same feature set, I expect that Arabic speakers of English will map ‘ila’ onto *to*. Since the Arabic counterpart *ila* for the particle *to* encodes the same feature value, the learning task for this lexical item is simple mapping of the relevant morphemes without further reassembly of the relevant features. The lexical item *to*, at least for L2 learners in the classroom setting, should not pose any challenges, as the particle *ila* ‘to’ corresponds to the English particle *to* in both meaning and function. A partial resemblance in meaning would help L2 learners to map *ila* onto English *to*. Furthermore, mapping tasks may be triggered by explicit instruction as Cho and Slabakova (2015) claim. The next phase, nevertheless, can make the learning process more complicated. The feature bundles on the English particle *onto,* [path: towards-onwards], are not presented in Arabic. With regard to the particle *onto* with the feature [path: towards-onwards], Arabic does not have a corresponding morpheme that reflects the corresponding feature cluster.[87]

As for *onto*, Arabic does not have a morpheme that exactly corresponds to it with respect to the semantic features it encodes. This situation suggests that Arabic learners of English will essentially have to reassemble the relevant feature sets of the L2 functional morpheme *onto*. Within the feature reassembly account, the initial phase in L2 acquisition is mapping on the basis of resemblances between the functional meanings of the L2 morphemes and those of the L1. After the preliminary mapping, L2 learners have to review their L1 feature set to better match the L2 feature set by reallocating the relevant features, along with adjusting different syntactic and/or semantic-pragmatic properties linked with the L2 functional items as Cho and Slabakova (2015) suggested.

On the basis of the similarities of the functional meanings of *9la* ‘on’ and *onto*, as well as explicit instruction, I expect that Arabic speakers will map *9la* ‘on’ onto *onto*. This mapping will be facilitated by available explicit instruction (i.e., teachers or

[87] The particles *to* ‘ila’ and *onto* ‘9la’ are presented here as examples for the learnability tasks that Arab learners are likely to encounter and, hence, the predictions are offered on how to master them. However, the experimental study includes a variety of different particles grouped into four different types. See Figure 6.

textbooks) of the language classroom. Language teachers and textbooks might introduce the particle *on* as an English counterpart for the morpheme *onto*. As I described in Chapter 2, this is only true to some extent. As for *onto*, Arabic does not have an assigned morpholexical item that reflects the same feature set. Hence, I predict that Arabic speakers will initially map the morpheme *onto* onto the particle *on* in English. The learners' next task, then, will be to substitute, delete from, or add to their L1 feature set. Therefore, I expect learners to encounter more difficulties with *onto* (i.e., it is likely to be acquired later) than with *to*.

Taking into account the clashes between interlingual and intralingual feature configurations, I conclude from the data presented above that this kind of dissimilarity can predict difficulty. In light of the abovementioned distinction, it could be argued that L2 speakers are likely to encounter difficulty whilst redistributing [path] of motion from the way it is configured in their L1 to approach the L2-specific morpholexical configurations, e.g., [path, Px] → [path, Py].[88] The suggested feature bundles reflected by motion constructions in Arabic and English are summarized in Figure 6 below.

Figure 6 The learning tasks of motion constructions from a feature-based perspective.

Type 1: [path, Px] → [path, Px]	Type 2a: [path, Px] → [path, Py]
	Type 2b: [path, V] → [path, P]
	Type 2c: [path, P] → [path, V]
PHASE (1) Simple Mapping	PHASE (2) Feature Reassembly

P=Particle, V=Verb

4.4.2 Research questions

From a feature-based perspective, the major research questions addressed in this study in the context of spatial morphology are as follows:

[88] Substituting a morpheme with another, [path, Px] → [path, Py], is only one example of the multiple tasks that would possibly face L2 learners, as Figure 6 shows.

RQ1 Do L2 speakers find motion constructions with feature configurations that match their L1 unproblematic? 'L1-L2 matching F bundles as in example (77)'

RQ2 Do L2 speakers find motion constructions with feature configurations that do not match their L1 problematic? 'L1-L2 mismatching F bundles as in example (78-79)'

4.4.3 Research hypotheses

Based on the cross-linguistic distinctions put forward, it could be hypothesised that L2 speakers will demonstrate non target-like performance due to overlapping in the way the two languages morpholexically configure [path] of motion onto different lexical elements, either a verb or particle. Arabic and English tend to configure [path] differently onto language-specific morphological configurations. That is, L2 speakers would find motion constructions with matching feature configurations to their L1 easy to acquire. On the other hand, they would encounter challenges with motion constructions with mismatching feature configurations to their L1. In this study, I established degrees of difficulty and developmental patterns based on whether feature reassembly is required or not on the basis of the (dis)similarities between the L1 and L2 feature sets (Lardiere, 2006, 2009). The expressions of the main hypotheses are inspired by Domínguez *et al*. (2011) as follows: [89]

H: If the learning task for L2 speakers engages feature reassembly, i.e. [PATH, LEX-L1] → [PATH, LEX-L2], the meaning demanding feature reassembly will constitute a source of difficulty for L2 speakers. That is:

(Ha) Motion representations with matching F + matching LEX-L2 are unproblematic in L2 acquisition.

[89] In this hypothesis, I build on those by Domínguez *et al.* (2011). However, what I am testing here is different. Domínguez *et al.* (2011) test both feature reselection as well as feature reassembly, while the present study tests only feature reassembly for the reason that both the L1 and L2 appear to select the same features to encode motion events, but they tend to vary in the way they distribute the relevant features onto lexical items in language-specific ways. Also, Domínguez *et al.*'s study (2011) was on L2 acquisition of aspect in Spanish, not motion constructions.

(Hb) Motion representations with matching F + mismatching LEX-L2 are problematic in L2 acquisition. These hypotheses are summarised in Table 6 below.

Table 6 The main hypotheses formulated within the feature-based approach

Hypothesis	Configurations	Acquisition
Ha	Matching F + Matching LEX e.g., Arabic [path, Px] English [path, Px]	Unproblematic
Hb	Matching F + Mismatching LEX e.g., Arabic [path, V] English [path, P]	Problematic

F= Feature, LEX= Lexicon

L2 learners commonly attempt to map one equivalent for each directional particle. While such one-to-one literal translations may yield the appropriate L2 constructions in a number of cases (Ha), there are a number of cases in which this strategy does not work (Hb), as Table 6 shows. To be more precise, [path] of motion may be expressed in different ways. When [path] is mapped onto particles in both the L1 and L2, the feature of [path] may similarly map onto the same particle in L1 and L2. In these cases, the L2 forms correspond precisely to their L1 equivalents. Hence, no feature reassembly is required (only simple mapping), and acquisition of the relevant items is likely to be easy. This situation is referred to as an ‘L1-L2 matching feature set’. The feature of [path] might also map onto particles in both languages, but, yet, not be identical. Accordingly, feature reassembly is required (i.e., in the form of the substitution of particle X with Y) and acquisition of the relevant forms is supposed to be demanding if the L2 learners do not receive enough evidence from the L2 input on how these motion verbs behave in the target language.[90] This situation is referred to as an ‘L1-L2 mismatching feature set’.

More interestingly, describing an event in an L1 or L2 does not always require a predicate. An L2 predicate is not constantly articulated in the learner’s L1 by a

[90] For further discussion on the poverty of the stimulus in spatial context, see Chapter 7.

particle; its counterpart might be a different part of speech (e.g., verbs). That is, when the feature of [path] is mapped onto a predicate in one language and a verb in the other language, the situation will be referred to as an 'L1-L2 mismatching feature set'. Consequently, feature reassembly is required (i.e., in the form of deletion of the unrequired particle, and the reallocating of the feature of [path] onto the verb). On the other hand, when [path] of motion is mapped onto a verb in the L1 and a particle in the L2, feature reassembly is required (i.e., in the form of addition of the needed particle and the reallocating of the feature of [path] onto this newly inserted particle). Acquisition of the relevant items is likely to be demanding if relevant evidence is not accessible in the input that learners would need to trigger the required adjustment by re-clustering the L1 feature set in order to accommodate the target set of features.[91]

The variation in the way the relevant features are distributed onto lexical heads accounts for why the acquisition of English motion constructions is not straightforward for Arabic-speaking learners of English, as was reported early in this chapter. In order to avoid non target-like usage of motion constructions, feature reassembly is required for the constructions that are mapped differently across the two languages. Taking this line of thinking into account, two different feature-based patterns are suggested in this study; the latter are further subdivided into three categories:[92]

Type 1: Matching motion constructions that reflect feature sets shared between the L1 and L2. Example (80) presents non-specific morpholexical representations. Both L1 and L2 use corresponding predicates *ḥawla* 'around'.

(80) She walked around the lake.

Type 2: Mismatching motion constructions that reflect feature sets that are different in the L1 and L2. Non target-like usage of motion constructions due to

[91] Evidence from the L2 input here stands for both positive data that tells the learners that some motion constructions are acceptable as well as negative data that tells the learners that other motion constructions are unacceptable in the target language. For general discussions on 'the poverty of the stimulus', refer to Berwick *et al.* (2011).

[92] It appears that what Arabic speakers of English need to add to their L1 feature set, English speakers of Arabic need to delete from their L1 feature sets in order to adjust their L1 feature set.

direct mapping of feature bundles from the learner's L1 to the L2 without redistributing them to accommodate the target representations can be subdivided into three categories:

Type 2a: Failure to substitute the L1-based feature set with that of the L2. That is, an incorrect particle is not substituted for a target-like one, as in example (81):

(81) *The kites flew on the big tree. (*above*)

Type 2b: Failure to add to the L1-based feature set. That is to say, an essential particle is deleted in an obligatory context in the target language, as example (82) demonstrates:

(82)*He arrived ^ Paris. (*in*)

Type 2c: Failure to delete from the L1-based feature set. Specifically, a superfluous particle is used in a context that does not require a particle at all according to the target feature set, as is the case in example (83):

(83) *She entered to the beauty shop. (Ø)[93]

It is worth mentioning that Stringer (2012) makes a distinction between 'Path-incorporating' and 'non-Path-incorporating' verbs of motion. His account of L2 development suggests that the feature of [path] might be deleted from some verbs of motion. However, the observed patterns do not suggest the feature of [path] is deleted from the whole construction as learners do not have to unselect any specific feature or reselect any new features from the UG. Hence, I describe the observed patterns in relation to featural-lexical transfer and in terms of how the same features are dissimilarly distributed onto non-corresponding lexical heads in language specific ways. This leads us to assume that addition or deletion of lexical heads, for instance, would trigger 'reallocation' of the feature of [path] from one lexical item to another

[93] It appears that what Arabic speakers of English need to delete from their L1 feature set, English speakers of Arabic need to add to their L1 feature set in order to accommodate the target feature set.

(e.g., from the verb to the added particle). That is, the feature is still there in the construction even if it was deleted from the verb, the added particle still hosts it.

The aforementioned types are summarised in Table 7 below. In Type 2b-deletion and Type 2c-addition to the L1 feature set are for lexicons not features, as the hypotheses are grounded on the assumption that both the L1 and L2 select the same features but vary in the way they assign these features onto lexical heads. L2 learners do not need to select new features from the UG inventory.

Table 7 Example of feature bundles in L1 and L2 with relation to the proposed hypotheses.

Type	FR	F-LEX Relation	Arabic Motion Constructions	Their English Counterparts	Type of FR (if required)	Description
1	−	Matching	*y'aqudu ila* 'drive to' [path, px]	*drive to* [path, px]	No FR required	Only simple mapping
2a	+	Mismatching	*y'aqfizu 9la* 'jump on' [path, px]	*jump onto* [path, py]	To substitute the L1 with L2 feature-based set.	NOT from UG inventory
2b	+		*y'aṣilu* 'arrive' [path, v]	*arrive in* [path, p]	To add to the L1 feature-based set.	
2c	+		*y'adkhulu ila* 'enter to' [path, p]	*enter* [path, v]	To delete from the L1 feature-based set.	

FR= Feature Reassembly, (−) where FR is NOT required, whereas (+) where YES FR is required, F-LEX= Feature-lexicon associations, UG= Universal Grammar.

In Table 7, deletion, addition and substitution of L1 features is anticipated. The elephant in the room remains what exactly is being learned? Are they the underlying features, the surface forms or both? Apparently, one could argue that it is just the addition, deletion or substitution of the whole particle and has nothing to do with features. And those learners just need to memorise what particles go with what verbs and that this process is influenced by the L1, nothing to do with features reassembly. And because the predictions in this study are mainly built within the feature reassembly approach to L2 development framed within the minimalist syntactic theory (Chomsky, 1995), in which cross-linguistic variation is a matter of how features are assembled onto lexical heads (Lardiere, 2008, 2009), I assume that the feature of [path] with its related values have an influence in SLA of these forms. I am making an assumption, based on Stringer's framework (2012), in which he summarises purely semantic and syntax-semantic approaches to the interpretation of V+P, and he concludes in favour of the semantic features that can be borne by particular prepositions being involved in the syntax. It seems that the data gained from previous studies data cannot be explained by the alternative approach (i.e., memorisation of which particle goes with which verb and L1 influence on this process). It may be that such an explanation cannot be ruled out. It is more economical to have a small set of features that are used across different structures than to rely on lexical learning of every single word and collocation. Learners do not construct their L2 representations (i.e. forms) from nothing; they build up the L2 structures based on meanings (i.e. features) from previous knowledge of their L1. Under the feature reassembly proposal, learners have to work with the input to restructure knowledge already stored in long-term or short-term memory and establish a new form-meaning connection. For instance, learners need to figure out that to express [path: toward-onward] movement, the verb *jump* should occur with *onto* not *on*. And although both of them encode [path], they differ in the trajectory values they indicate and using one of them in place of the other would result in incorrect image of the movement.

By looking at the underlying elements of the constucation, we notice that the feature bundles on the L2 particle are not always the same in the L1 and L2, indicating a corresponding meaning or identical trajectory value e.g., *onto* [path: towards-onwards] vs. *on* [path: onwards]. This suggests that Arabic, for instance, does not have a corresponding morpheme to that in English that reflects the corresponding value. Arab learners of English in this case would need to substitute [path: onwards] with [path: towards-onwards] which means that they should replace *9la* 'on' with *onto* to accommodate the target language.

In this study, I make the distinction between the features and their values and assume that they have implications on learnability. I observed the distinction between English and Arabic motion construction as a dissimilarity in lexically expressed values, not in features by themselves. As explained in Chapter 2, the feature of [path] includes a different set of language-specific values such as [path: ±interior], [path:

±touch], [path: ±distinct], [path: ± transfer],..etc. These values might be encoded lexically in a language-specific way. These values might be − in one language, + in the other or neutral = in one language but not the other. This is important since the learners would need to delete, substitute or add these trajectory values in the L2 according to the semantic values of their L1. Hence, deletion, addition and substitution are for the L1 semantic values. Accordingly, deleting, adding or substituting the value will result in the addition, deletion or substitution of the related particle, rather than just the values on their own.

To conclude, as was outlined in Chapter 2, language-specific morpholexical representations and overlapping in the way the two languages use different morphemes to hold the feature of [path], and the failure to redistribute the relevant feature onto specific target configurations may be the source of the observed non target-like usage of motion constructions. In light of this argument, I claim that motion constructions with mismatching feature sets are perhaps the root of the observed non target-like usage of L2 motion constructions. This hypothesis will mainly be tested in the context of the L2 acquisition of motion constructions by L2 speakers of English and Arabic as described in the next chapter.

4.5 Conclusion

Despite the fact that there is a large volume of published studies describing the role of L1 on the L2 acquisition of motion constructions from different viewpoints, there has been no study that has directly focused on the impact of primitive feature bundles developed in L1 on L2 acquisition of motion constructions. The argument that the exploration attempts to develop here is that this study following FRH, predicts that L1 feature-based clusters have an effect on the L2 acquisition of motion constructions in Arabic and English.

Besides reviewing earlier research, this chapter presented the research questions of the study and outlined the hypotheses formulated to explore the role of L1 feature bundles in the L2 acquisition of motion constructions. Different feature sets have been identified in the acquisition of L2 spatial morphology as well as the role of L1 feature bundles in the L2 acquisition in regards to what sounds easy or hard to acquire. In the light of FRH, some motion constructions are predicted to be easier to acquire than others. It is predicted that motion constructions with feature bundles, which are different to the L1, are difficult to acquire, and which are similar, are easy to acquire. The next chapter describes the methodology used to test the aforementioned hypotheses and to find out whether the results of the current study lend further support to the FRH in the realm of L2 acquisition of spatial morphology.

Chapter 5. The Experimental Study

5.1 Introduction

This chapter describes the methodology used in this study, including descriptions of the participants, materials, procedures and data analysis methods. It reports the empirical study designed to examine the participants' judgments and productions of sentences, including motion constructions. The purpose of the experimental study is twofold. The first aim is to investigate whether L2 speakers appear to judge and produce motion constructions in a way consistent with the claims proposed earlier in chapter four. The second aim is to see how the responses of the L2 groups compare with those of the control groups, and investigate whether there is evidence that the L2 groups had acquired native-like representations of these constructions. An essential question is whether the knowledge of the L2 groups, that is, form-meaning mapping, differs from the control groups' knowledge.

In order to test the L2 acquisition of motion constructions, two off-line tasks – (i) an acceptability judgment task and (ii) a picture description task – were administered to four groups: Arabic-speaking learners of English, English-speaking learners of Arabic, a control group of native speakers of English, and another control group of native speakers of Arabic. A follow-up questionnaire on the acceptability judgment task was conducted with each participant at the end of the session. Tasks in English were provided to L2 English learners, and Arabic tasks were given to L2 Arabic learners. In addition, an English proficiency (Oxford Quick Placement Test, 2001) and an Arabic placement test were administered at the beginning of the session to the L2 speakers to divide them into different proficiency levels.

Both the acceptability judgment task and the picture description task used stimulus items expressing direction of motion. All the verbs used were verbs of motion according to Levin's (1993) classification. Motion verbs were divided into four types based on the nature of the learnability tasks, according to whether or not they required feature reassembly [±FR]. These categories were used as the basis for selecting verbs to be used in the test. The experimental instruments are described in greater detail in the following sections.

5.2 Participants

A total of 120 participants aged between 20 and 39 (M= 30.82) were invited to take a part in the experiment (including both genders; males and females). The participants in this study included: a control group of native speakers of British English 'EE' (*n*=20), another control group of native speakers of Saudi Arabic 'AA' (*n*=20), Arabic-speakers of English 'AE' (*n*=60), and English speakers of Arabic 'EA' (*n*=20).[94]

Background information was collected by means of a pre-test questionnaire (see Appendix 1C for Appendix 1D) with 17 questions. The participants were asked to provide biographical and linguistic information; age, gender, native language, language used at home, parents' language, previous educational system (i.e., private or public), length of L2 study (for L2 speakers), length of living in an L2-speaking country, amount and type of exposure to the L2, age of first exposure to the L2, any visits to the countries where the L2 is spoken, and TOEFL/IELTS scores (if any). Age and sex were reported for information only; they were not considered variables in the study. All of the L2 participants had learnt the L2 via classroom instruction. They were not naturalistic learners, although they had experience of living in the L2-speaking country.[95] None of the AE or EA participants were bilingual from birth or early childhood.

The Arabic speakers of English were relatively homogeneous in terms of their learning conditions and L2 experiences. With the exception of one speaker who started learning the L2 at 8 years old, the age of onset was the same for the rest of the Arabic learners of English. Their first exposure to English was between the ages of 12 to 13, when it is first introduced through the school curriculum. At the time of the experiment, all participants were university students (from different academic disciplines such as Engineering, Physics, Education, Nutrition, Computing, among

[94] The size of the sample is important to be representative of the target population. Learners of Saudi Arabic variety were chosen because the number of Saudi learners in the UK who were willing to take part was bigger than the number of speakers of other Arabic varieties at the time of the experiment. Furthermore, I speak Saudi Arabic and had experience of teaching EFL in Saudi Arabia, so I preferred working with subjects whose L1 variety I am familiar with, including the difficulties they commonly encounter while learning English.

[95] They started learning the L2 in classroom situations.

others) and were also students at language centres (representing different proficiency levels: elementary, intermediate and advanced) and all were resident in the United Kingdom at the time of the experiment.

The L2 learners of English were native-speakers of Saudi Arabic who were born and raised in Saudi Arabia by Arabic parents. The only language they spoke at home was Saudi Arabic. They had not studied any languages other than English, and were introduced to English around the same age as each other (M=12.5). Their first contact with English was at middle school. Hence, these participants received formal instruction in English as a subject (4 classes per week) for at least seven years: middle school (*n*=3 years), high school (*n*=3 years), and university (range=1-4 years). The educational medium was mainly Modern Standard Arabic (MSA). However, now, as students living abroad, the educational medium is English. Given that they were living in an English-speaking country at the time of the experiment and were in direct contact with native speakers of English for up to three years (M= 1.7), the participants were in a rich setting for the acquisition of English.

The official language of Saudi Arabia is Arabic. The language of education and the media is MSA. The three main regional varieties spoken by Saudis are Hijazi Arabic, which is spoken by around 7 million in western Saudi Arabia, Nejdi Arabic, which is spoken by around 10 million people and mainly spoken in Najd, central and northern parts of Saudi Arabia, and the third variety is Gulf Arabic which is spoken by around 0.2 million speakers in eastern parts of Saudi Arabia (Clay, 2014). The majority of differences in these regional varieties are assumed to be in the vocabulary, pronunciations, and in a few aspects of morphology and syntax (Prochazka, 2010).[96] Thus, the design of the test for this study was intended to only include motion verbs that seem to behave similarly in these different varieties of colloquial Arabic and MSA to eliminate any possible inconsistencies in the speakers' responses.

On the other hand, the L2 speakers of Arabic were native-speakers of British English and were mostly born and raised in the United Kingdom by English-speaking

[96] Variation at the level of the lexicon such as the English verb *exit* can translate into 'y'akhruj' in MSA, 'y'undur' in Hejazi Arabic, 'y'aṭla9' in Nejdi Arabic and 'y'aẓhur' in Bedouin Arabic which are all forms of the same verb and behave similarly in terms of how they occur with *min* 'from'.

parents. The only language they spoke at home was English. However, there were two participants speaking other languages. One speaks Urdu, as his family is originally from Pakistan, and the other speaks Greek, as her mother was from Greece. The L2 speakers of Arabic had studied other languages besides Arabic such as French, Spanish, Latin, German and Chinese. All participants appeared to be homogeneous with respect to their learning settings and learning experiences. However, they were introduced to Arabic at different ages. Their first formal contact with Arabic was at university, where they received formal education in Arabic as a subject (8 hours per week) for at least 2 years. The educational medium was MSA. As part of the degree requirements, they had to spend a full year in an Arabic–speaking country such as Morocco, Egypt or Jordan to develop a strong grounding in both spoken and written Arabic. Some of the participants have also visited other Arabic speaking countries such as the United Arab Emirates, Palestine and Libya. Given that the participants were not living in an Arabic-speaking country or in direct contact with native speakers of Arabic for more than one year, only two speakers reported that they read and heard Arabic outside of classroom instruction. Input was thus limited to classroom-based instruction at the time of testing. In other words, the participants were not in a rich setting for acquiring Arabic, as the Arabic learners of English were. None of the participants from any group had any speech or hearing problems.

In addition to the two experimental groups, the study also included two control groups: a control group of native speakers of British English and another control group of native speakers of Saudi Arabic. The aim of including native speakers is to find out whether the performance of the experimental groups differs from that of the control groups.

5.3 Proficiency testing

The Oxford Quick Placement Test (OQPT) (Version 2, 2001) was administered to all Arabic speakers of English in order to assign them to different proficiency levels. This test consisted of two sections in multiple choice formats, mainly on grammar, apart from the first five questions which were on vocabulary. Only the first part (1-40) of the test was administered due to time constraints. The second part (41-60), in any case, would only be administered to those scoring full marks, which would not apply to this scenario.

Due to the lack of a standardized Arabic quick placement test, a placement test was developed based on Slabakova's (2000) cloze test, which was a slightly adjusted and translated into MSA, and was used to assess the participants' proficiency. The text was adjusted from *the Advanced Student's Book* by O'Neill *et al.* (1981) as described by Slabakova (2001).[97] The test includes 40 blanks to be filled with only one appropriate Arabic word. Aside from the first sentence, every seventh word was left out. The participants are required to fill out each blank with only one word that conveys the meaning in the given context. An acceptable response was given one point, whereas an unacceptable one was given a zero. The scoring was validated by an independent native-speaker of Arabic. A copy of this test, along with the test answers and the original test (the English version) can be seen in Appendix 3A, 3B and 3C.

In the experiment, each participant in the group of Arabic speakers of English had to do the proficiency test first, and, on the basis of the scores they obtained in the proficiency test, the L2 speakers were divided into three groups, i.e., (i) elementary (elem), (ii) intermediate (int), and (iii) advanced (adv). Participants who scored 16-23 are deemed to be elementary speakers, those with 24-30 are intermediate, and those who scored 31-40 are considered advanced. The variety of proficiency levels will also be used to analyse the correlation between L2 speakers' proficiency levels and performance on the tested items. Due to the low number of English learners of Arabic, their results will be reported as one group.[98] The demographic characteristics and proficiency levels of the participants are summarized in Table 8. The table shows the learners divided into proficiency groups.

[97] The wordings were slightly amended.

[98] Although some of the learners' scores were relatively low, no learners were excluded from the study on the basis of their proficiency test scores. Instead, distractors in the main tasks were used to exclude any learner whose proficiency level may have been insufficient for the task (see section 6.2. from Chapter 6).

Table 8 The Demographic characteristics and proficiency levels of participants.

Groups	Proficiency levels	No.	Age Mean SD	Years of studying the L2 Range	Years of living in the L2 country Range	Proficiency test		
						Mean score	SD	Range
AE (*n*=60)	elem	16	31.70 5.53	1-5	1-2	20.50	2.56	16-23
	int	33		5-15	3-4	27.64	1.91	24-30
	adv	11		11-20	3-4	34.00	2.45	31-38
EE	n/d	20	22.65 2.58	n/a	n/a	n/a	n/a	n/a
EA (*n*=20)	elem	12	26.45 9.62	1-4	0-2	17.75	4.99	17-22
	int	4		5-10	0-2	27.25	1.500	26-29
	adv	4		5-10	3-4	35.25	2.22	33-38
AA	n/d	20	31.00 4.39	n/a	n/a	n/a	n/a	n/a

Note: The control groups do not need to do the proficiency test; hence no data (n/d) is reported in the table and because they are native speakers no data is needed in the columns of no. years of living in an L2-speaking country and studying an L2.

A one-way ANOVA (Analysis Of Variance) test was conducted within each L2 to compare the scores of the L2 groups in the proficiency test, and the results reveal a significant difference between the four groups ($F(2,57) = 126.947$, $p < .001$). Post hoc Scheffe tests indicate that the three learner groups ($p=0.001$) differ significantly from each other in their performance on the proficiency test, and that each of them also differs significantly from the control group ($p = 0.001$).

5.4 Selection of motion constructions for use in the experimental study

As already mentioned in this chapter, two data collection instruments were designed: an acceptability judgment task, and a picture description task. The method of selecting motion constructions was the same for each task, and is described in this section. Specific details of each task are then provided in sections 5.7.

Some of the selected motion constructions used were obtained from earlier L2 acquisition studies of particles by Arabic learners of English (e.g., Habash, 1982; Abisamra, 2003; Tahaineh, 2010; Abushihab, 2011). I also consulted the *Cambridge Phrasal Verbs Dictionary* (2006). To reach a decision about which items to incorporate, the following steps were taken: I identified all the constructions expressing motion events cited in prior studies, in addition to those I selected from the dictionary. This totalled 71 items. To examine which of the targeted items had semantically and lexically Arabic counterparts and which did not, I consulted an Arabic-English Dictionary (Abu-Ssaydeh, 1995), and asked native-speakers of Arabic *(n*=4). Motion constructions that behave differently in MSA and the colloquial Arabic of Saudi Arabia were excluded as far as possible to reduce any inconsistency within the participants' responses.

I initially identified examples of motion constructions that might (not) need reassembly of a feature set from Arabic to accommodate the English feature set. To reach a final decision about which motion constructions to include in the main study, I tried them and excluded many for various reasons. Some motion constructions such as *stand up* were excluded because, in English, the particles used are commonly optional, which makes no difference to the learner's L1. Others motion constructions were also excluded such as *bail out*, as they were less common and might be unfamiliar to some L2 speakers. Moreover, motion constructions that do not have literal counterparts (e.g., manner verbs) were excluded such as the motion construction *fly down* which translates into *y'anqaḍ 9la* 'attack on', as example (84a-b) demonstrates.

(84) a. The eagle flew down to attack the rabbit. (English)

b. *anqaḍ*	*al-naser*	*9la*	*al-?arnab.*	(Arabic)
attacked	the-eagle	on	the-rabbit.	

'The eagle attacked on the rabbit'.

Furthermore, motion constructions with verbs that occur with more than one particle in a single context were excluded such as *jump up and down* as in *'the monkey jumped up and down'*. Furthermore, in line with Sinclair's (1987) emphasis on the significance of the frequency of co-occurrence of forms, frequency was calculated based on the *British National Corpus* (BNC, 2007), which reduced the quantity of motion constructions (*n*=29).[99]

Finally, the items that remained after these measures were employed in the experiment. No formal measures of sentence length or complexity were employed, but, to be consistent, the sentences used were roughly of comparable length, and, in all the sentences in the acceptability judgment task, the verbs were all in the simple past tense. The simple past was preferred because using progressive-*ing* could have biased participants: it seems that progressive-*ing* may allow a locative reading of the particle *through* as in (85a), whereas the simple past allows only the directional reading as in (85b), and, as such, (85b) may be judged acceptable whereas (84a) is odd. The past tense was chosen in order to yield the directional reading of particles.

(85) a. #They were walking across the Millennium Bridge. (AJT: Type 2a, 2)
b. They walked across the Millennium Bridge.

Afterwards, the tasks were piloted with native speakers (*n=20*) and L2 speakers (*n=20*) to validate the instruments and to attain a final version of the target items (for more information on the pilot study, see section 5.6). The intuition of native speakers acted as a filter for the test items. When there was inconsistency between the consulted references and the native speakers' responses, the latter source was used. The responses of the L2 speakers served as an assessor of the complexity of the test items. This led to the selection of 16 constructions of physical motion for each task.

The motion constructions selected for the acceptability judgment task were: *come from, drive to, move to, walk around, go through, walk across, fly above, jump over, get to, arrive in, crash into, go out, enter, exit, leave,* and *approach*. The other motion constructions which were selected for the picture description task: *fly to, move around, fly around, swim around, roll into, jump over, go across, jump into, climb down, ski down, crash into, slide down, enter, exit, leave,* and *approach.*[100] The reasons behind choosing these verbs will be further outlined in sections 5.7.1

[99] However, according to the results of the pilot study, frequency was excluded as it did not show a significant difference in the results of the pilot study and it was difficult to control. For further clarifications on this point see section 5.6.

[100] Some motion constructions were used in both tasks (i.e., *crash into, enter, exit, leave, approach*).

and 5.7.2.[101] The tasks included motion events with four different trajectory values which were adapted from Levin (1993) (See Table 9 below).

Table 9 Four trajectory values used in the experimental study.

Directional Feature	*Motion*	*Example of Arabic con.*	*Their English counterparts*
[path: inwards]	arriving & entering	*y'aṣil* 'to arrive'	*arrive in*
[path: outwards]	leaving & escaping	*y'akhruj min* 'to exit from'	*go out*
[path: towards-endpoint]	hitting & breaking	*y'aṣṭdam* 'to crash'	*crash into*
[path: downwards]	lowering & falling	*y'ataslaq* 'to climb'	*climb down*

The experimental design included three types of motion constructions: (1) transitive (e.g., *the students ran into the school*), (2) intransitive and (2) inseparable (e.g., *Honeybees flew away*).[102] Separable verb-[X]-particle constructions were excluded (e.g., *Can you pick me up at the airport at 8:30 tonight?)*. However, participants were not expected to behave differently on the basis of this distinction. The target items semantically fell into two classes according to Dagut and Laufer (1985): literal (e.g., *the hippo jumped into the lake*) and completive (e.g., *many clowns got off a yellow car*). However, figurative forms were excluded as they do not show a real physical movement (e.g., *Hamlet fell in love with Ophelia*). The task included different types of path verbs: trajectories (e.g., *roll*), direction (e.g., *exit*) and deixis (e.g., *go*) (Noguchi, 2011: 38).[103]

The experimental study was designed in a way that addresses the research questions and tests the formulated hypotheses in Chapter 4. The two tasks include two main types of motion verbs. The first type includes motion verbs that behave similarly in Arabic and English, using corresponding particles (e.g., *come from, drive to, move to,*

[101] These verbs will be listed in tables according to [±FR] variable in section 5.7.

[102] However, it was difficult to find inseparable constructions in both English and their Arabic equivalents. For example, the motion constructions *swim around* in 'the shark swims$_{[v, manner]}$ around $_{[p, path]}$ the man' is inseparable in English, but its Arabic equivalent *tasbaḥ hawal* is separable as in '*tasbah*$_{[v, manner]}$ *smakaht al-qresh* *hawal*$_{[p, path]}$ *arajul*'.

[103] Again, the participants were not expected to behave differently based on this distinction.

walk around, fly to, move around, fly around and *swim around*). I assume that the feature configurations of these motion constructions are the same in both the L1 and L2, which, consequently, require no feature reassembly "−FR", requiring only simple mapping. I will call this type 'Type 1: L1-L2 matching feature set'.

The second type includes motion verbs that behave differently in Arabic and English, using different particles (e.g., *go through, walk across, fly above, jump over, roll into, go across* and *jump into)* or omitting them in one language but not the other (e.g., *get to, arrive in, crash into, go out, climb down, ski down, crash into, slide down, enter, exit, leave* and *approach)*. I assume that the feature configurations of these motion constructions are different in L1 and L2, and, consequently require feature reassembly, "+FR", and I will call this type 'Type 2: L1-L2 mismatching feature set' as described earlier in Chapter 4. I assume that a comparison of L2 speakers' performances on the two types will allow us to find out whether Type 2 "+FR" is more difficult to acquire than Type 1 "−FR". The following sections will give more details of the experimental design and the adopted procedures.

5.5 The Arabic version of the tasks

The tasks were originally designed in English to examine the Arabic speakers' performance on the L2 motion constructions. Later, both tasks were translated into MSA to attempt a bidirectional study and to find out how the English speakers of Arabic acquire motion constructions from a feature-based contrastive analysis.[104] MSA was used because it is the high variety, as Arabic is diglossic with 22 dialects as low varieties (Maalej, 2011), and also because MSA is commonly used within the L2 classroom context and Arabic learners of English were mainly taught by Arabic teachers from different varieties of Arabic (e.g., Egyptian Arabic, Jordanian Arabic, Syrian Arabic and Iraqi Arabic). An English-Arabic online dictionary, ECTACO (1990) was used for the translations. As well as intuitions of Arabic speakers (n=2) were consulted during the translation process. The Arabic version corresponds

[104] Some of the Arabic test items turned out to be problematic. See Chapter 7 for further discussion.

exactly to the test items of both tasks in the English version.[105] For the full set of the experimental task in the Arabic version, see Appendix 2D, 2E, 2G and 2H.

5.6 The Pilot study

In order to check validity, experimental instruments were pilot-tested before the actual data gathering. The test instrument was first piloted on 20 participants whose L1 was English (*n*=10), and Arabic speakers of English (*n*=10). The point of piloting the materials was to assess how well they worked and to find out whether they achieve what they are expected to. Furthermore, piloting aimed to check how long participants would need for the tasks, and whether instructions were clear and the order of the tasks appropriate. After piloting the test items, I found that the participants completed each test within the expected time limit. Instructions were clear and the order of tasks appeared appropriate. Detailed results of the pilot study are not presented here.[106] Not all the test items worked equally well; there were some items that worked better than others. The target items which were missed by either the entire L2 group or some of the control group were regarded as problematic, and, thus, were revised for the eventual full-scale study (see Appendix 4B for motion constructions included in the pilot study).

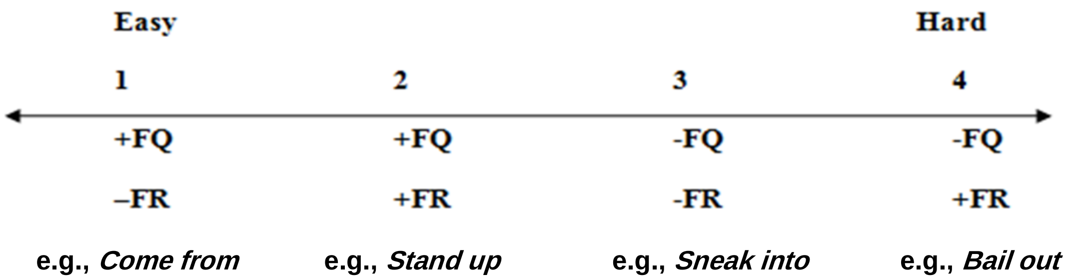
As a result of the pilot, certain changes were made. One change was to some of the pictures used in the picture description task. A number of the participants found some pictures hard to describe, or they did not show the target motion in an unambiguous way to the participants. Another change was to some of the vocabulary items for both the acceptability judgment task and the picture description task. Attempts were made to reduce (as far as possible) the possibility of non-comprehension of vocabulary items. During the pilot study, the participants were instructed to ask the examiner if the instructions or the test vocabulary were not clear. This procedure aimed to reduce non-target like usage based on misinterpretation.

[105] English proper names (e.g., *Edward, Titanic, the Millennium Bridge*) in both tasks were not translated into Arabic, a common method used by Arabic translators when translating from Western literature to Arabic, e.g., *Hamlet, Romeo and Juliet, Julius Caesar,* etc.

[106]Detailed results of the pilot study are not reported here due to word limit.

Another change that is worth mentioning here was excluding the frequency of occurrence variable [±FQ]. The target items were initially divided based on two variables: Feature Reassembly [±FR] and Frequency [±FQ]. The test initially included motion constructions (*n*=16) grouped into four categories: (i) frequent motion constructions that do not require feature reassembly, (ii) frequent motion constructions that require feature reassembly, (iii) infrequent motion constructions that do not require feature reassembly, and, (iv) infrequent motion constructions that require feature reassembly. I attempted to find out whether frequent motion constructions that do not require feature reassembly would be much easier than infrequent motion constructions that require feature reassembly (see Figure 7).

Figure 7 Difficulty hierarchy of L2 acquisition based on Feature Reassembly (FR) and Frequency (FQ).



Tables 10 and 11 below present the initial items used in the tasks, in which numbers >10/100 are considered +FQ, whilst <10/100 are −FQ. The most challenging motion constructions, hypothetically, were infrequent and require FR. In brief, the results of the pilot study suggest that the L2 group's performance seems to fluctuate. They found infrequent motion constructions that require FR the most challenging. Overall, the results of the pilot study indicate that the L2 group shows a slightly better performance on frequent items (e.g., *drive to*) than infrequent items (e.g., *roll up*), and on items that do not require FR (e.g., *run into*) instead of those that do require FR (e.g., *rush in*).

Table 10 Motion constructions targeted in the acceptability judgment task of the pilot study based on [±FR] and [±FQ].

	1	2	3	4
	+FQ – FR	+FQ +FR	−FQ −FR	−FQ +FR
	Come from	*Get in*	*Jump into*	*Rush in*
FQ	143.06	82.13	2.25	1.62
	Drive to	*Go out*	*Crawl out*	*Bail out*
FQ	17.41	90.06	1.02	1.54
	Run into	*Sit down*	*Sail to*	*Climb down*
FQ	14.24	47.55	2.28	1.89
	Move to	*Stand up*	*Fly out*	*Roll up*
FQ	55.37	33.7	3.65	4.59

FQ= Frequency, FR= Feature Reassembly

Table 11 Motion constructions targeted in the picture description task in the pilot study based on four trajectory values.

	1	2	3	4
	[Path:upwards]	[Path:downwards]	[Path:inwards]	[Path:outwards]
	fly up	*ski down*	*break into*	*get out*
FQ	1.89	0.28	15.03	69.92
	climb up	*slide down*	*run into*	*fly out*
FQ	5.33	2.89	14.24	3.65
	stand up	*drop down*	*go into*	*run away*
FQ	33.7	3.51	82.93	12.34
	go up	*fall down*	*rush into*	*scare away*
FQ	17	6.81	3.05	0.29

Note: The numbers in the table above indicate frequency in the British National Corpus (BNC, 2007) in frequency xx.xx instances per million words. For example, my query "{climb/V} * down" returned 186 hits in 137 different texts (98,313,429 words [4,048 texts]: frequency: 1.89 instances per million words).

However, frequency did not show significant difference. Frequency was excluded in the main study for the reason that it did not show a correlation in the results. This was advantageous because, as seen in Table 10, it was difficult to adequately control the frequency variable with +FQ varying from 14.24 to 143.06. Another reason is that the BNC frequency includes both the idiomatic and non-idiomatic uses of each construction. That is, the BNC did not allow differentiating between, for example, the three meanings of *run into*.[107] The non-target like motion constructions used in the initial version of the acceptability judgment test were manipulated by deleting the directional particles, whereas the final version included all three non-target like constructions (i.e., particle-deletion, particle-addition and particle-substitution).

Nevertheless, I provided the frequency information even though I do not use it in the full-scale study to double check whether frequency has an effect on learnability or not. Overall, the pilot study was helpful in terms of checking how the test works and identifying any flaws. It helped to overcome design limitations, and allowed me to develop and refine a more appropriate design for the main study.

5.7 The Experimental materials

5.7.1 The Acceptability Judgment Task (AJT)

The first task was an acceptability judgment test (AJT). This instrument was employed rather than other cued research instruments (e.g., multiple-choice tests) for the reason that it does not draw participants' attention to the issue under investigation. The aim of the AJT was to examine the learners' initial mappings, more specifically that, if learners map their L1 lexical items to L2 specifications, they should be able to discriminate the target-like forms from the non-target like forms. This task is developed to illuminate the initial mapping between the learners' L1 morphemes and the target morphemes. The prediction was that if L2 learners had already achieved this mapping, they would successfully discriminate the grammatical sentences from the ungrammatical sentences.

The test included 42 items: critical (*n*=32), distracters (*n*=8) and practice (*n*=2). The last two types were not counted in the analysis. For the critical items, there were four

[107] Coding all the results by hand was not really possible within the time constraints of the study.

variables to be tested using four motion verbs that would be encountered twice in the test. Thus, there were eight critical sentences that comprise motion constructions from the same type: grammatical items (*n*=4) vs. ungrammatical items (*n*=4). Example (86) illustrates a sample test item where (86a) with verb-particle morphology is target-like whilst (86b) with verb morphology is non-target like:

(86) a. A small plane crashed into the new building. AJT: Type 2c, 3
b. *Because of the ice, the driver crashed ^ the house. (into/*Ø)

A total of 16 simple motion verbs were selected to form the critical sentences. The sentences took the format of [v, manner], for example, the motion verb *crash* that carries [manner] of motion, as well as [v, path], for example, the motion verb *enter* that holds [path] of motion.

On the basis of the two types of FR identified in section 5.4, the target items were divided based on Feature Reassembly [±FR]. The test included motion constructions (*n*=16) grouped into two main categories: motion constructions that behave similarly in the L1 and L2, and, thus, do not require feature reassembly [−FR] with only simple mapping, which I referred to as 'Type1; L1-L2 matching feature set' in the previous chapter. It also included motion constructions that behave differently in L1 and L2, and, thus, require feature reassembly [+FR], which I referred to as 'Type 2; L1-L2 mismatching feature set'. The latter are subdivided into three subcategories based on what type of feature reassembly they would require - to substitute, to delete from, or to add to the L1 feature set. The test type can be identified by the item index, i.e., '−FR' in the index shown in Appendix 2A, and this indicates items that do not require feature reassembly, whereas '+FR/A', '+FR/D', and '+FR/S' in the index indicate items that require feature reassembly by adding, deleting or substituting, respectively. For example, index '+FR/A01' is Type +FR/A, Token 1, and '+FR/S02' is Type +FR/S, Token 2, and so on.

Each set of the four types includes 4 items that appear twice in the test (once grammatically, as in (86a) and once ungrammatically, as in (86b)). That is, eight tokens were created for each type (*n*=4), giving a total of (8 x 4) or 32 test items. These were mixed randomly with 8 distractor items to create a 40-item test battery. The full test battery is presented in Appendix 2A. Table 12 presents the motion constructions used in the AJT. The particles marked with asterisks were unacceptable in the specific context of the test item they occurred in.

Table 12 Motion constructions targeted in the AJT based on [±FR][108]

Learnability Tasks			
−FR	**+FR**		
Simple Mapping (Type 1)	**Substitute** (Type 2a)	**Add** (Type 2b)	**Delete** (Type 2c)
*come from/*Ø* 143.06	*go through/*across* 57.99	*get to/*Ø* 251.89	*enter Ø/*to* 141.43
*drive to/*Ø* 17.41	*walk across/*through* 4.83	*arrive in/*Ø* 24.52	*attend Ø /*to* 91.26
*move to/*Ø* 69.64	*fly above/*on* 0.44	*crash into/*Ø* 3.82	*leave Ø/*from* 627.77
*walk around/*Ø* 5.32	*jump over/*on* 1.35	*go* out/*Ø 90.06	*approach Ø/*from* 68.73

Note: Type 2b is addition in terms of what is required to accommodate the target set of features and deletion in terms of the actual performance of the L2 speakers whereas, Type 2c is deletion in terms of what is required to accommodate the target set and addition in terms of the actual performance of the L2 speakers.[109]

As previously mentioned, frequency information was included (even though I do not use them in the statistical analysis) to double check for any possible effects. The test included four types; for each type, there are four items (with two pairs each: well-formed vs. ill-formed sentences). The ill-formed sentences were manipulated to represent motion constructions with the L1 feature sets. The following (87-90) are examples of these pairs.

Type 1 [−FR]

(87) a. A group of tourists walked around the town.

[108] The tables here are reported based on the test items from the English version; the Arabic version corresponds exactly to the same test designs of the English version.

[109] These types are presented in Chapters 6 and 7 in terms of actual performance of the L2 speakers. Hence, Type 2a is substitution, Type 2b is Deletion and Type 2c is Addition.

b. *A group of hikers walked the lake.

Type 2a [+FR] (requires substitution of L1 with L2 feature set)

(88) a. Different coloured kites flew above the big tree.
b. *The black birds flew on my head.

Type 2b [+FR] (requires addition to L1 feature set)

(89) a. My cousin's family arrived in Dubai yesterday.
b. *The newly married couple arrived ^Venice.

Type 2c [+FR] (requires deletion from the L1 feature set)

(90) a. The runners finally approached the finish line.
b. *The zookeeper approached from the lion cautiously.

The two practice items, presented one by one, were given at the beginning of the task as a part of the explanation of how to complete the task, with time for discussion of the task and time for participants to ask questions in order to prepare them for the actual test. Distractors (*n*=8) were added to each test set. It was considered that eight distractors were enough because the different test types within each task also offered a certain amount of distraction from each other. Four of the distractors were expected to be judged acceptable and four unacceptable - the same acceptable-to-unacceptable ratio as for the actual test items. The reason for the unacceptability of the distractor items was grammatical non-target like usage (for distractors, see D in the index shown in the appendix 2A and 2D). Not all types were distinguished in the test, and were presented as a single task. The distractors and the test items were mixed randomly using the *Research Randomizer* (2015) to form two different orders: 'Order 1' and 'Order 2'. The latter was the reverse of Order 1. These orders were administered equally across the sample. Some participants completed Order 1 for each task and others Order 2 (e.g., 10 subjects of the control group received order 1 and the other 10 received order 2). This was intended to reduce any potential effect of the order in which test items appeared.

The AJT was designed in a restrictive manner that permitted only one acceptable construction within the given context. The target parts of the sentences were not underlined so as not to draw the participants' attention to the focus of the study.

Instructions were given to the participants that they are going to rate, on an answer sheet, the appropriateness of a set of sentences with the use of a 4-point scale (1= *I'm sure this is incorrect*, 2= *I think this is incorrect,* 3= *I think this is correct*, and 4= *I'm sure this is correct*). A forced-choice was used excluding the neutral choice *I do not know*, as this might be chosen as the most preferred option.[110] The participants received an explanation that the ratings '1' and '2' indicated degrees of rejection of the sentence, and the ratings '3' and '4' indicated degrees of acceptance. This scale is presented on the answer sheet that is provided in Table 13. The complete answer sheet is given in Appendix 2B in English, and Appendix 2E in Arabic. A full copy of the AJT, along with the instructions given to the participants, can be seen in Appendix 2A, 2B, 2D and 2E.

Table 13 Answer sheet layout for the AJT.

Sentence no.	I'm sure this is incorrect	I think this is incorrect	I think this is correct	I'm sure this is correct
1	1	2	3	4
2	1	2	3	4

The test items from the AJT were displayed one by one on a computer screen via the *Microsoft PowerPoint* program. The test items were not available on the answer sheet, reducing the chance of participants going back and changing their answers. Participants were given 13 seconds to read and then judge each sentence by circling the appropriate number. They were instructed that they were going to hear the sound of a bell indicating a new sentence each time they heard it.

5.7.2 The Picture Description Task (PDT)

The picture description test (PDT) was designed to examine the participants' proficiency in producing target-like motion constructions. The aim of the PDT was to examine the learners' initial mapping configurations, more explicitly, the prediction was that if L2 learners had already achieved initial mapping of their L1 lexical items to L2 specifications, they should be able to produce target-like constructions with L2 specifications and abandon their L1-specific morphology. This task is designed to

[110] Although the option 'Don't know' was favored in most previous studies to avoid random guessing by the participants in cases when they did not know the answer, it was excluded because it might be the most preferred among others.

illuminate the initial mapping between the learners' L1 morphemes and the target morphemes.

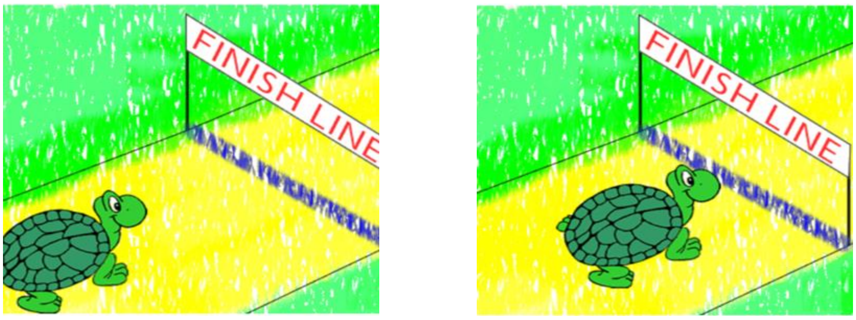
Animated pictures were used to illustrate motion events with both [manner] and [path]. The test included 26 items: critical (*n*=16), distracters (*n*=8) and practice (*n*=2). Neither the distracters nor the practice items were counted in the analysis. Again, four tokens were created for each type (*n*=4), giving a total of (4 x 4), or 16 test items. These were mixed randomly with 8 distractor items to create a 24-item test battery. Similar to the AJT, the target items were divided based on Feature Reassembly [±FR]. Table 14 presents the items targeted in the PDT. Again, similar to the AJT, particles marked with asterisks were unacceptable in the specific context of the test item they occurred in. Numbers in the table indicate frequency per million words by the British National Corpus (BNC, 2007).

Table 14 Motion constructions targeted in the PDT based on [±FR].

Learnability Tasks			
−FR	**+FR**		
Simple Mapping (Type 1)	**Substitute** (Type 2a)	**Add** (Type 2b)	**Delete** (Type 2c)
*fly to/*Ø* 15.06	*roll into/*in/to* 2.07	*climb down/*Ø* 1.89	*enter Ø/*to* 141.43
*move around/*Ø* 5.79	*jump over/*on* 1.35	*ski down/*Ø* 0.28	*exit Ø/*from* 4.15
*fly around/*Ø* 1.29	*go across/*on* 5.07	*crash into/*Ø* 3.82	*leave Ø/*from* 627.77
*swim around/*Ø* 0.37	*Jump into/*in/to* 2.52	*slide down/*Ø* 2.89	*approach Ø /*from* 68.73

For each test item, the participants were presented with an animated image depicting a directional scenario together with a specific motion verb to fill in the blank for each picture, as Figure 8 shows. The critical pictures showed different manners of motion (e.g., *sliding, climbing, flying, jumping*) in four basic trajectories (e.g. *up, down, in, out*). The order of the pictures and sentences used was also randomised.

Figure 8 Snapshot of a sample motion animation of the verb *approach* 'y'aqtarib min'



What is going on?

(91) A turtle (approach)……………………… the finish line.

Stimulus:	A GIF picture of a turtle approaching a finish line.
Prompt:	A turtle (approach)………………… the finish line.
Model answer:	A turtle is approaching the finish line.
	(No requirement for using any particle)
Response:	*A turtle is approaching from the finish line.

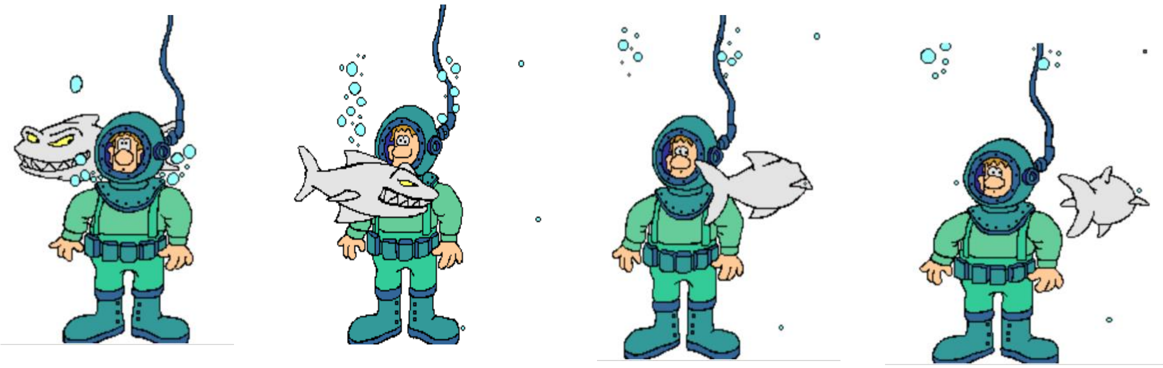
Examples (92a-b) illustrate sample test responses to the stimulus shown in Figure 8, where (92a), a sentence with verb morphology, is target-like, whilst (92b), with verb-particle morphology, is non target-like.[111]

(92) a. A turtle is approaching the finish line. PDT: Type 2c, 4
b.*A turtle is approaching from the finish line. (Ø/*from)

[111] The Arabic verb *y'qtarib* 'approach' might occur with *min* 'from' or *ila* 'to'.

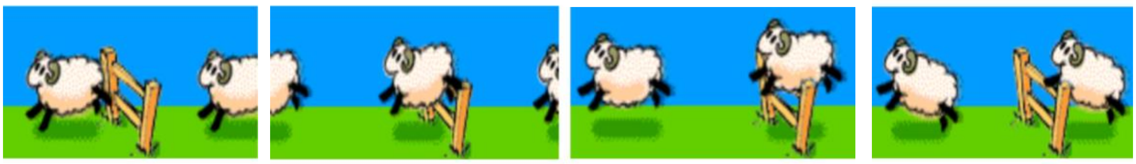
Each of the four critical sentences comprised motion constructions from the same type (either Type 1 or Type 2). Examples (93-96) present four different test items accompanied by the respective animated pictures (Figures 9-12).

Figure 9 Snapshot of a sample motion animation targeted in the PDT: Swimming around a man (Type 1: −FR).



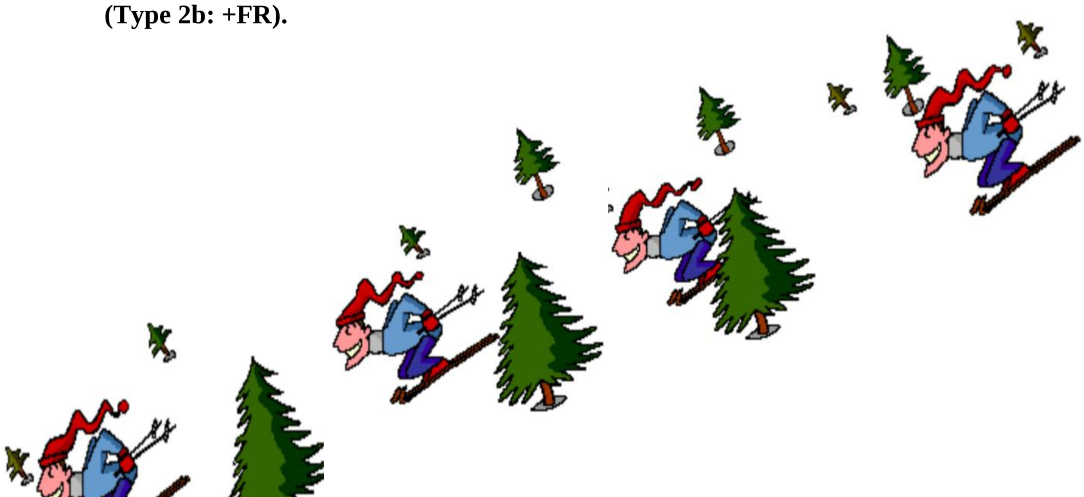
(93) A shark (swim)…………………a man.

Figure 10 Snapshot of a sample motion animation targeted in the PDT: Jumping over a fence (Type 2a: [+FR]).



(94) The sheep (jump)………………… the fence.

Figure 11 Snapshot of a sample motion animation targeted in the PDT: Skiing down a slope (Type 2b: +FR).



(95) A man (ski) ………………… a slope.

Figure 12 Snapshot of a sample motion animation targeted in the PDT: Entering a school (Type 2c: +FR).

(96) The students (enter)…………………a school.

The given animation pictures depicted actions performed by different agents (e.g., a fireman, a hippo, a golf ball). To avoid complexity, pictures comprised only a single movement (e.g., *An airplane is flying to India*). As in the majority of earlier studies (e.g., Berman and Slobin, 1994), pictures comprised two kinds of movement: self-initiated movement (e.g., *A turtle is approaching the finish line*) vs. caused movement (e.g., *A golf ball is being rolled into a hole*).[112] The filler pictures depicted a range of non-motion acts (e.g., sleeping, dreaming, thinking, crying, blinking, and singing) (see Appendix 2I).

The participants' production was restricted by means of a fill-in-the-blanks form. This method was selected because it was difficult to control the participants'

[112] Again, the participants' performance was not expected to vary based on this distinction and, hence, they were not included as variables in this study.

responses in the pilot study. In the pilot study, the examiner showed the animated pictures and asked “what is going on?”. The participants accordingly described the pictures using a wide range of motion constructions. The expected motion constructions were not compulsory; in preference of saying *stand up*, the participants might say *get up.* It is worth mentioning that native speakers might also describe some movements with only verbs especially if they do not pay attention to the object. Therefore, a single picture might trigger different patterns of description. For example, the following (97a-j) are some patterns triggered by the pictorial stimulus of ‘a lizard is climbing up a mountain’ from the pilot study.

(97) a. A lizard is climbing. AJT: Type 2b, 2
b. A lizard is climbing a mountain.
c. A lizard is climbing up a mountain.
d. A lizard is going up.
e. A lizard is going up a mountain.
f. A lizard is mounting.
g. A lizard is ascending.
h. A lizard is hiking.
i. A lizard is hiking up.
j. A lizard is hiking up a mountain.

Hence, as a result of the pilot study, a fill-in-the-blank form with a specific motion verb (e.g., *climb*) was adopted for each picture in the main task to control as far as possible the participants’ responses, especially when the objects were provided. The availability of the stimulus pictures also played a role in selecting the target items in this task, as some motion constructions (e.g., *come from)* were challenging to depict.

The PDT incorporated a variety of animated, coloured pictures in GIF (Graphics Interchange Format), extracted from two online websites: the Animation Library (2000), and Heathers Animations (2012).[113] I made sure not to include arrows on the target pictures (using arrows is a common format used by Inagaki, 2002) to indicate directional movement or signal an endpoint of movement to allow for more spontaneous responses, and not to draw the participants’ attention towards the issue

[113] However, due to the unavailability of any animated picture depicting the motion event *approaching*, the animated picture of a turtle approaching the finish line was created by an anonymous friend.

being investigated. Pictures showed the target actions for a few seconds. The animations used as stimuli for data collection were dynamic in nature, as this was appropriate to the research. Although the pictures were silent, they were rich with different movements involving displacement from one point to another. They triggered different descriptions of actions on the basis of a real dynamic object moving in a more natural context. Accordingly, participants had the opportunity to access images that elicited a natural perspective of movement structures. Prior studies (e.g., Berman and Slobin, 1994, Naigles *et al*., 1998) on spatiality mainly relied on static image descriptions (e.g., the wordless picture book *Frog where are you?* by Mayer, 1969). Although this type of stimuli yielded good findings, participants were often challenged with inferring movement from static pictures that might not always be clear in terms of the [path] of motion they aim to depict.

After designing the experiment, a thorough discussion was held with teachers of English as a Foreign Language (*n=2*) in Saudi Arabia to ensure that the tested items, both the sentences and pictures, are commonly familiar to the L2 learners. The teachers provided their corrective feedback. They agreed that the final version seemed appropriate. A full copy of the test items, including sentences and pictures used in both tasks, along with the instructions given to the participants, can be seen in Appendix 2C, 2H, and 2I.

5.7.3 Follow-up questionnaire on the AJT

A questionnaire was designed to follow-up on the AJT. After the administration of the experimental tasks, the examiner held a brief discussion with each participant. The follow-up questionnaire on the AJT was paper-based. By employing qualitative modes of enquiry, I attempt to shed light on the possibility the participants gave target-like responses by chance. The follow-up questionnaire was intended to gather qualitative data along with the quantitative data to find out which part of the sentence led participants to judge it as unacceptable. They were asked to elaborate on their intuitions about the task sentences, explaining why they think a specific structure is more accurate. The use of such methods was planned to avoid some of the disadvantages related to judgment tasks, whereby it is impossible to know from the participants' responses which word they regard as incorrect. The follow-up questionnaire was intended to probe these issues, and to shed more light on how participants would correct the test sentences. This method was utilised in Coppieters' (1987) study of the linguistic intuitions developed by native and near-native speakers of French. Qualitative data of this type is essential in order to explore whether L1 and L2 speakers' responses are of different types. In the present study, it is essential to know whether a participant is rejecting the sentence because s/he thinks the verb or particle is incorrect in the given context, or for other reasons. The kinds of questions that the examiner asked were related to why the participants rejected a particular sentence and what they think is more appropriate in the given context (See Appendix 2F and 2G).

5.8 Administration of the tasks

All tasks were administered at the same time in only one session per individual. Participants completed the tasks one-on-one, not in groups. Data collection took place from June to September 2014 .The participants were examined independently by the examiner in a quiet study area on the university campus. The examiner was satisfied that the place was comfortable, well-lit and free from distractions.

Instructions were given in L2 and L1 to avoid miscomprehension. First, all participants filled in a background questionnaire. Then, the L2 group completed the language placement test. Afterwards, both groups were invited to complete the AJT first, then, the PDT, followed by the follow-up questionnaire on the AJT. The AJT preceded the PDT in order to minimize the participants' awareness of the focus of the experiment. All participants completed the tasks in the same order. No time limit was imposed on the participants excepting for the AJT; however they were told as part of the instructions not to go back and change items once they had made a decision. The time taken for each element of the data collection was as follows:

(1) Background questionnaire: up to 7 minutes.
(2) Proficiency test (the OQPT for AE and the cloze test for EA): 25–35 minutes (3 minutes for explanation, up to 32 minutes for the actual test component).[114]

[114]The control groups of native speakers went immediately from step 1 to 3 as they did not need to undergo step 2 (i.e., language proficiency tests).

(3) AJT: 15 minutes (5 minutes for instructions and examples, 10 minutes for the actual test component).
(4) PDT: about 15 minutes (5 minutes for instructions and examples, up to 10 minutes for the actual test component).
(5) Follow-up questionnaire (on AJT): about 15 minutes (2 minutes for instructions, 13 minutes for the actual test component).

The times given allow for completion of each section comfortably, without rushing. It was planned that the L2 participants would complete all the tasks in one session lasting at most 90 minutes. The majority of the participants finished all tasks in less than 80 minutes.

The majority of the Arabic speakers of English were accessed through friends and acquaintances. The participants were invited through Facebook posts, Twitter posts, as well as through face-to-face invitations. Participants were solicited via phone calls and e-mails. The English speakers of Arabic, on the other hand, were students at the Arabic Language Department at Leeds University. The numbers of students in the Arabic classes were small and not all of them accepted taking part in the current study. The Arabic version of this study, as a result, turned out to have a small number of English speakers of Arabic. Due to time limitations, I was unable to travel to collect data from English learners of Arabic in an Arabic-speaking country.[115] I tried to access more English speakers of Arabic through the mosque community (i.e., Leeds Grand Mosque's noticeboard), but some of them withdrew as they found the task too difficult for their lower L2 levels.

Participants were informed that their participation in this research study is completely voluntary and that, if they decide to take part, they will still be free to withdraw without giving a reason, even during the session itself. They also were informed that only group results will be given, and a summary of the results will be available to them upon request. Ethical approval was obtained before data gathering commenced, and participants who finished all tasks were remunerated for their time and efforts (£5). For the information sheet and the informed consent form for participation in this research study, see Appendix 1A and 1B.

[115]It was difficult to approach other universities in the North in order to access more participants due to financial and time limitations and because some universities do not have an Arabic department.

At the beginning of the experiment, the examiner explained all procedures concerning the administration of the tasks to each participant, individually. On both tasks, the participants were offered detailed oral and printed instructions in the L2 along with their L1 for the purpose of avoiding any misinterpretation. That is, instructions were given in English to the L1 English-speaking learners of Arabic and the native English speakers, and instructions were given in Arabic to the L1 Arabic-speaking learners of English and the native Arabic participants. The oral instructions were based on the written instructions on the answer sheets. However, participants had the opportunity to ask questions during the presentation of the instructions and the examples. Each participant and each task was numbered to ensure each participant attempted both of the tasks. Participants were not instructed to concentrate on grammar and no language support was permitted. They were prohibited from making use of any dictionary (hard copy or electronic) that might help them guess the acceptable motion constructions to the given items and to leave empty any item they were uncertain of. During the experiment, no (in)correct feedback was given.

On the AJT, participants were instructed to read and then judge each sentence appearing on the screen by circling the appropriate number available on the sheet of paper. Then, as far as the PDT was concerned, they were instructed to fill in gaps using the verbs given within the brackets to form complete and correct L2 sentences. In other words, the participants' task was simply to watch the animated picture, to read the combined fill-in-the-blank sentence and to complete it using the given verb. Pictures were displayed one-after-another on a laptop screen,[116] whereas, the corresponding fill-in-the-blank sentences were available on a pre-prepared answer sheet preceded by the question "*What is going on?*", which encouraged the participants to describe the target motion by using the verb provided. After describing the given picture, participants advanced to the subsequent test item at their own pace. The actual tests were preceded by trials (n=2) allowing a repeated attempt. These were intended to familiarise participants with the tasks and the procedures. None of the participants failed to complete the practice or the actual sessions.

[116] A laptop was used to display both the sentences from the AJT and the animated pictures from the PDT for each participant.

Later, participants were instructed to comment on the AJT in the questionnaire. At the start of the follow-up questionnaire, all participants were assured that by asking them about certain sentences, this did not indicate that their responses to them in the AJT had been incorrect. I emphasised that my main interest was in knowing which part of the sentence lead them to reject the sentence and to find out why they decided that it is incorrect. A full copy of the items included in the follow-up interview, along with the instructions given to the participants in both studies, can be seen in Appendix 2F and 2G.

5.9 Analysis procedures

The scoring for the AJT was carried out by the investigator, while the coding and scoring process for the quantitative, as well as the qualitative data from the PDT and the follow-up questionnaire was completed by two independent persons. They compared coding outcomes and any inconsistency in scoring the PDT was resolved via discussion. Output was quantitatively and qualitatively analysed to observe any variations. The analysis of the participants' responses was done with the help of native speakers of both languages to interpret the participants' responses for both semantic and syntactic acceptability.

The reasons for the non-target like constructions given by the L2 group were categorised into two main classes: (1) non target-like constructions which are caused by the participants transferring their L1 knowledge to the L2, and, (2) developmental (i.e., non-target like constructions that occur normally while speakers expand their knowledge into L2 structures). The former was categorised into three classes of expectations for the L2 learners' behaviour: L2 learners are likely to be unsuccessful at substituting, at deleting from, and at adding to the L1 feature clusters (adapted from Corder's (1974) taxonomy).

The data were coded using Excel. For the analysis, the data gathered from the tasks were scored as acceptable vs. unacceptable. The acceptable responses for both tasks were coded as 1 and the unacceptable responses as 0. For the analysis of the AJT, the rating scale of '1, 2, 3, 4' was changed to '1, 4'. On the transformed scale, 1 indicates rejection of the test type, whereas 4 indicates acceptance of the test type. For example, a 'rating of 4 (3)' means, a 'rating coded as 4 for the analysis but which was 3 on the actual rating scale'. The ratings for the eight tokens for each type were averaged for each participant. For the analysis of the PDT, each unacceptable response was categorised into one of the three types: particle-substitution, particle-deletion and particle-addition. Unanswered items were counted as invalid. The filler and the practice items were not considered either. For more details on the data analysis and the statistical procedures used to analyse the data, see section 6.3.1. and 6.3.2.

As far as the qualitative data analysis is concerned, the qualitative data were organized by coding into reduced but meaningful categories, and inferred by reference to connections that emerge from the data. Theme extraction techniques were used such as pattern matching in which I identify connections, and develop related themes: i.e. justification, explanation, and correction. Different particpants respond dissimilarly to the same question by using different phrases, however, these phrases are still conceptually related.

5.10 Conclusion

The purpose of this chapter was to describe the research methodology, including the participants, the instruments and the procedures used in designing the instruments and data collection. A total of 120 individuals participated in the study in single sessions lasting approximately 80 minutes each. The primary purpose of the study was to investigate how L2 speakers acquire motion constructions. The experimental study involved both a quantitative and qualitative approach, using two tasks to gather data along with a follow-up questionnaire. After classifying the non-target like constructions, the most frequent ones were identified. Afterwards, the types and frequencies of these non-target like constructions were compared across the three levels to find out whether the rate of each type significantly decreased/increased across the three levels. The findings regarding the examination of each task for each group of speakers are reported in Chapter 6.

Chapter 6. Results

6.1 Introduction

In this chapter, the results of the data analysis are presented. The data were collected and then analysed in response to the problems posed in Chapter 4. The data obtained from the experimental study in relation to the research questions and predictions formulated in the previous chapters are described here. This chapter presents the research findings from the two main tasks: (1) the acceptability judgment task (AJT), and, (2) the picture description task (PDT). The results are divided into six subsections. The first section presents details of the distractor results first, since these were used to determine whether any data should be excluded from the analysis. The second section deals with the results of the AJT, whilst the third section deals with the results of the PDT for the English version. The fourth section deals with the results of the AJT task, whilst the fifth section deals with the results of the PDT for the Arabic version. Finally, the sixth section presents a summary of the results from the two studies (i.e., both the Arabic and English versions). Within the feature reassembly framework, I hypothesized that the L2 group and the control group will show similar patterns on Type 1 (Matching) but not Type 2s (Mismatching) of the test items that have been described in Chapter 5, that is, that the L2 group will acquire Type 1 earlier and find it easier than Type 2.

A total of 1440 tokens were collected and coded for the dependent variable in the present study. The percentage of accuracy for the responses represented by each raw score is reported. Data is analysed in response to the research questions. The first question was: *Do learners find L2 motion constructions with matching feature configurations to their L1 unproblematic?* For the sake of the data analysis, I called this question ‘Type 1: Matching [−FR]’. The second main question was: *Do learners find L2 motion constructions with mismatching feature configurations to their L1 problematic?* I called this question ‘Type 2: Mismatching [+FR]’. Type 2 was subdivided into three categories based on what type of [+FR] they would require: Type 2a-Substitution, Type 2b-Deletion, or Type 2c-Addition. To facilitate presentation, each section starts with the main question that lies behind it.

6.2 Distractor items

In terms of the distractors used, the responses to the distractor items in both tasks in both versions were initially examined with the intention of making a decision about whether to eliminate any participants' data from the analysis as a result of a possible lack of understanding of the given tasks. All the included distractors were intended to be unambiguous. Overall, there were no unreliable distractors identified in either version of the tasks and, hence, no distractors were ignored when considering whether any of the control participants' data should be excluded due to unacceptable distractor answers. Thus, the result was that the eight distractors remained the same for consideration in the English and Arabic data (See Appendix 5A, 5B, 5C, and 5D for the results of distractors used in the AJT and PDT by all learners).

The criterion for inclusion of participants' data in the analysis was set at a minimum of four acceptable distractor responses out of the total of eight for the AJT and the PDT, with no more than four unacceptable responses on either the AJT or the PDT. The word 'acceptable', for example, is defined as a rating of 0 (1) or 1 (2) on distractors where a sentence did not match the L2 construction (D01, D05, D07, and D08), and 2 (3) or 3 (4) on distractors where a sentence matching the L2 construction (D02, D03, D04, and D06) on the AJT. By this criterion, the data from three Arabic speakers of English were excluded from the analysis. The resulting group sizes for the analysis data for the English version were: native English= 20, elementary AE=16, intermediate AE=33 and advanced AE=11. As far as the Arabic version is concerned, the criterion for inclusion of participants' data in the analysis was the same as in the English data: a minimum of four acceptable distractor answers out of eight, with no more than four unacceptable responses on either the AJT or the PDT. On this basis, there were no exclusions from the Arabic data. The resulting group sizes for the analysis data for the Arabic version were: EA=20 and AA=20.

6.3 Study 1: Arabic learners of English

While most of the critical test items in Study 1 (i.e., the English version) were found to be reliable due to the lack of optionality and ambiguity, there were a number of test items in Study 2 which were unreliable due to the optionality of some particles. However, I decided not to ignore these when considering participants' performance on the items, and consider this optionality factor while marking the participants' responses. This was for the reason that exclusion would result in a considerable number of test items being omitted, which might influence the overall design of the study. I think it is important to discuss the optionality of the use of the particles in cases where L2 learners might find a particle that is optional in their L1, while it is obligatory in their L2 (e.g., *y'aṣil* (*ila*) 'arrive in'). All the remaining test items in both tasks were considered reliable.

6.3.1 Results on the Acceptability Judgment Task

This section presents the results of the first task: the acceptability judgment task (AJT), first by all levels of L2 speakers of English (AE, L2 group), and then the native speakers of English (EE, Control group) on Type 1 (Matching) and Type 2 (Mismatching). Then, the results are presented by proficiency levels.[117]

Group means were computed and analysed using the Statistical Package for the Social Sciences (SPSS). To describe and present the collected data, two essential data analysis methods were applied: Exploratory Data Analysis, and Statistical Tests. For the statistical tests, summary measures (i.e., means) are used for both categorical and numerical variables. A Single Factor ANOVA for means was used to determine the statistical differences between the means of the study items according to the differences in groups of L2 speakers and native speakers. The Single Factor ANOVA allows us to test for differences between multiple means simultaneously, consistent with the statistical hypothesis stated and without the inappropriate inflation of the Type 1 Error Level originally selected (in this study, it is 5%). Also, a Friedman test was used to determine the statistical differences between the medians of the test types according to the difference in groups of Type 2s, Mismatching in both tasks.[118]

[117] Recall that the L2 groups were divided into three proficiency groups—elementary, intermediate and advanced— on the basis of their performance on the OQPT, as discussed in Chapter 5.

[118] The analysis procedure for the results of both tasks in the Arabic version was the same as the English version.

6.3.1.1 Do Arabic learners of English find motion constructions with mis/matching feature configurations to their L1 un/problematic within Type1 and Type 2s?

Table 15 shows the different statistics (means) for both types all speakers. As far as the L2 group results are concerned, it is clear that Type 1 (Matching) shows a higher mean (6.12) score compared with Type 2s (Mismatching). However, the scores for Type 2s are very close to each other (see Table 15 and Figure 13). Notice for all types that the maximum scores are 7 and 8. As a result, the order of accuracy scores for types using means for Arabic learners of English (from the highest to the lowest) are Type 1, Type 2c-Addition, Type 2b-Deletion, and Type 2a-Substitution. This suggests that Arabic learners of English find Type 2 motion constructions with mismatching feature configurations to their L1 more difficult to master, which is compatible with the proposed hypotheses in Chapter 4.[119] Figure 14, on the other hand, shows the performance of the control group; it seems that they did not show a significant difference in their performance on the different types.

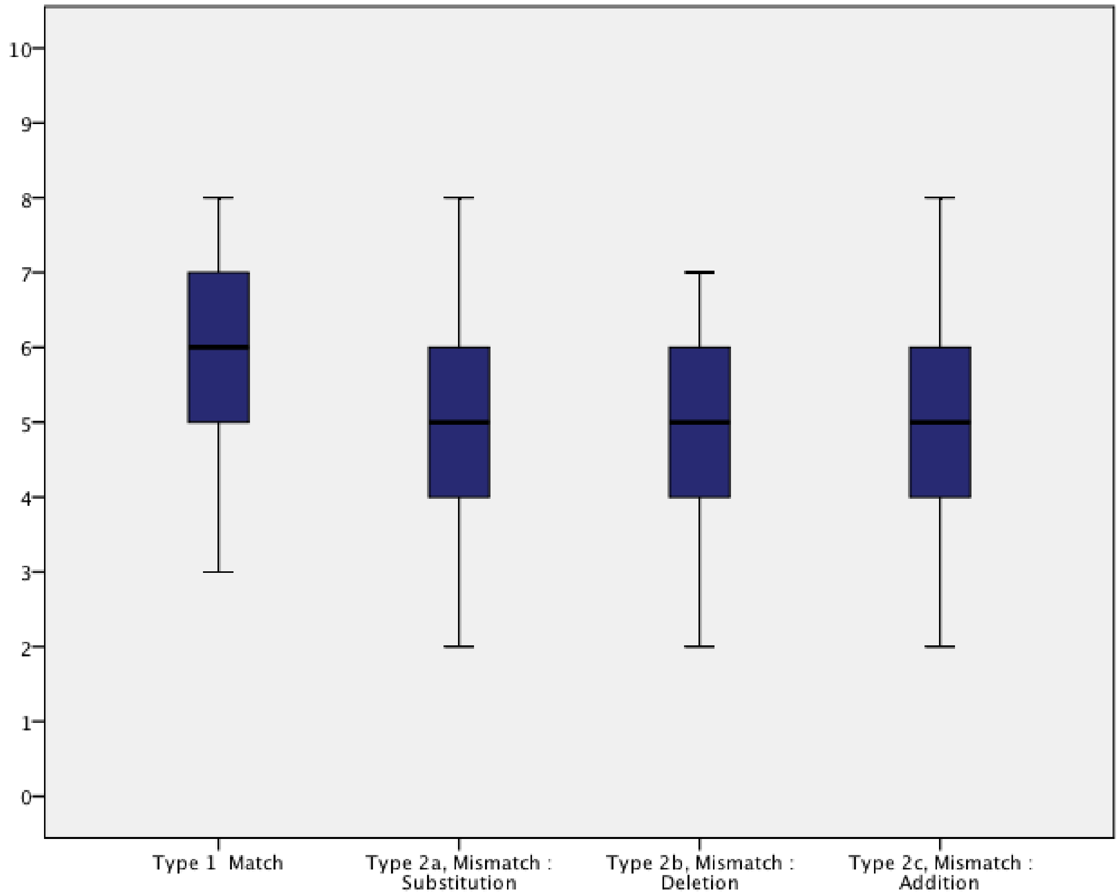
Table 15 Mean accuracy and standard deviations of Type 1 & Type 2s for AE and EE on the AJT.

Group		*Type*			
		1:Matching	*2a:Mismatching, Substitution*	*2b:Mismatching, Deletion*	*2c:Mismatching, Addition*
AE *n=60*	Mean	6.12	4.78	4.87	5.22
	Std. Deviation	1.33	1.47	1.32	1.49
	Range	5	6	5	6
EE *n=20*	Mean	7.65	7.10	7.25	7.65
	Std. Deviation	.489	1.07	.85	.489
	Range	1	3	2	1

[119] Exploration of why this result occurs is presented in Chapter 7.

Accuracy, in this study, stands for the percentage (%) of the accurate responses. If the control group was 70% accurate on sentences with deletion, this means that they did not add the required particle on 30% of the total sentences.

Figure 13. Box-plot showing accuracy on all Types for the AE on the AJT



Additionally, using mean ranks, Type 1 is the highest in terms of accuracy. But, it is important to discover whether the observed differences in the scores are statically significant. Using the Friedman test, there is a very highly significant difference in the resulting scores between Type 1 and Type 2 ($X^2 = 27.35$, $p<0.001$) - see Table 16. This suggests that Arabic learners of English find meanings which require new semantics-morphology mappings more difficult than those constructions that do not require reconfiguration, as Figure 13 shows.

Figure 14 Box-plot showing accuracy on all Types for the EE on the AJT.

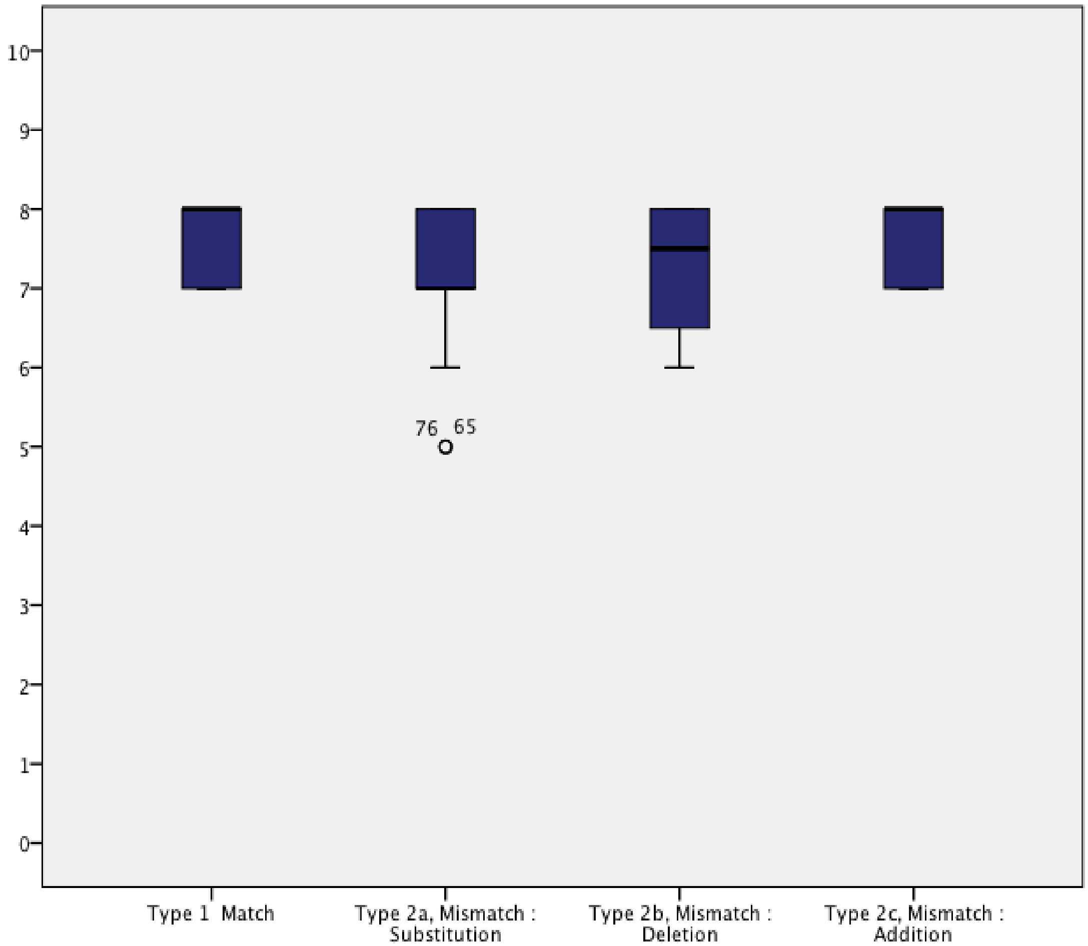


Table 16. Friedman test for all Types for AE and EE on the AJT.

Group	*Type*	*Mean rank*	X^2	*p*
AE *n=60*	1: Matching	3.17	27.35	**<0.001**
	2a: Mismatching, Substitution	2.17		
	2b: Mismatching, Deletion	2.16		
	2c: Mismatching, Addition	2.51		
EE *n=20*	1: Matching	2.78	5.54	.14
	2a: Mismatching, Substitution	2.18		
	2b: Mismatching, Deletion	2.30		
	2c: Mismatching, Addition	2.75		

*The mean difference is significant at the 0.05 level or less (P<0.05).

6.3.1.2 Do Arabic learners of English from differing proficiency levels differ from each other and from native English speakers on Type1?

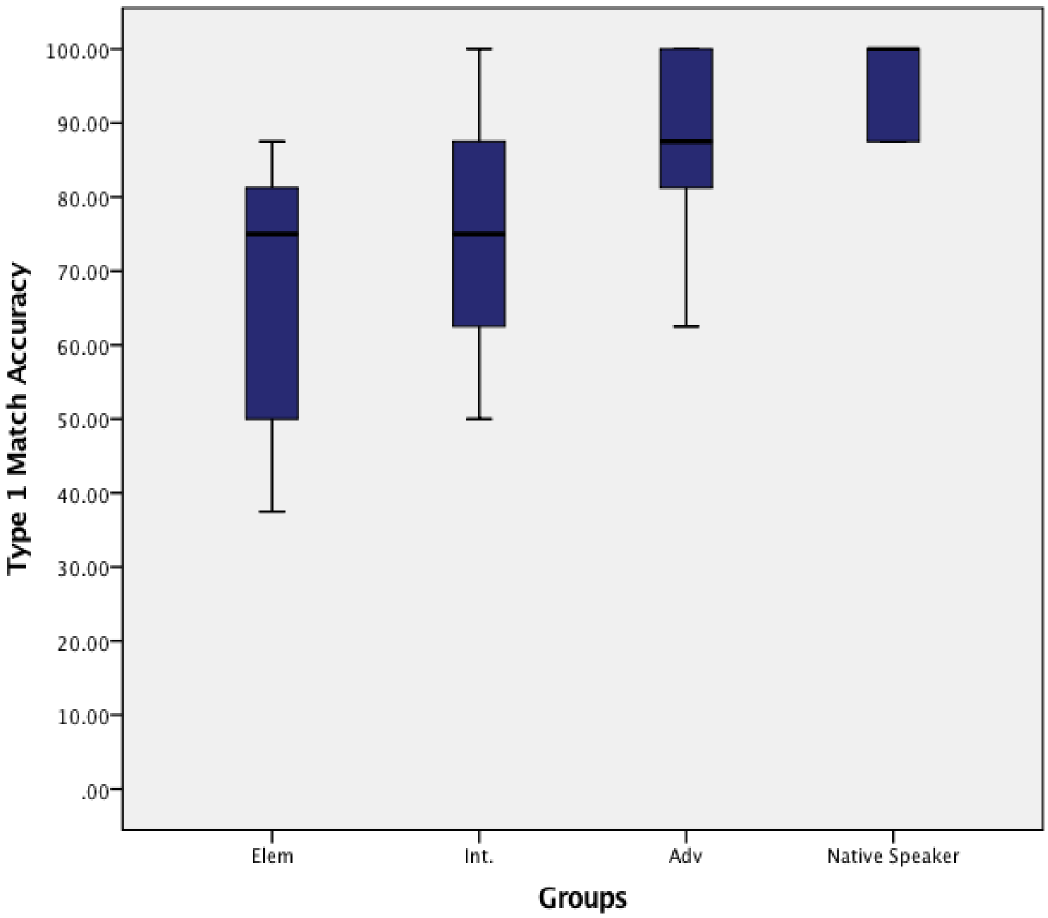
The average percentage of accuracy from the elementary level is found to be the lowest compared with the other remaining levels (67.19% with 17.60 SD) - see Table 17. Then, there are the intermediates (77.27% with 15.13 SD), followed by the advanced group (87.50% with 12.50 SD). Of course, the native speakers show very high levels (95.63% with 6.12 SD). Notice that some learners in the intermediate and advanced groups reached 100%. The variation in the percentages of accuracy within the groups is lower for higher levels (see Figure 15). Also, from Figure 15, it is noted that the distribution of levels seems to be asymmetric, where the levels seem to be skewed. For example, the number of learners who are at an elementary level has a higher percentage of accuracy for Type1 than those with low levels. It seems that there is a kind of relationship between the average percentage of accuracy on Type 1, and levels of learners.

The result of a one-way ANOVA confirms that there is a significant difference in the average percentages of accuracy between the four groups of speakers ($F_{3,76}$=14.66, p<0.001), as Table 17 shows. As a result, post-hoc testing is used to examine differences between all pairs of levels.

Table 17 Summary statistics and One-way ANOVA for Type 1 for the four groups on the AJT

Group	*N*	*Mean*	*Std. Deviation*	*Variance*	*Range*
Elementary	16	67.19	17.60	309.90	37.50-87.50
Intermediate	33	77.27	15.13	229.05	50.00-100.00
Advanced	11	87.50	12.50	156.25	62.50-100.00
Native Speaker	20	95.63	6.12	37.42	87.50-100.00
Total	80	81.25	16.88	284.81	37.50-100.00
		ANOVA $F_{3,76}$=14.66, p<0.001			

Figure 15 Box-plot for percentage of accuracy for Type 1 for the four groups on the AJT.



According to Table 18, although the Type 1 for the elementary level is 10% (mean difference), which is lower than the intermediate level, a Tukey test shows that this difference is not significant (p=0.082). The elementary group shows about 20% and 28% (mean difference) less than advanced and native speakers, respectively, indicating that these differences are highly significant (p=0.002 and <0.001, respectively). The percentages of accuracy for Type 1 for the intermediate level is about 10% (mean difference) less, and, hence, no significant difference is observed (p=0.148). The Type 1 for the intermediate level is about 18% (mean difference) less than the native speakers, and this results in a very highly significant difference (p<0.001). The advanced level group is statistically the same as the native speaker group (p=0.396). The results of comparing the mean difference are as expected, especially for the elementary speakers, having a greater difference from those who are more advanced in their performance.

Table 18. Multiple comparison of Type 1 for the four groups on the AJT using a Tukey HSD.

Level	*Group*	*Mean Difference*	*Std. Error*	*Sig.*	*95% CI*	
					Lower Bound	*Upper Bound*
Elementary	Intermediate	-10.09	4.17	.082	-21.04	.87
	Advanced	-20.31*	5.36	**.002**	-34.40	-6.22
	Native Speaker	-28.44*	4.59	**.000**	-40.50	-16.37
Intermediate	Advanced	-10.23	4.77	.148	-22.75	2.30
	Native Speaker	-18.35*	3.88	**.000**	-28.55	-8.16
Advanced	Native Speaker	-8.13	5.14	.396	-21.63	5.38

The star * in the mean difference column indicates $p<0.001$.[120]

6.3.1.3 Do Arabic learners of English based on differing proficiency levels differ from each other and from native English speakers on Type 2a, Substitution?

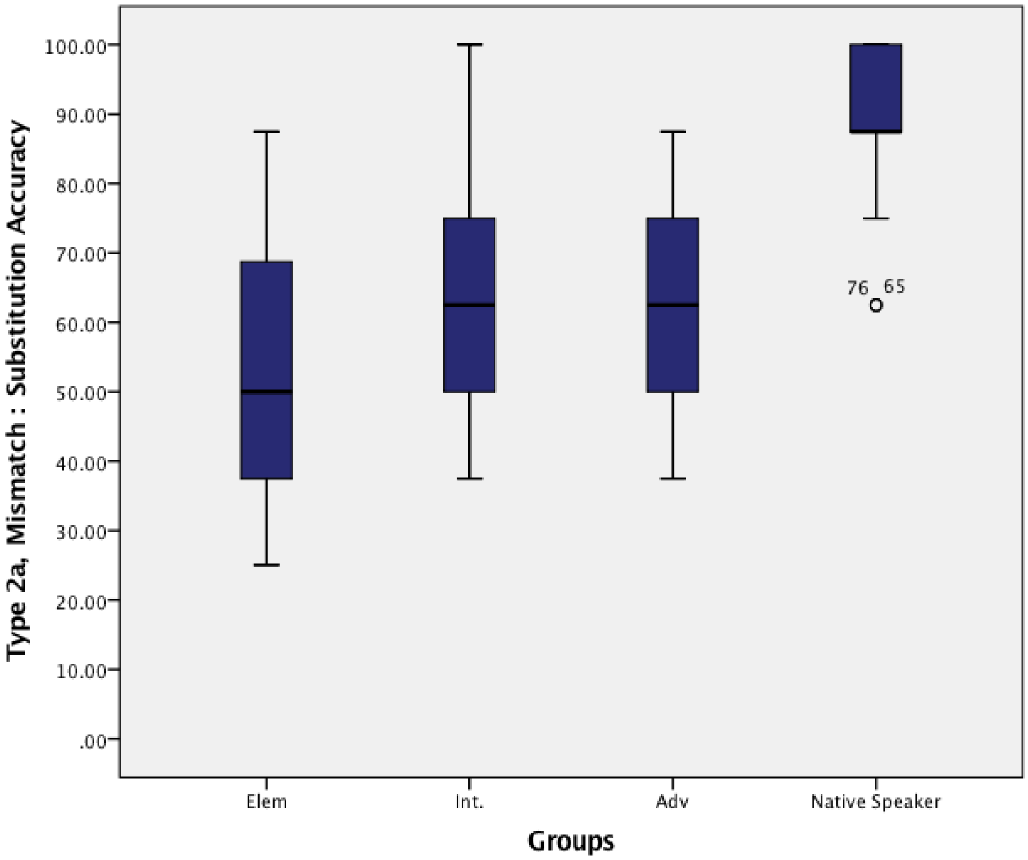
The exploratory statistics for Type 2a, Substitution are presented in Table 19 and Figure 16. The average percentage of accuracy for the elementary level (53.13% with 17.97 SD) is found to be the lowest, compared with the other levels. The mean intermediate level (62.12% with 18.62 SD) and the advanced level (62.50% with 17.68 SD) show a very similar mean percentage. Indeed, the native speaker group shows the highest mean percentage (88.75% with 13.39 SD). 100% accuracy is only observed for (some) intermediate and native speakers. The lowest percentage of accuracy, which is 25%, is observed from the elementary level speakers. From Figure 16, it is noted that the distribution of the advanced group is different from the rest. This suggests that the more advanced L2 speakers of English were much more successful in rejecting sentences in which particles from the L2 were substituted with those from their L1 (e.g., *fly over* is substituted with *fly on* as in **the black birds flew on my head*).

[120] Figures shown in **bold** are pairs for which a statistically significant correlation (two-tailed $p < .05$) was detected.

Table 19 Summary statistics and One-way ANOVA for Type 2a, Substitution from the four groups on the AJT.

Group	*N*	*Mean*	*Std. Deviation*	*Range*
Elementary	16	53.13	17.97	25.00-87.50
Intermediate	33	62.12	18.62	37.50-100.00
Advanced	11	62.50	17.68	37.50-87.50
Native Speaker	20	88.75	13.39	62.50-100.00
ANOVA $F_{3,76}=15.28$, $p<0.001$				

Figure 16 Box-plot of percentage of accuracy for Type 2a, Substitution for the four groups on the AJT.



Looking at Figure 16, the non-native speakers are close to each other, even though they are much lower than the native speakers. The result of one way ANOVA given in Table 19 confirms that there is a very highly significant difference in the average the percentages of accuracy of Type 2a, Substitution between the four groups ($F_{3,76}$=15.28, p<0.001). As a result, the Tukey HSD (Tukey's Honestly Significant Difference) test is used to examine differences between all pairs of levels.

Table 20. Type 2a, Substitution for four groups on the AJT using Tukey HSD

Level	*Group*	*Mean Difference*	*Std. Error*	*Sig.*	*95% CI Lower Bound*	*95% CI Upper Bound*
Elementary	Intermediate	-9.00	5.24	.322	-22.75	4.76
	Advanced	-9.38	6.73	.508	-27.06	8.31
	Native Speaker	-35.63*	5.77	**.000**	-50.77	-20.48
Intermediate	Advanced	-.38	5.99	1.000	-16.10	15.34
	Native Speaker	-26.63*	4.87	**.000**	-39.43	-13.83
Advanced	Native Speaker	-26.25*	6.45	**.000**	-43.20	-9.30

As can be seen in Table 20, the average percentages of accuracy for the elementary, intermediate and advanced levels are statistically the same ($p>0.05$). In contrast, the elementary level is about 35.63% lower than the native speaker level, which results in a very highly significant difference ($p<0.001$). Unexpectedly, the mean difference for the intermediate and advanced levels were both approximately 26% lower than the native speaker levels, with a very highly significant difference ($p<0.001$). I can argue that motion constructions with feature configurations that are similar to the L1 but are not quite the same (e.g., *jump over* is substituted with *jump on* as in **the black horse jumped on eight hurdles*) are much harder to master, and, as such, the advanced speakers did not show an improvement in this particular study in comparison with the native speakers. The advanced speakers also did not reach a level similar to native speakers in rejecting sentences in which particles of their L2 were substituted with those of their L1.

6.3.1.4 Do Arabic learners of English of differing proficiency levels differ from each other and from native English speakers on Type 2b, Deletion?

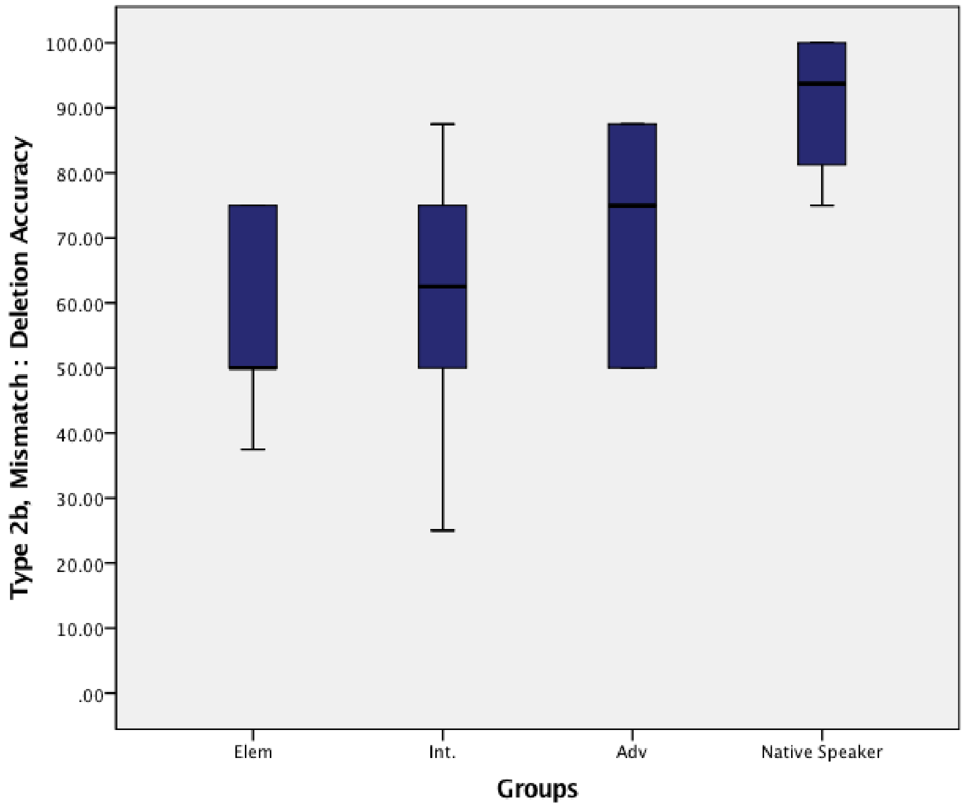
The exploratory statistics for Type 2b, Deletion, are given in Table 21 and Figure 17. The average percentages for the elementary and intermediate levels (57.81% with 13.60 SD, and 59.47% with 17.12 SD, respectively) are close to each other and lower than the other levels. The average advanced level (69.32% with 17.11 SD), as expected, was lower than the native speakers, who showed a higher average percentage (90.63% with 10.63 SD). The lowest percentages, which are 25% and 37.50%, are observed for the intermediate and elementary levels, respectively.

From Figure 17, it is noted that the results of the advanced group are more consistent than the other levels. It seems, from Figure 17, that the differences between the average percentages for levels increase as the level goes up. This suggests that the more advanced L2 speakers of English were much more successful in rejecting sentences in which essential particles of L2 constructions were deleted (e.g., deletion of the particle *in* as in **the newly married couple arrived ^ Venice*). However, there was still a significant difference between advanced and native speakers.

Table 21 Summary statistics and One-way ANOVA for Type 2b-Deletion for four groups on the AJT.

Group	*N*	*Mean*	*Std. Deviation*	*Range*
Elementary	16	57.81	13.60	37.50-75.00
Intermediate	33	59.47	17.12	25.00-87.50
Advanced	11	69.32	17.11	50.00-87.50
Native Speaker	20	90.63	10.63	75.00-100.00
ANOVA		$F_{3,76}$=21.04, $p<0.001$		

Figure 17 Box-plot of percentage accuracy for Type 2b-Deletion for the four groups on the AJT.



According to Table 22, the average percentages for the elementary and intermediate levels are statistically the same (p=0.984), indicating that it is very difficult to distinguish between them in terms of Type 2b, Deletion. Also, elementary and advanced levels are statistically the same (p=0.216). The elementary level is about 32.81% lower than the native speaker level, which results in a very highly significant difference (p<0.001). Similarly, the intermediate and advanced levels are approximately 31.16% and 21.31%, respectively - lower than the native speaker level, which results in a very highly significant difference (p<0.001).

Table 22 Type 2b, Deletion for the four groups on the AJT using a Tukey HSD.

Level	*Group*	*Mean Difference*	*Std. Error*	*Sig.*	*95% CI Lower Bound*	*95% CI Upper Bound*
Elementary	Intermediate	-1.66	4.59	.984	-13.71	10.3925
	Advanced	-11.51	5.90	.216	-27.00	3.9867
	Native Speaker	-32.81*	5.05	**.000**	-46.08	-19.5456
Intermediate	Advanced	-9.85	5.24	.246	-23.62	3.9226
	Native Speaker	-31.16*	4.27	**.000**	-42.36	-19.9465
Advanced	Native Speaker	-21.31*	5.65	**.002**	-36.15	-6.4590

Similar to Type 2a, Arabic learners of English of differing proficiency levels also significantly differ from each other and from the native speakers on Type 2b, Deletion.

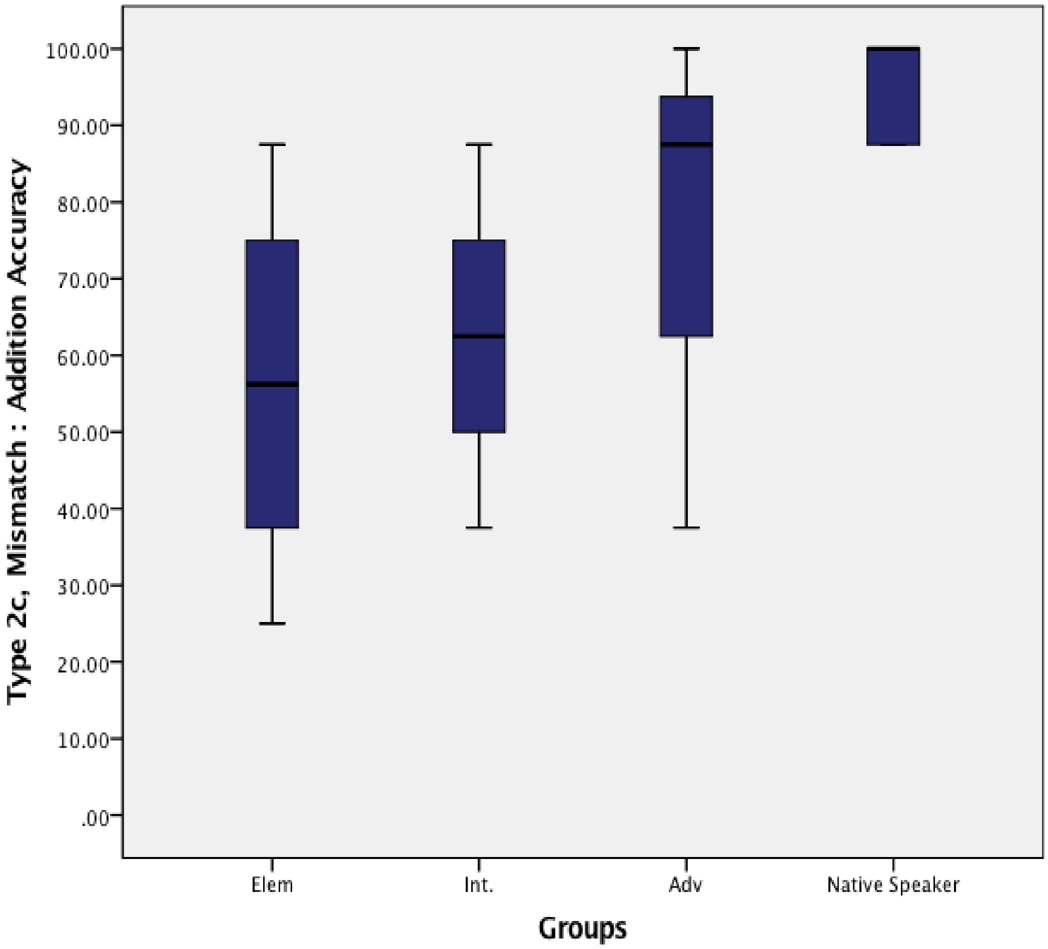
6.3.1.5 Do Arabic learners of English of differing proficiency levels differ from each other and from native English speakers on Type 2c, Addition?

The average for Type 2c, Addition seems to increase consistently, particularly from elementary to advanced (see Table 23 and Figure 18). The elementary level shows the lowest average percentage (56.25% with 19.90 SD), followed by the intermediate (65.91 with 14.75 SD) and advanced levels (76.14 with 21.98). The native speakers show a very high average (95.63 with 6.12 SD). Based on the results of the one way ANOVA, there is a very highly significant difference ($F_{3,76}$=22.66, p<0.001) in the averages for Type 2b-Deletion because of the differing levels of the four groups. This is in line with the prediction that less advanced speakers should exhibit worse performances in rejecting sentences in which superfluous particles have been added (e.g., addition of the particle *to* as in **the students entered to the school*).

Table 23 Summary statistics and One-way ANOVA for Type 2c, Addition for the four groups on the AJT.

Group	*N*	*Mean*	*Std. Deviation*	*Range*
Elementary	16	56.25	19.90	25.00-87.50
Intermediate	33	65.91	14.75	37.50-87.50
Advanced	11	76.14	21.98	37.50-100.00
Native Speaker	20	95.63	6.12	87.50-100.00
	ANOVA	$F_{3,76}$=22.66,	*p*<0.001	

Figure 18 Box-plot of percentage of accuracy for Type 2c, Addition for the four groups on the AJT.



Using a Tukey HSD of pairs-wise comparison test, the elementary level is highly significantly different from the advanced level (p=0.009), where it is about 19.89%, as Table 24 shows. Also, the elementary level is extremely significantly different from the native speakers (p<0.001), where it is about 39.38%. No significant difference is observed with the intermediate level. Also, the intermediate level is statistically the same as the advanced level, whilst it is extremely significantly different from the native speaker level (p<0.001). Comparing the advanced and native speaker levels, there is a highly significant difference (p=0.007), where the advanced level is 19.49% lower than the native speakers. In terms of Type2c, Addition, I observed that although there is a significant difference between the native speakers and the advanced, and the native speakers and the intermediate ones, there was no significant difference between advanced and intermediate speakers within this type of +FR. This outcome is similar to the performance of the advanced and intermediate learners on Type2a, substitution. It is interesting that it is only Type 1 on which the advanced and the native speakers are equal, whilst on the other three Type 2s, they were not.

Table 24 Type 2c, Addition for the four groups on the AJT using a Tukey HSD

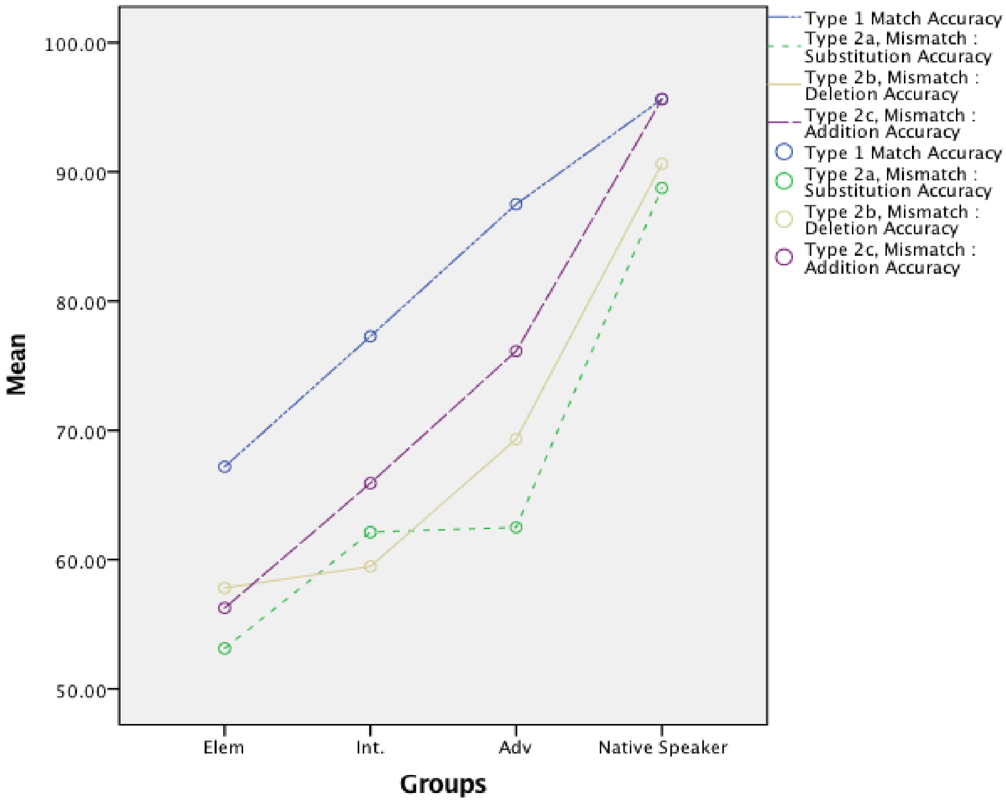
Level	*Group*	*Mean Difference*	*Std. Error*	*Sig.*	*95% CI*	
					Lower Bound	*Upper Bound*
Elementary	Intermediate	-9.66	4.74	.184	-22.12	2.80
	Advanced	-19.89*	6.10	**.009**	-35.91	-3.86
	Native Speaker	-39.38*	5.22	**.000**	-53.10	-25.65
Intermediate	Advanced	-10.23	5.42	.243	-24.47	4.02
	Native Speaker	-29.72*	4.41	**.000**	-41.31	-18.12
Advanced	Native Speaker	-19.49*	5.85	**.007**	-34.85	-4.13

The Arabic learners of English of differing proficiency levels differ from each other and from the native English speakers on Type 2c, Addition. However, comparing the three Mismatching types, it can be seen that Type 2c, Addition was the easiest for the Arabic learners of English on the AJT.

6.3.1.6 Do Arabic learners of English from differing proficiency levels differ from each other and from native English speakers on both Type1 and Type 2?

Figure 19 summarises the performance of the L2 speakers at the three proficiency levels compared with the native speakers on Type 1 and Type 2. Of interest is whether: (1) there is a difference in sentences between the four groups irrespective of Type 1 and Type 2, (2) there is a significant difference in sentences between Types irrespective of the four groups and, (3) there is any significant interaction between levels and Types.

Figure 19 Mean sentence Type for the four groups and Type 1 & Type 2s on the AJT.



Using a two way ANOVA with an interaction test, Table 25 reveals a very highly significant main effect of Types within the four groups ($p<0.001$). Also, there is a highly significant difference between the L1-L2 types ($p<0.001$). For the interaction, no significant difference is detected ($p=0.348$), indicating that the change in Types is consistent for the four groups. Although in Figure 19 we see some interaction, the ANOVA test does not show this as significant. As we know, Type 1 was subject to higher accuracy. On the other hand, the other three lines that represent Type 2s are lower than Type 1: Type 2c, Addition followed by Type 2b, Deletion, and, finally, Type 2a, Substitution. Notice that, in Figure 19, Type 1 seems to have higher average percentages than Type 2. This is in line with the prediction that L2 speakers will perform better on motion constructions with matching feature sets to their L1.

Table 25 Two-way ANOVA Using the four groups and Type 1 & Type 2s for sentences on the AJT.

Source	Type III Sum of Squares	Df	Mean Square	F	p
Group	50202.95	3	16734.32	70.28	**.000**
Sentence Type	9142.90	3	3047.63	12.80	**.000**
Group * Sentence Type	2399.21	9	266.58	1.12	.348
Error	72386.13	304	238.11		
Corrected Total	134929.69	319			

What is interesting in the data from the AJT is that learners' performance differs significantly from the control group on Type 2s but not Type 1. Learners found difficulty in discriminating the acceptable construction in the L2 from the unacceptable construction transferred from their L1.

6.3.2 Results on the Picture Description Task

This section presents the results of the second task - the Picture Description Task (PDT) - from the L2 speakers of English (AE, L2 group), and the native speakers of English (EE, Control group). The structure of this section is the same as that in the previous section, 6.3.1.

The data analysis procedure was quite similar to that of the AJT (see Section 6.3.1). The data were also coded using Excel. As the PDT might allow for more than one possible response, intuitions of native speakers (n=5) were consulted to check whether my judgments were acceptable or not. For the analysis, the data gathered from the task was scored as acceptable *vs.* unacceptable. The responses were transformed to '0, 1'. The acceptable responses were coded as 1, and the unacceptable responses as 0. The unacceptable responses were then categorised based on what type of non-target like usage was produced: Particle-Substitution (S), Particle-Deletion (D), and Particle-Addition (A). Unanswered items were counted as invalid. The filler and the practical items were not considered either.

6.3.2.1 Do Arabic learners of English find motion constructions with mis/matching feature configurations to their L1 un/problematic within Type 1 and Type 2s?

From Table 26, it is clear that Type 1 shows higher mean scores (3.54) compared with other Type 2s. The scores for Type 2s also show different averages - see Table 26 and Figure 20. The order of score types using means for Arabic learners of English are Type 1, Type 2c, Addition, Type 2a, Substitution and Type 2b, Deletion. Figure 21, on the other hand, shows the performance of the control group; it seems that they did not show a significant difference in their performance on the different types.

Table 26 Summary statistics for Type 1 & Type 2s for AE and EE on the PDT.

Group		*Type*			
		1:Matching	*2a: Mismatching, Substitution*	*2b:Mismatching, Deletion*	*2c: Mismatching, Addition*
AE *n=60*	Mean	3.54	3.05	2.09	3.39
	Std. Deviation	1.06	1.06	1.02	1.07
	Range	0-4	1-4	0-4	0-4
EE *n=20*	Mean	3.95	3.85	3.75	3.95
	Std. Deviation	.224	.37	.444	.224
	Range	1	1	1	1

Note: The maximum score that can be achieved in Table 26 and similar tables is 8.

Figure 20 Box-plot of percentage of accuracy for Type 1 & Type 2s for AE on the PDT.

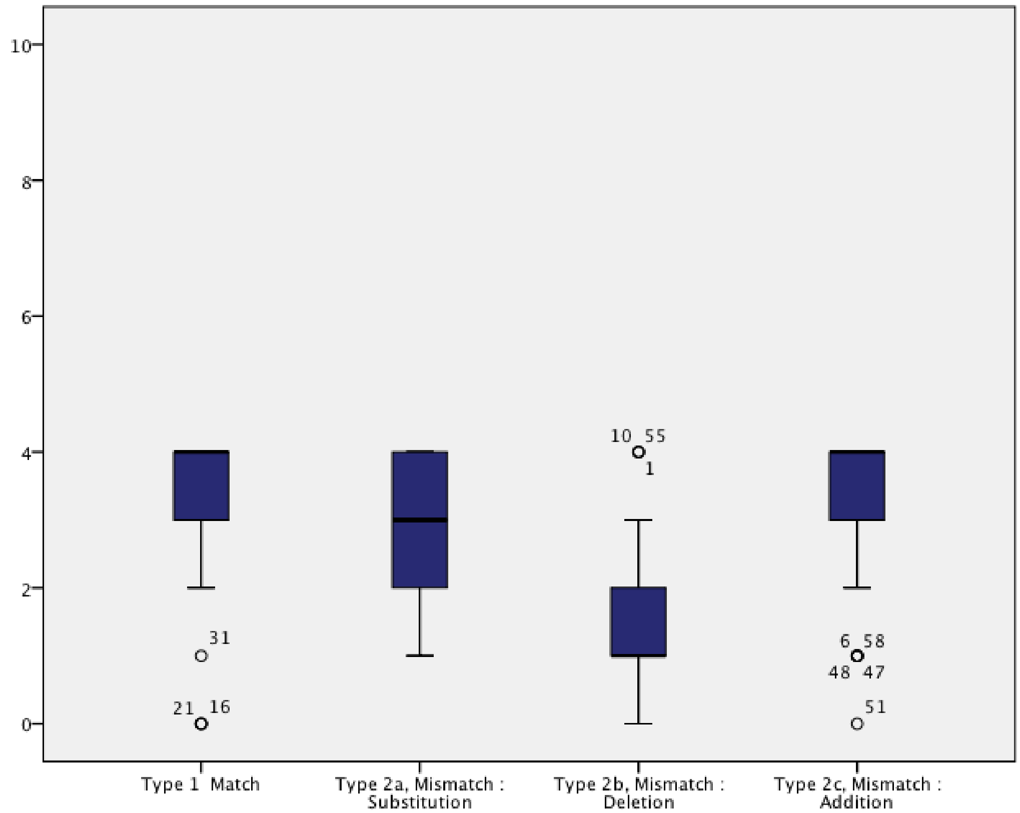
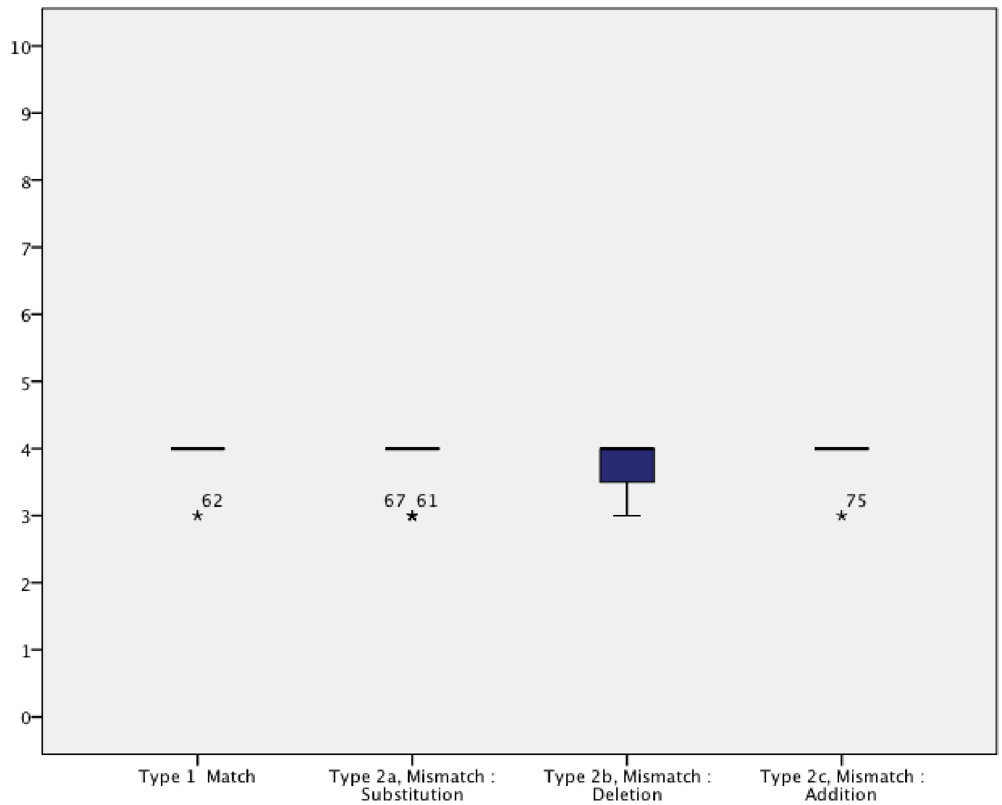


Figure 21 Box-plot of percentage of accuracy for Type 1 & Type 2s for EE on the PDT.



Using the Friedman test, there is a very highly significant difference in the correct response between the four categories of Types 1 and 2 (X^2 = 79.75, p-<0.001), see Table 27.

Table 27 Friedman test for Type 1 & Type 2s for AE on the PDT.

Group	*Type*	*Mean Rank*	X^2	*p*
AE *n=60*	1: Matching	3.13	79.75	<0.001
	2a: Mismatching, Substitution	2.50		
	2b: Mismatching, Deletion	1.43		
	2c: Mismatching, Addition	2.93		
EE *n=20*	1: Matching	2.65	4.714	.194
	2a: Mismatching, Substitution	2.45		
	2b, Mismatching, Deletion	2.25		
	2c, Mismatching, Addition	2.65		

The results of the Post-hoc test, given in Table 28, show that Type 1 and Type 2c, Addition are statistically the same. Comparing Type 2s, there is a significant difference in the correct response between: Type 2c, Addition and Type 2a, Substitution (p=0.010), and Type 2a, Substitution and Type 2b-Deletion (p<0.001).

The data in Table 28 suggests that Type 2b-Deletion is much more difficult, followed by Type 2a, Substitution, then by Type 2c, Addition. This suggests that Arabic learners of English performed better on L2 motion constructions with matching feature configurations to their L1 compared to those with mismatching feature configurations to their L1, which is compatible with the hypotheses proposed in Chapter 4. However, there was no statistical difference between the matching and the mismatching/addition context. Although this may provide evidence against the main predictions of this thesis, however, there was statistical difference between the matching and the other two of the mismatching types; Deletion and Substitution. We could argue that the learners found addition much easier compared with the other two.

Table 28 Post-hoc analysis using a Friedman test for Type 1 & Type 2s for AE on the PDT.

Type	*Mean rank*	*Chi-Square*	*p*
1: Matching	1.55	.95	0.330
2c: Mismatching, Addition	1.45		
2c: Mismatching, Addition	1.63	6.72	0.010
2a: Mismatching, Substitution	1.38		
2a: Mismatching, Substitution	1.81	31.84	<0.001
2b: Mismatching, Deletion	1.19		

6.3.2.2 Do Arabic learners of English from differing proficiency levels differ from each other and from native English speakers on Type 1?

The average percentage of accuracy for the elementary level is found to be the lowest compared with the remaining levels (73.44%) - see Table 29 - followed by that of the intermediate (87.12%) level. The advanced level and native speakers exhibit very high levels (95.45% and 98.75, respectively). Notice that some L2 speakers in the groups reach 100%. The variation in the percentages within the elementary and intermediate groups is high (see Figure 22). Moreover, from Figure 22, it is noted that the distribution of levels seems to be asymmetric, where the levels seem to be skewed. There is a very small variation in the percentages for the advanced level and native speakers, as shown in Figure 22. This strongly suggests that the Type 1 is more easily mastered by the L2 learners than Type 2.

Table 29 Summary statistics and One-way ANOVA for Type 1 for the four groups on the PDT.

Group	*N*	*Mean*	*Variance*	*Range*
Elementary	16	73.44	1289.06	.00-100.00
Intermediate	33	87.12	551.61	.00-100.00
Advanced	11	95.45	102.27	75.00-100.00
Native Speaker	20	98.75	31.25	75.00-100.00
ANOVA		$F_{3,76}=4.15$,	p<0.001	

Figure 22 shows that there is a sharp increase in mean Type 1 as the level of the respondents increases; however, this is expected, as they are all giving the same picture description. The result of a one-way ANOVA confirms that there is a very highly significant difference in the average percentages between the four groups

($F_{3,76}$=4.15, p<0.001) as Table 29 shows.

As a result of differences found between the four levels on the PDT, a post-hoc test is used to examine the differences between all pairs of levels. The Tukey HSD test reveals that the only difference is between the elementary and native speakers (p=.007) (see Table 30).

Figure 22 Box-plot of percentage of accuracy for Type 1 for the four groups on the PDT.

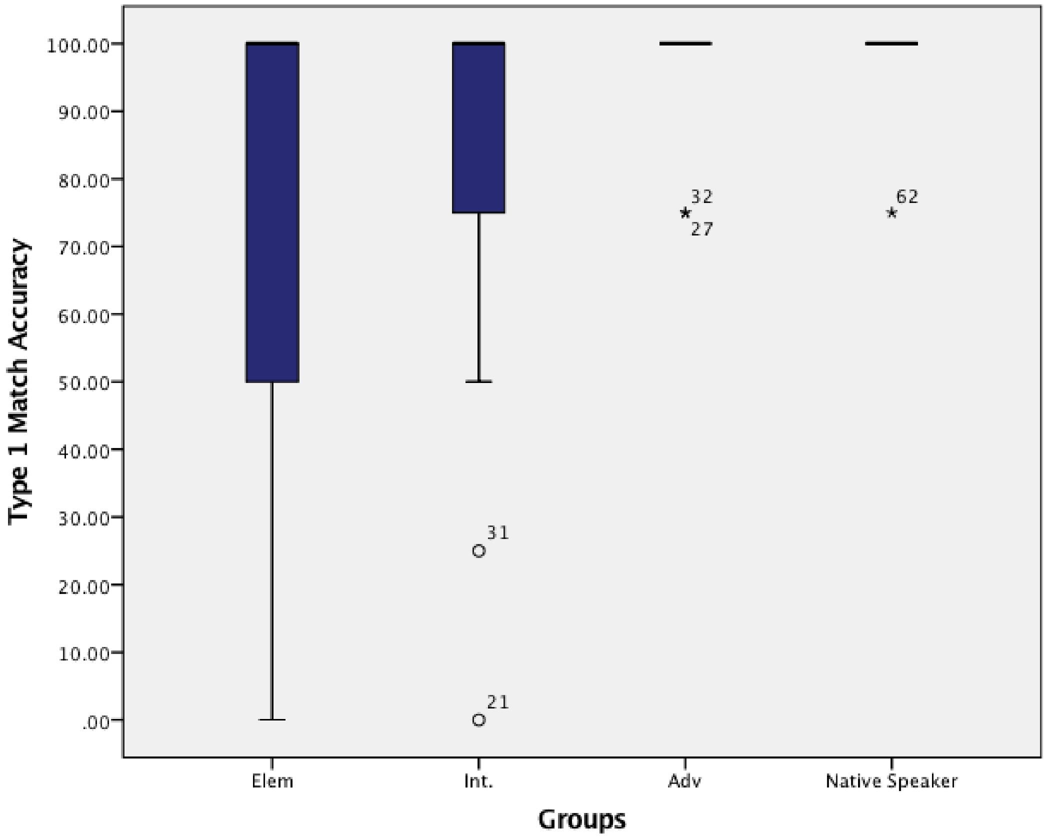


Table 30 Tukey HSD results for Type 1 for the four groups on the PDT.

Level	*Group*	*Mean Difference*	*Std. Error*	*Sig.*	*95% CI Lower Bound*	*95% CI Upper Bound*
Elementary	Intermediate	-13.68	6.87	.200	-31.72	4.35
	Advanced	-22.02	8.83	.069	-45.20	1.17
	Native Speaker	-25.31*	7.56	**.007**	-45.17	-5.46
Intermediate	Advanced	-8.33	7.85	.714	-28.94	12.28
	Native Speaker	-11.63	6.39	.272	-28.41	5.15
Advanced	Native Speaker	-3.30	8.46	.980	-25.52	18.93

Clearly, the results revealed that Arabic learners of English did not significantly differ from the native English speakers on Type 1.

6.3.2.3 Do Arabic learners of English from differing proficiency levels differ from each other and from native English speakers on Type 2a, Substitution?

The average percentage of accuracy for the elementary level is found to be low, and it is the lowest, compared with the remaining levels (51.56% with 23.22 SD) - see Table 31. The advanced level and the native speakers show a very high level (96.25 with 9.16 SD). Notice that lowest percentage (25%) is observed for the students of the elementary and intermediate levels. The variation in the percentages within the elementary and intermediate groups is high - see Figure 23. Also, from the figure, it is noted that the distribution of levels seems to be asymmetric, and the levels seem to be skewed. The percentages of the native speakers lay between 75% and 100%, and these results in very low variation, as shown in Figure 23.

Table 31 Summary statistics and One-way ANOVA for Type 2a, Substitution for the four groups on the PDT.

Group	*N*	*Mean*	*Std. Deviation*	*Range*
Elementary	16	51.56	23.22	25.00-100.00
Intermediate	33	72.73	26.04	25.00-100.00
Advanced	11	86.36	17.19	50.00-100.00
Native Speaker	20	96.25	9.16	75.00-100.00
ANOVA		$F_{3,76}=14.23$,	$p<.001$	

Figure 23 also shows that there is an increase in mean Type 2a, Substitution as long as the level of respondents increases. The result of a One-way ANOVA confirms that there is a very highly significant difference in the average percentages between the four groups ($F_{3,76}$=14.23, p<0.001) as Table 31 shows. As a result, post-hoc testing is used to examine the differences between all pairs of levels.

According to Table 32, the elementary level is about 21.16 % (mean difference) lower than the intermediate level, but the Tukey test shows that this difference is not significant (p=0.009). The elementary group exhibits about 34.80% and 44.69% (mean difference) less than advanced and native speakers, respectively, indicating that these differences are highly significant (p<0.001 and <0.001, respectively). The intermediate level is about 13.63% (mean difference) less than the advanced level, but no significant difference is observed (p=0.262). The intermediate level is about 23.52% (mean difference) less the native speakers, and this results in a highly significant difference (p=0.001). The advanced level is statistically the same as the native speaker group (p=0.604). This suggests that Arabic learners of English at the advanced level successfully substituted their L1-based feature set with that of the L2 (e.g., substitution of the particles *into* with *to* 'ila' or *in* 'fii' as in *the golf ball is rolling into the hole*).[121]

[121] The use of the particles *to* with [path; towards] or *in* with [path; inwards] feature is grammatically acceptable but it does not show the actual movement; [path; towards-inwards].

Figure 23 Box-plot of percentage of accuracy for Type 2a, Substitution for the four groups on the PDT.

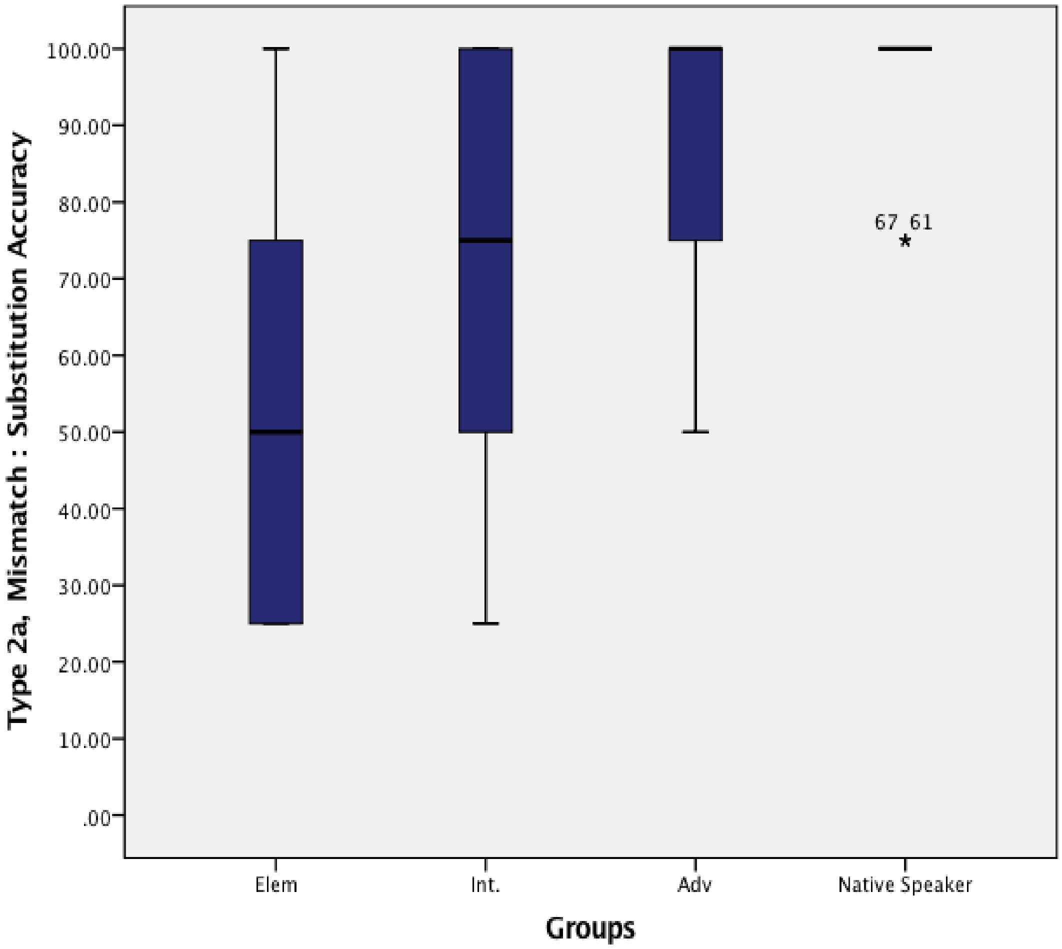


Table 32 Type 2a, Substitution for the four groups on the PDT using a Tukey HSD

Level	*Group*	*Mean Difference*	*Std. Error*	*Sig.*	*95% CI Lower Bound*	*95% CI Upper Bound*
Elementary	Intermediate	-21.16*	6.48	**.009**	-38.17	-4.16
	Advanced	-34.80*	8.33	**.000**	-56.67	-12.93
	Native Speaker	-44.69*	7.13	**.000**	-63.42	-25.96
Intermediate	Advanced	-13.63	7.40	.262	-33.08	5.80
	Native Speaker	-23.52*	6.02	**.001**	-39.35	-7.70
Advanced	Native Speaker	-9.89	7.98	.604	-30.85	11.07

6.3.2.4 Do Arabic learners of English from differing proficiency levels differ from each other and from native English speakers on Type 2b, Deletion?

The average percentages of accuracy from the elementary and intermediate levels are found to be very low, and they are the lowest compared with the remaining levels (31.25% with 25 SD and 34.85% with 23.33 SD) - see Table 33. The advanced level is also low (59.09% with 23.11 SD), however. Native speakers show a high mean (93.75% with 11.11 SD). Notice the percentage of accuracy can be 0% for some of the learners from the elementary and intermediate levels. The accuracy of native speakers lay between 75% and 100%. The variation in the percentage of accuracy within the Arabic learners is higher than that of the native speakers - see Figure 24. Also, from Figure 24, it is noted that the distribution of levels seems to be asymmetric, and the levels seem to be skewed. This suggests that Arabic learners of English, even at an advanced level, find it difficult to delete particles that are not needed in their L2 from their L1 feature-based set (e.g., addition of the particle *from* or *to* to the verb *approach* as in **the turtle is approaching from/to the finish line*).[122]

[122] The learners' results are low on this type – whether this might be due to the specific vocabulary required, or due to the mismatching-deletion condition, will be discussed in Chapter 7.

Figure 24 Box-plot of percentage of accuracy for Type 2b-Deletion for the four groups on the PDT.

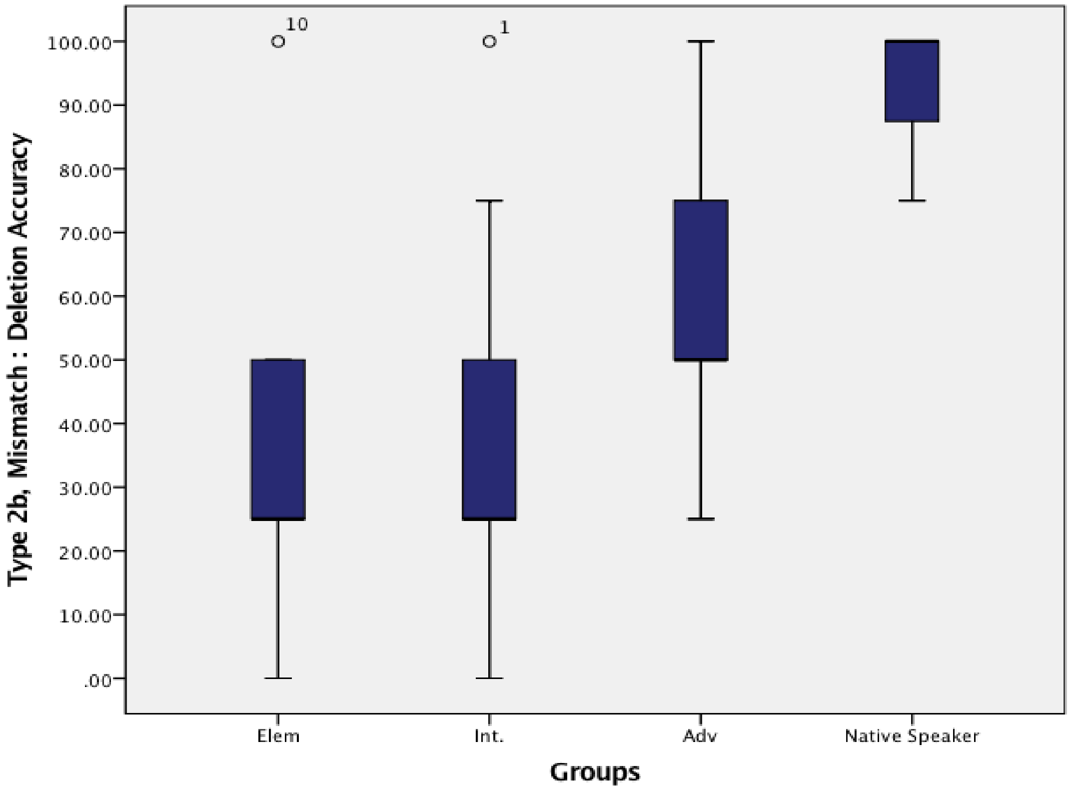


Figure 24 shows that there is increase in mean Type 2b-Deletion as long as the level of respondents increases. The result from a One-way ANOVA confirms that there is a very highly significant difference in the average percentages between the four groups ($F_{3,76}$=38.21, p<0.001) as Table 33 shows. As a result, post-hoc testing is used to examine differences between all pairs of levels.

Table 33 Summary statistics and One-way ANOVA for Type 2b-Deletion for the four groups on the PDT.

Group	*N*	*Mean*	*Std. Deviation*	*Range*
Elementary	16	31.25	25.00	.00-100.00
Intermediate	33	34.85	23.33	.00-100.00
Advanced	11	59.09	23.11	25.00-100.00
Native Speaker	20	93.75	11.11	75.00-100.00
ANOVA		*$F_{3,76}$=38.21,*	*p<.001*	

Based on Table 34, the elementary level is about 3.60% (mean difference) lower than the intermediate level, indicating that they are statistically the same. The elementary group shows about 27.84% and 62.50% (mean difference) less than advanced and native speakers, respectively, indicating that these differences are highly significant (p=0.007 and <0.001, respectively). The intermediate level is about 24.24% (mean difference) less than the advanced level (p=0.009). Furthermore, the intermediate level is about 58.90% (mean difference) less than the native speakers, and this results in a highly significant difference (p<0.001). The advanced level is different from the native speakers by 34.66%, which is in favour of native speakers, and there is a very highly significant difference between them (p<0.001). From Table 34, we also see that the mean difference between the elementary and intermediate groups is much smaller than the mean difference between the intermediate and advanced speakers. Clearly, deletion from L1 is harder to master than substitution and addition of particles.

Table 34 Type 2b-Deletion for the four groups on the PDT using a Tukey HSD

Level	*Group*	*Mean Difference*	*Std. Error*	*Sig.*	*95% CI*	
					Lower Bound	*Upper Bound*
Elementary	Intermediate	-3.60	6.49	.945	-20.64	13.45
	Advanced	-27.84*	8.34	**.007**	-49.76	-5.93
	Native Speaker	-62.50*	7.14	**.000**	-81.27	-43.73
Intermediate	Advanced	-24.24*	7.42	**.009**	-43.72	-4.76
	Native Speaker	-58.90*	6.04	**.000**	-74.76	-43.05
Advanced	Native Speaker	-34.66*	8.00	**.000**	-55.66	-13.66

6.3.2.5 Do Arabic learners of English from differing proficiency levels differ from each other and from native English speakers on Type 2c, Addition?

Table 35 shows the average percentages are generally very good (greater than 75%); however, there seem to be differences in the averages. The lowest average is seen for the intermediate level (78.03% with 28.48 SD). This can be attributed to those who obtain 0% and less than 30% - see Figure 25. The native speakers show a very high average (98.75% with 5.59 SD), and, also, they show consistent values, as presented in the figure. The pattern of the relationship between the result and the levels is not the same as for the previous Type 2s. The result of a One-way ANOVA confirms that there is a very highly significant difference in the average percentages between the four groups ($F_{3,76}$=3.31, p<0.001) as Table 35 shows.

Figure 25 Box-plot of percentage of accuracy for Type 2c, Addition for the four groups on the PDT.

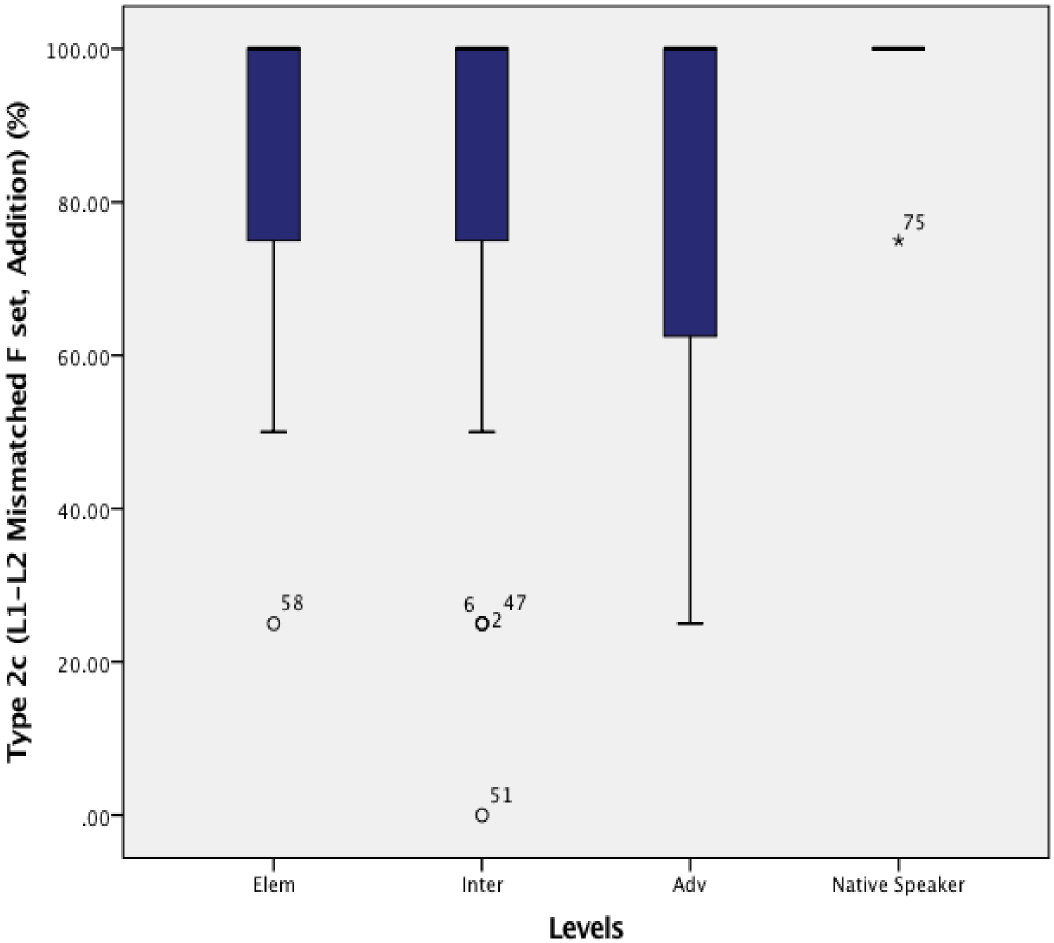


Table 35 Summary statistics and One-way ANOVA for Type 2c, Addition for the four groups on the PDT.

Level	*N*	*Mean*	*SD*	*Range*
Elementary	16	82.81	23.66	25.00-100.00
Intermediate	33	78.03	28.48	.00-100.00
Advanced	11	81.82	27.59	25.00-100.00
Native Speaker	20	98.75	5.59	75.00-100.00
ANOVA	$F_{3,76}=3.31$,	$p<0.001$		

As a result, post-hoc testing is used to examine differences between all pairs of levels. Based on the Tukey HSD test, the only significant difference found is between the intermediate level and native speakers (p=.015), where there is a figure of 20.72% in favour of the native speakers - see Table 36. The high mean results for all levels suggest that Arabic learners of English find adding particles to their L1 feature set (e.g., *a man is skiing down a slope*) easier compared to substitution or deletion of particles.[123] However, surprisingly, the intermediates have a lower mean mark than the elementary group; this may be due to the larger number of participants classified at the intermediate level.

Table 36 Type 2c, Addition for the four groups using a Tukey HSD on the PDT

Level	*Group*	*Mean Difference*	*Std. Error*	*Sig.*	*95% CI Lower Bound*	*95% CI Upper Bound*
Elementary	Intermediate	4.782	7.21	.910	-14.15	23.72
	Advanced	1.00	9.27	1.000	-23.35	25.34
	Native Speaker	-15.94	7.94	.194	-36.79	4.91
Intermediate	Advanced	-3.79	8.24	.968	-25.43	17.85
	Native Speaker	-20.72	6.71	**.015**	-38.33	-3.11
Advanced	Native Speaker	-16.93	8.89	.234	-40.26	6.40

6.3.2.6 Do Arabic learners of English from differing proficiency levels and native speakers have different percentage levels of accuracy for Type 1 and Type2?

The interesting thing to do here is to see whether: (1) there is a difference in Types between the four groups irrespective of the Types, (2) there is a significant difference in Types between the four groups, and, (3) there is a significant interaction between levels and Types. Using two-way ANOVA with interactions, there is a very highly significant difference in the Types due the four groups ($p<0.001$) - see Table 37. Additionally, there is a very highly significant difference in Types due the Types ($p<0.001$). For the interaction, a significant difference is also detected ($p<0.001$), indicating that the change in Types is inconsistent for the four groups, see Figure 26. Notice, for the figure, that Type 1 seems to have a higher average percentage than Type 2s, and Type 2b-Deletion has the lowest.

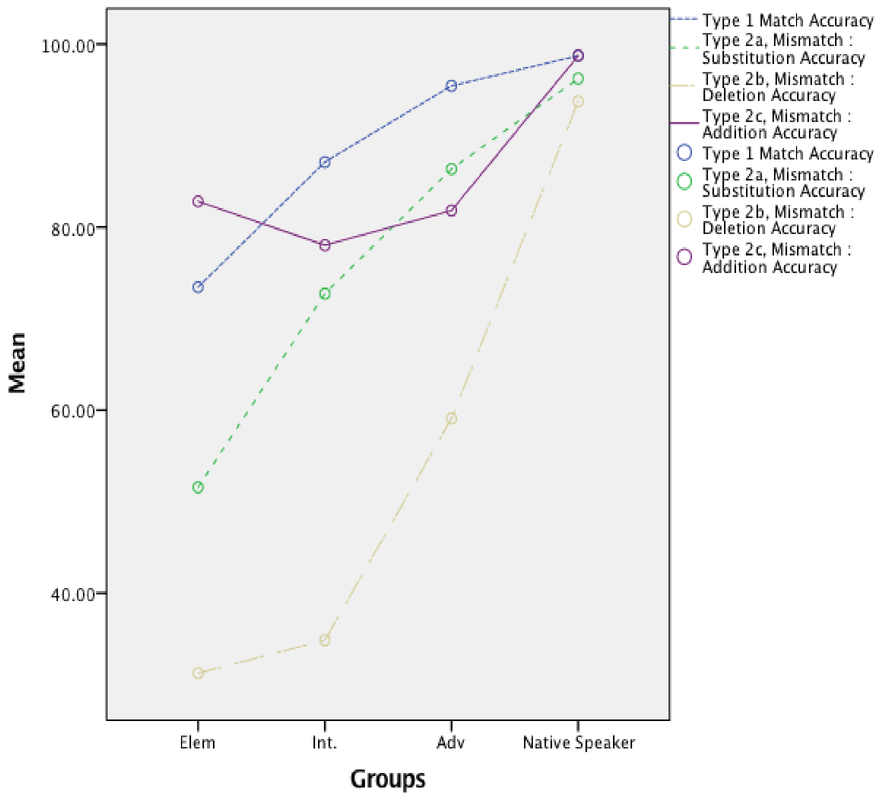
[123] See footnote 122.

Table 37 Two-way ANOVA using the four groups and Types 1 & Type 2s (on the PDT)

Source	*Type III Sum of Squares*	*df*	*Mean Square*	*F*	*Sig.*
Group	60642.76	3	20214.25	41.00	**.000**
Type	47970.02	3	15990.01	32.41	**.000**
Group * Type	22541.90	9	2504.66	5.08	**.000**
Error	149979.41	304	493.35		
Corrected Total	296826.17	319			

Figure 26 shows an interaction for Type 1, but only occurring between elementary and intermediate speakers. In addition, another interaction occurs between intermediate and advanced learners for substitution and addition; again, the interaction is found between advanced and native speakers. As expected, Type 1 had higher accuracy. On the other hand, the other three lines that represent Type 2 are lower than Type 1 - Type 2c-Addition followed by Type 2a-Substitution, and, finally, Type 2b-Deletion. Notice that, in Figure 26, Type 1 seems to have a higher average percentage the Type 2s. This is in line with our prediction that L2 speakers will perform better on motion constructions with matching feature sets to their L1.

Figure 26 Mean Type in terms of the four groups and Type 1 & Type 2s on the PDT.



6.3.3 Conclusion on Study 1

To conclude, this section has presented the results from the acceptability judgment task and the picture description task from the Arabic speakers of English across three different proficiency levels and the control group (native speakers of English). Comparing the two results, it can be seen that the Arabic speakers of English have performed better on motion constructions with matching feature sets to their L1 (Type 1) compared to other motion constructions with mismatching feature sets to their L1 (Type 2s). The control group did not show a difference across types in their performance. This provides evidence that features that have been assembled in an L1 in a different way from in an L2 are problematic. In addition, the results showed that the more advanced the L2 speakers are, the fewer feature misconfigurations they generate. The implications of these findings are discussed further in Chapter 7. The next section presents the results from the acceptability judgment task and the picture description task from the English learners of Arabic, and the control group of native speakers of Arabic.

6.4 Study 2: English learners of Arabic

6.4.1 Results on the Acceptability Judgment Task

This section presents the results of the first task: the Acceptability Judgment Task (AJT) with the L2 speakers of Arabic (EA, L2 group) and the native speakers of Arabic (AA, Control group). As previously mentioned, the data analysis procedure for the two tasks in the Arabic version was the same as in the English version (see Section 6.3.1 and Section 6.3.2).

6.4.1.1 Do English learners of Arabic find motion constructions with mis/matching feature configurations to their L1 un/problematic within Type 1 and Type 2?

Table 38 shows the different statistics (mean) in Types. It is clear that Type 1 shows a higher mean score (5.18) compared with other Type 2s. However, the scores for Type 2a, Substitution and Type 2c, Addition are very close to each other, and show higher percentage of accuracy than Type 2b, Deletion - see Table 38 and Figure 27. Notice, for the all Types, that the maximum scores are 7 and 8. As a result, for English learners of Arabic, the order of score Types using resulting means are Type

1, Type 2a, Substitution, Type 2c, Addition, and Type 2b, Deletion. This suggests that English learners of Arabic find motion constructions with mismatching feature clusters to their L1 more difficult to master (e.g., addition of the particle *fii* 'in' to the verb *y'aṣil* 'arrive', as in *waṣla al9rasn aljudad fii albundugeh,* 'The newly married couple arrived in Venice'[124]), which is compatible with the proposed hypotheses in Chapter 4.

Table 38 Summary statistics for Type 1 & Type 2s by EA on the AJT.

Group		*Type*			
		1:Matching	*2a:Mismatching Substitution*	*2b:Mismatching Deletion*	*2c:Mismatching Addition*
EA *n=20*	Mean	5.18	4.55	3.08	4.10
	Std. Deviation	1.59	1.04	1.07	1.12
	Range	2-8	2-6	1-5	3-7
AA *n=20*	Mean	5.45	4.95	3.05	4.10
	Std. Deviation	1.39	1.19	1.15	1.02
	Range	5	4	4	4

Unexpectedly, Table 28 shows that there is no statistical difference between the matching and the mismatching/addition context. Although this provides evidence against the main predictions of this thesis, however, this may be due to the flexibility and optionality of using particles in Arabic. Some participants found that adding the particle is necessary whist others found that the sentences still make sense without the particle; a matter of preference.

Furthermore, using mean ranks, Type 1 is the highest, followed Type 2a, Substitution, Type 2b, Addition, and Type 2c, Deletion - see Table 39. It is essential to discover whether the observed differences in the scores are statistically significant.

[124] The use of the particle in such sentences is optional, i.e., including or excluding it would result in a grammatical sentence in Arabic. So, English speakers of Arabic would be expected not to reject it. However, their rejection could be justified if they thought that the motion verb still obligatorily needs a particle in the target language, as is the case in their L1.

Table 39 Friedman test for Type 1 & Type 2s by EA on the AJT

Group	*Type*	*Mean Rank*	X^2	*p*
EA *n=20*	1: Matching	3.08	41.48	**<0.001**
	2a: Mismatching, Substitution	2.73		
	2b: Mismatching, Deletion	1.65		
	2c: Mismatching, Addition	2.55		
AA *n=20*	1: Matching	3.30	26.91	**.000**
	2a: Mismatching, Substitution	3.00		
	2b: Mismatching, Deletion	1.45		
	2c: Mismatching, Addition	2.25		

Using the Friedman test, there is a very highly significant difference in the resulting scores between the four categories of Types (X^2 = 41.48, p<0.001) - see Table 39. The unexpected performance of the control group on Type 2b-Deletion and Type 2c, Addition was due to the optionality of the addition and deletion of the particles, as Figure 27 and 28 show.

Figure 27 Box-plot of percentage of accuracy for Type 1 & Type 2s by EA on the AJT.

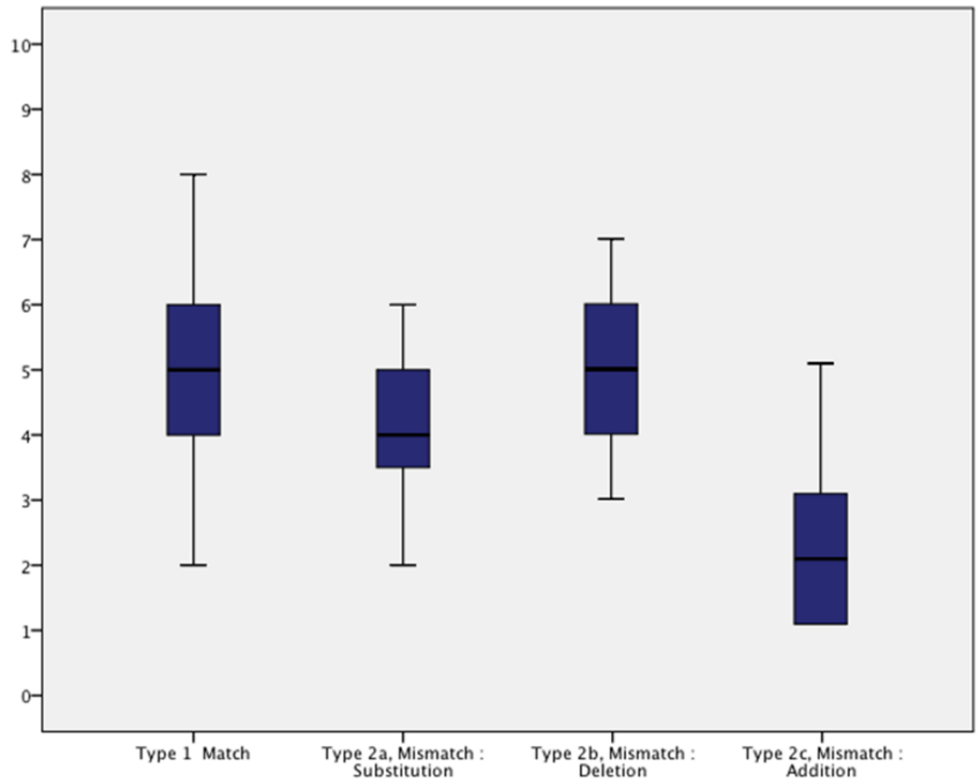


Figure 28 Box-plot of percentage of accuracy for Type 1 & Type 2s by AA on the AJT.

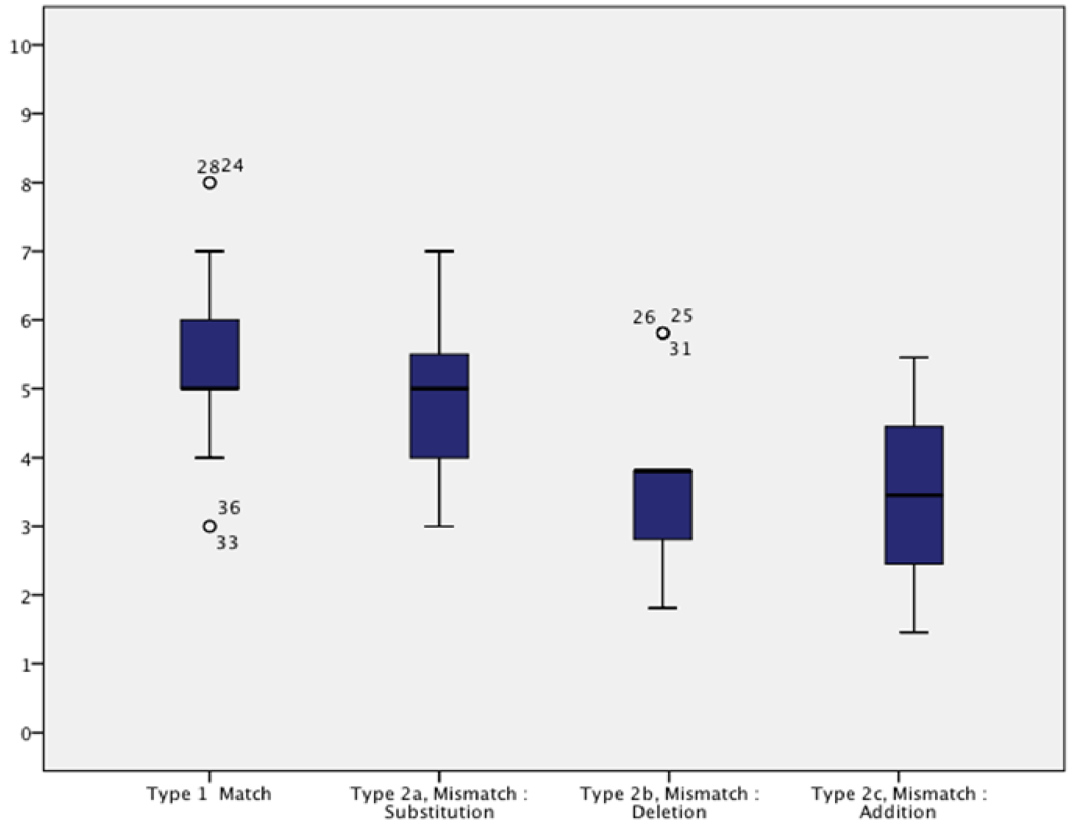
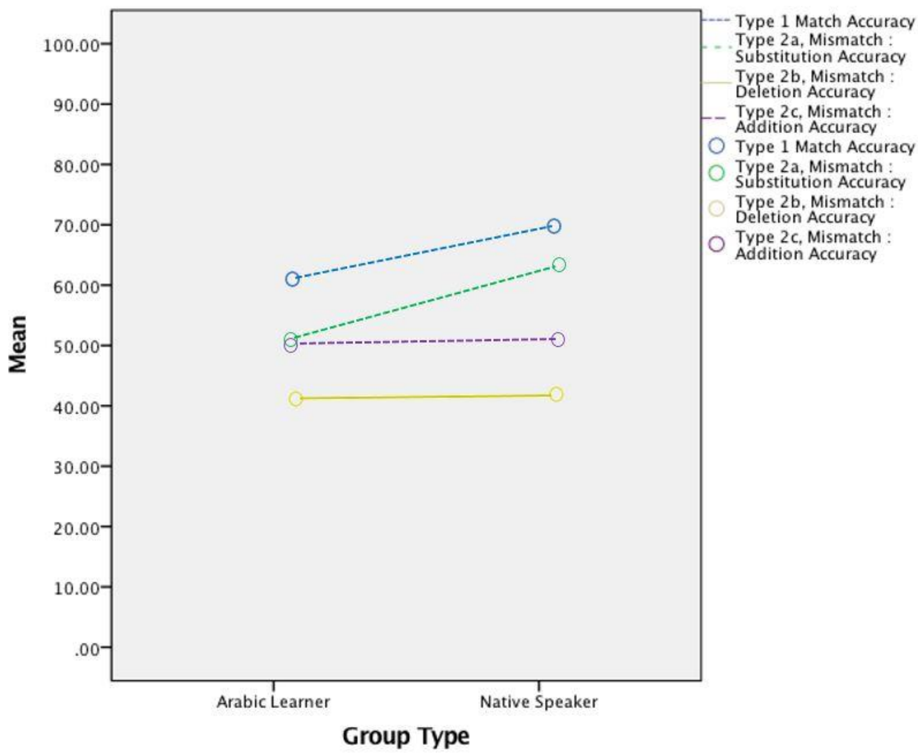


Figure 29 shows how the two groups performed on Type 1 & Type 2s on the AJT. Type 1 was higher than the other Type 2s. Nevertheless, Type 2a, Substitution and Type 2c, Addition are very close to each other, and are higher than Type 2b, Deletion. For English learners of Arabic, the order of score are Type 1, Type 2a, Substitution, followed by Type 2c, Addition, and finally Type 2b, Deletion. This suggests that English learners of Arabic find motion constructions with mismatching feature clusters to their L1 more difficult to master, which is compatible with the proposed hypotheses in Chapter 4.

Figure 29 Mean percentage in terms of groups, and Type 1 & Type 2s on the AJT.



6.4.2 Results of the Picture Description Task

This section presents the results of the second task, the Picture description task (PDT), from the L2 speakers of Arabic (EA, L2 group) and the native speakers of Arabic (AA, Control group).

6.4.2.1 Do English speakers of Arabic find motion constructions with mis/matching feature configurations to their L1 un/problematic within Type 1 and Type 2?

The results of the summary statistics (mean) are given in Table 40. It is clear that Type 1 (Matching) shows a higher mean score (3.63) compared with other Type 2s (Mismatching). However, the mean scores for Type 2a, Substitution are higher than the other Type 2s, as seen in Table 40 and Figure 30. The outcome of the PDT for the English speakers learning Arabic clearly shows that they had greater difficulty mastering addition of particles (e.g., addition of the particle *asfel* 'down' to the verb *y'anzaliq* 'slide' as in **y'anzaliq rajul aletfa asfal el9mod* 'a fire man is sliding down a fireman's pole').[125] The difference is also clear when using mean ranks, as shown in Table 40.

Table 40 Summary statistics of Type 1 & Type 2s on the PDT by EA

Group		Types			
		1:Matching	*2a: Mismatching Substitution*	*2b: Mismatching Deletion*	*2c: Mismatching Addition*
EA *n=20*	Mean	3.63	3.43	3.20	2.20
	Std. Deviation	.68	.44	.88	1.02
	Range	2-4	2-4	1-4	0-3
AA *n=20*	Mean	3.85	3.95	4.00	2.65
	Std. Deviation	.49	.22	.000	1.04
	Range	2	1	0	4

It is important to discover whether the observed differences in the scores are statistically significant. Using the Friedman test, there is a very highly significant difference in the resulting scores between the four categories of L1-L2 types (X^2 = 60.26, p<0.001) - see Table 41. This suggests that English speakers of Arabic find motion constructions with matching feature sets to their L1 much easier to acquire (e.g., *y'asbaḥ ḥawla* 'swim around') than Type 2 constructions (e.g., *y'ataslaq asfal* 'climb down'). The unexpected performance of the control group on Type 2c-Addition was due to the optionality of using particles in a comparable way to the performance of the L2 group, as Figure 30 demonstrates. Figure 31 shows how the control group performed on the PDT whilst Figure 32 shows how both groups in general performed on the PDT.

[125] Adding the particle *asfel* 'down' will result in a different meaning – sliding at the bottom of the fireman's pole not from the top to the bottom.

Table 41 Friedman test for Type 1 & Type 2s on the PDT by the EA and AA.

Group	*Type*	*Mean Rank*	X^2	*p*
EA *n=20*	1: Matching	3.40	60.26	**<0.001**
	2a: Mismatching, Substitution	2.85		
	2b: Mismatching, Deletion	2.15		
	2c: Mismatching, Addition	1.60		
AA *n=20*	1: Matching	2.80	44.505	**.000**
	2a: Mismatching, Substitution	2.93		
	2b: Mismatching, Deletion	3.00		
	2c: Mismatching, Addition	1.28		

The results in Table 41 show that Type 2s are not as difficult for English learners of Arabic than for Arabic learners of English. Although this provides an asymmetry in the reassembly task for these two groups of learners, however, I could not make a direct comparison between the two groups for many reasons such as the number of the participants of Study 2 is smaller.

Figure 30 Box-plot of percentage of accuracy for Types 1 & Type 2s on the PDT by EA

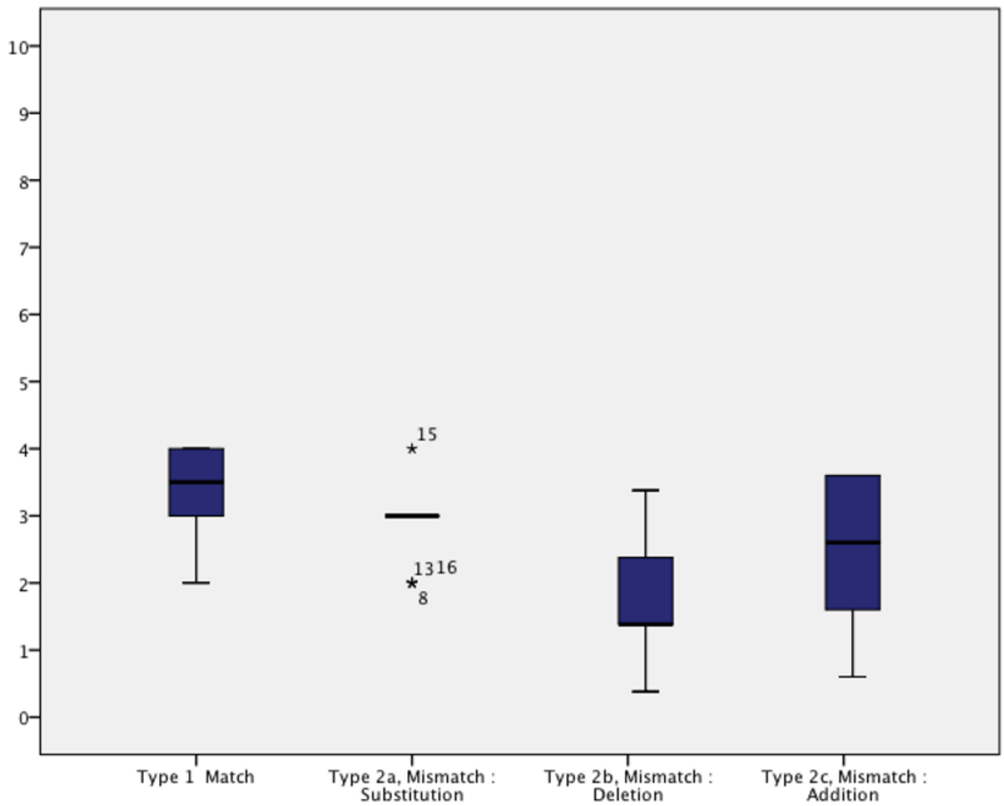


Figure 31 Box-plot of percentage of accuracy for Type 1 & Type 2s on the PDT by AA.

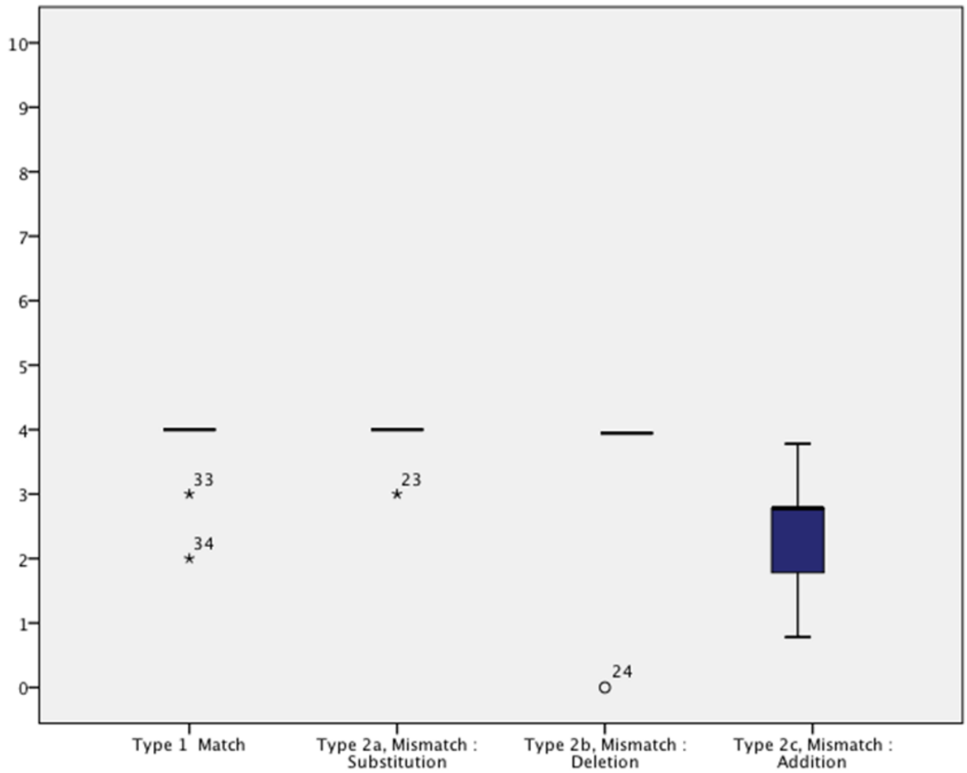
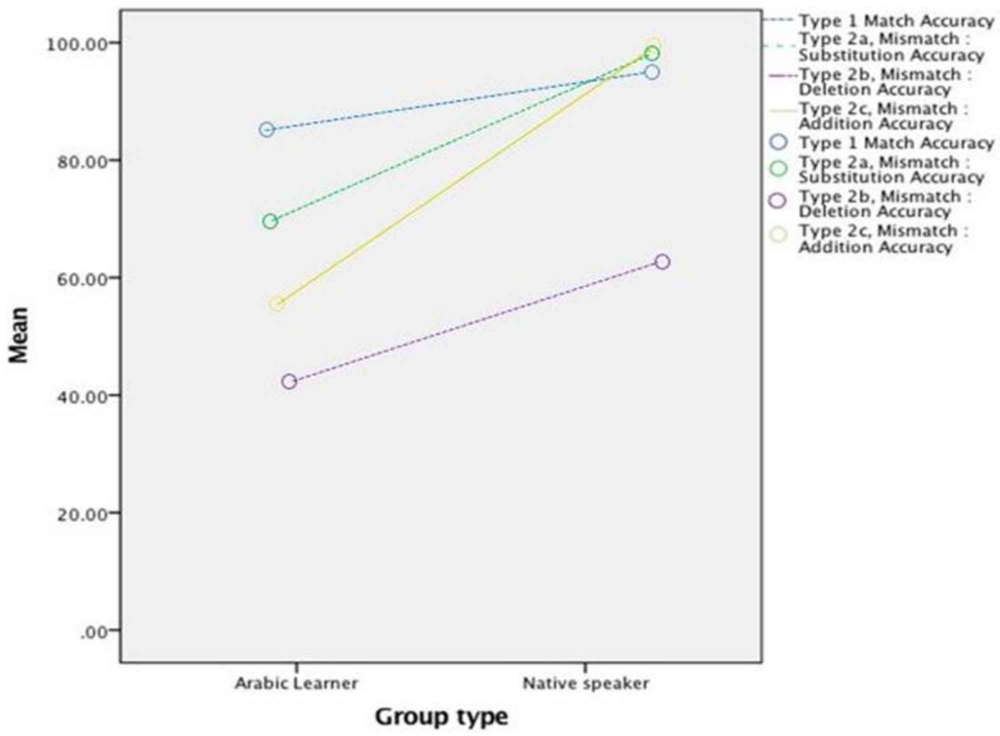


Figure 32 shows how the two groups performed on Type 1 & Type 2s on the PDT. Similar to the AJT, Type 1 (Matching) was also higher than the other Type 2s (Mismatching). For English learners of Arabic, the order of score on the PDT were Type 1, Type 2a, Substitution, followed by Type 2c, Addition, and lastly Type 2b, Deletion. This suggests that English learners of Arabic find motion constructions with mismatching feature clusters to their L1 more difficult to master, which is also compatible with the proposed hypotheses in Chapter 4.

Figure 32 Mean percentage in terms of groups and Type 1 & Type 2s on the PDT.



6.4.2.2 Do English speakers of Arabic and the native speakers have different percentage levels of accuracy for Type 1 and Type 2?

Comparing English learners of Arabic and native speakers in terms of Types, the English learners show, generally, lower means - see Table 42. For both groups, the mean for Type 2c-Addition is the lowest (43.75% for Arabic and 66.25% for the native speakers). The correct score for Type 2b-Addition is 0.0% for both groups. The scores for the native speakers seem to be more consistent than those of the English learners. The native speakers reach a mean of 100% for Type 2b, Deletion, whilst the English learners only achieved a mean of 60%. Using a one way ANOVA, there are significant differences ($p<0.001$) in the mean percentages of correct answers between learners based on Type (English learners and native speakers) for all Types.

Table 42 Summary statistics and One-way ANOVA for groups and Types on the PDT by EA & AA.

Group	*Type*	*Mean*	*Std. Deviation*	*Range*
EA (*n=20)*	1: Matching	85.00	17.01	50.00-100.00
	2a: Mismatching, Substitution	72.50	11.18	50.00-100.00
	2b: Mismatching, Deletion	60.00	22.06	25.00-100.00
	2c: Mismatching, Addition	43.75	25.49	.00-75.00
Total	65.31			
AA (*n*=20)	1: Matching	96.25	12.23	50.00-100.00
	2a: Mismatching, Substitution	98.75	5.59	75.00-100.00
	2b: Mismatching, Deletion	100.00	.00	100.00-100.00
	2c: Mismatching, Addition	66.25	26.00	.00-100.00
Total	90.31			
One-way ANOVA $F_{7,125}=28.144$, $p<0.001$				

6.4.3 Conclusion on Study 2

To conclude, this section presented the results from the acceptability judgment task and the picture description task from the English speakers of Arabic and the control group (native speakers of Arabic). The results suggest that the Arabic speakers of English have also performed better on motion constructions with matching feature configurations to their L1 compared to those constructions with mismatching feature configurations to their L1. The control group did not show a significant difference in their performance on the two types of the test items. This provides evidence that lexical items with features that have been clustered in an L1 in a different way from in an L2 are problematic to master for L2 adult speakers.

6.5 Conclusion

In summary, this chapter presented the results from the two tasks: the acceptability judgment task and the picture description task for Arabic learners of English, English learners of Arabic, and two control groups of native speakers. On both tasks, the results suggest that the L2 group performed better on motion constructions with matching feature configurations to their L1 (Type 1) compared to other constructions with mismatching feature configurations to their L1 (Type 2). The control groups did not show a significant difference in their performance. This provides evidence that motion constructions with features that have been assembled in the L1 in a different way from in the L2 are difficult for the learners examined to master. In addition, the results showed that the more advanced the L2 speakers are, the fewer feature misconfigurations they generate. The next chapter of the thesis, therefore, discusses the results reported here.

Chapter 7. Discussion

7.1 Introduction

In this chapter, the major findings observed in Chapter 6 will be recapitulated, and then discussed in relation to the wider theoretical questions. This chapter will also address the two main research questions:

> **RQ1** Do L2 speakers find motion constructions with feature configurations that match their L1 unproblematic?
>
> **RQ2** Do L2 speakers find motion constructions with feature configurations that do not match their L1 problematic?

The first question on –FR (Matching) was referred to as Type 1 and the second question on +FR (Mismatching) as Type 2. The latter question was subdivided into three categories based on which type of FR is required: substitution, deletion from or addition to the L1 feature set. The persistent variability in adult L2 data in terms of the feature reassembly account of L2 acquisition will be closely observed. The main hypotheses are:

> H: If the learning task for L2 speakers engages feature reassembly, e.g. [PATH, LEX-L1] → [PATH, LEX-L2], the meaning that demands feature reassembly will constitute a source of difficulty for L2 speakers. That is:
>
> (H_a) Motion representations with matching F + matching LEX-L2 are unproblematic in L2 acquisition.
>
> (H_b) Motion representations with matching F + mismatching LEX-L2 are problematic in L2 acquisition.

As previously mentioned, the data are drawn from two main sources: the AJT and PDT in four groups. Study One consisted of Arabic speakers of English and native speakers of English (control group) whereas Study Two consisted of English speakers of Arabic and native speakers of Arabic (control group). This discussion will be illustrated using selected items from participants' responses on the two tasks as well as from the follow-up questionnaire comments on the AJT providing a qualitative analysis in addition to the quantitative analysis presented in Chapter 6.

This chapter is divided into four main sections which are organized as follows. The first section discusses the results of the first study involving the Arabic speakers of English and the English native group whilst the results of the second study focusing on the English speakers of Arabic and the Arabic native group are presented in the second section. Given that the participants' performance in all tasks is compared, the first and second sections discuss the results of both the AJT and the PDT achieved by the L2 speakers and the control groups. The third section comments on the results of both studies in relation to the research questions and the main hypothesis. Finally, the fourth section summarises the major findings.

7.2 Study 1: Arabic learners of English (AE)

As previously noted, the distribution of accuracy scores between the two types were significantly different, with Type 1 (Matching) showing higher accuracy scores compared with the Type 2s (Mismatching) on both tasks. The order of score types using the mean for the Arabic learners for English on the AJT were Type 1 followed by Type 2c-Addition, Type 2b-Deletion and finally Type 2a-Substitution. On the PDT, however, the order of score types were Type 1 followed by Type 2c-Addition, Type 2a-Substitution and, finally, Type 2b-Deletion.

As previously described in Chapter 5, both tasks included two main types of motion constructions. The first type included motion verbs that behave similarly in both Arabic and English using corresponding particles, These were *come from, drive to, move to* and *walk around* in the AJT and *fly to, move around, fly around* and *swim around* in the PDT. It was assumed that the feature configurations of these motion constructions are the same in both L1 and L2 and consequently require no feature reassembly (−FR).

The second type of motion constructions, on the other hand, includes motion verbs that behave differently in Arabic and English. The second type is subdivided into three subtypes: (2a) those using non-corresponding particles in the given context; (2b) those omitting required particles in the L2; and (2c) those adding superfluous particles from the learners' L1 to the L2, for example*, enter/*enter to, attend/*attend to, leave/*leave from,* and *approach/*approach to/from* in the AJT and *enter/*enter to, exit/*exit from, leave/*leave from, approach/*approach to/from* in the PDT.

Overall, the results suggest that Arabic learners of English performed significantly better on Type 1 motion constructions with feature configurations that match their L1 rather than those with Type 2 feature configurations that do not match their L1. In other words, Arabic learners of English find L2 Type 1 motion constructions that do not require FR easier to master, a finding which is compatible with the hypotheses proposed in Chapter 4.

The four following subsections will discuss the findings relating to the four types identified above, namely, Type 1, Type 2a-Substitution, Type 2b-Deletion and, finally, Type 2c-Addition. This discussion begins by focusing on the Arabic speakers of English and the native speakers' judgments and productions of Type 1 (−FR).

7.2.1 Evidence for effect of non-specific feature configurations: Type 1, Matching (−FR): [path, Px] → [path, Px]

The focus here was on whether adult Arabic-speaking acquirers of English were able to provide appropriate judgments and productions for motion constructions of Type 1 (−FR: Matching). As previously mentioned, the first type of motion verbs includes verbs that behave similarly in Arabic and English using corresponding particles (i.e. *come from, drive to, move to* and *walk around* in the AJT, and *fly to, move around, fly around,* and *swim around* in the PDT. It is assumed that motion constructions of Type 1 sharing the same feature configurations in both L1 and L2 and consequently not requiring FR will be much easier to master than those classed as Type 2s (+FR: Mismatching).

Using mean ranking, Type 1 was placed highest of all four types on both tasks. The results of the Friedman test revealed highly significant differences in the resulting scores across the four categories of the two types on the AJT and the PDT, respectively (X^2=27.35, p<0.001 and F=14.66, p<0.001). As previously noted, using the means to order scores by type for Arabic learners for English gave a ranking of Type 1, Type 2c-Addition, Type 2b-Deletion and, finally, Type 2a-Substitution for the AJT, and Type 1, Type 2c-Addition, Type 2a-Substitution and Type 2b-Deletion for the PDT. These results could be interpreted as meaning that the feature configuration type of the test items has an effect. The L2 speakers might copy or transfer L1 feature-bundles yet still sound target-like as L2 fortunately allows analogous feature configurations by mapping the same feature onto equal particles. The results suggest that when the same semantic features encoding motion events are bundled up together onto corresponding lexical items in L1 and L2, Arabic learners of English performed significantly better on this type as it does not require FR. They found it easier to judge and produce than those with feature configurations mismatching with their L1. This finding is compatible with the proposed hypothesis Ha. that is, they find representations which do not require new or different semantic-morphology re-clustering are easier (for the full set of responses for the PDT, see Appendix 6B).

According to the FRH (Lardiere, 2008, 2009), since the initial phase in the feature reassembly process is to determine the similarities between the L1 and L2 morphemes, L2 learners map the target morphemes onto their L1, based on the similarities between the meanings and grammatical functions of these morphemes. This leads us to assume that L2 learners have transferred this knowledge from their L1. Some motion verbs which occur with corresponding particles holding [path] of motion in the target language are similar to those in the L1 (e.g., the English particle *around* is equivalent to the Arabic particle ‘ḥawla’, *to* is equivalent to ‘ila’, *from* is equivalent to ‘min’, etc.). The verb *drive*, for instance, occurs with the directional particle *to* in English as test item 98a shows. Similarly, the Arabic verb *y’aqudu* ‘drive’ occurs with a corresponding particle *ila* ‘to’ to host the same feature: [path] of motion. The L2 group unanimously rejected the ungrammatical sentence 98b from which *to* was omitted, since it reflects a representation that does not match the feature set of either their L1 or the target language. It seems that L2 learners know that the motion verb *drive* must use a directional particle because both their L1 and L2 require its existence as the only slot available to host the relevant semantic feature.

(98) a. Edward drove to London in his van to see his family. AJT: Type 1, 2

b.*A 35 year old man drove Edinburgh in a stolen car.

Thus far, the quantitative results of the AJT are consistent with the proposed hypothesis Ha. I will now consider how the qualitative data which were gathered by means of the follow-up questionnaire relate to this issue. Not only were the L2 group and control group generally similar in terms of their rejection and acceptance of Type 1 target constructions, but the reasons that they gave for rejecting sentences were also similar. When they were asked in the follow-up questionnaire to state why they judged sentences to be incorrect, responses overwhelmingly indicated that to describe the events accurately, the English verbs needed to be tied in with particles in order to indicate [path] of motion, thus forming VPCs not the non-target like V morphology. In general, respondents successfully acknowledged that essential particles that depict directionality (e.g., *around, from, to,* etc.) had been omitted in obligatory contexts. It appears that their accurate justifications suggest that their perception of what is incorrect about the test sentences is the same as that of the control group for Type 1.

However, there were a few cases in which the learners misinterpreted the context of spatiality in the AJT. For instance, instead of adding *around* to the motion verb *walk* they successfully rejected the sentence but added a non-target like particle *throughout/through* in the follow-up questionnaire. Another example of the misuse of this type was caused by overgeneralisation when learners corrected the sentence by using non-target like particles, overgeneralising the use of certain particles in all contexts such as *into* instead of *to* as example (99) illustrates:

(99) *Mark felt lonely because he moved ^ a new school. (to/*into) AJT: Type 1, 3

Similarly, in the case of the PDT, the L2 group performed significantly better on Type 1 test items with L1-L2 matching feature sets. They produced sentences in which [path] of motion is mapped onto corresponding particles in both L1 and L2 as they share identical feature bundles and hence do not require FR. The motion verb *move,* for instance, occurs with the particle *around* to host [path] of motion in English. Likewise, the Arabic verb *y'ataḥark* 'move' occurs with the corresponding particle *ḥawla* 'around' to convey the same semantic feature. When the L2 group was asked to use the verb *move* while describing a picture of a toy train moving around a Christmas tree, they frequently produced sentences in which the given motion verb *move* accompanies the particle *around* ‘ḥawla’ which reflects a feature-lexicon distribution commoneq4es345gb ` to both their L1 and the target language as example (100) shows.

(100) A train is moving around a Christmas tree. (*y’ataḥrak ḥawla*) PDT: Type 1, 2

As far as proficiency levels are concerned, there appears to be a kind of relationship between the average percentage for Type 1 and learners’ levels. Generally speaking, when asked to judge a set of sentences, the L2 speakers’ judgments correlated closely with those of the control group on Type 1 in so far as they typically rejected sentences with V morphology and accepted those with VPC morphology. In the AJT, the average percentage for elementary level was found to be the lowest of all the levels (67.19%, 17.60 SD). Intermediate came next (77.27%, 15.13 SD) followed by the highest percentage for advanced level (87.50%, 12.50 SD). As expected, native speakers scored very highly (95.63%, 6.12 SD). Furthermore, some L2 speakers in the intermediate and advanced groups achieved 100%.

As previously noted, the result of the one way ANOVA confirms that there was a very highly significant difference in the average percentages across the four groups for the AJT ($F_{3,67}$=14.66, p<0.001). Although Type 1 is 10% (mean difference) lower for elementary level than intermediate level, the Tukey test proves that this difference is not significant (p=0.082). The elementary level speaker scored 20% and 28% (mean difference) less than the advanced and the native speakers, respectively, indicating that these differences are highly significant (p=0.002 and p=<0.001). At intermediate level Type 1 was about 10% less (mean difference) than the advanced and the native speaker, meaning no significant difference was observed (p=0.148). At intermediate level Type 1 was about 18% less (mean difference) than the native speaker, resulting in a very highly significant difference (p<0.001). The advanced level speaker was statistically the same as the native speaker (p=0.396). As expected, the mean differences are higher for the advanced speakers than for those who are less advanced in their performance level.

On the PDT, similarly, the average percentage for elementary level was found to be the lowest compared with the remaining levels (73.44%), followed by the intermediate level (87.12%). Advanced level and native speakers, on the other hand, showed very high percentages (95.45% and 98.75, respectively). The variation in the percentages within the elementary and intermediate level was high. There was a very small variation in the percentages for the advanced level and native speaker. As with the AJT, it was noted that some L2 speakers in the groups reached 100% on Type 1, strongly suggesting that it can be more easily mastered. There was a sharp increase in the mean for Type 1 as the speaker level increased; however, this was to be expected as they all completed the same picture description test. The result of the one way ANOVA confirmed that there is a very highly significant difference in the average percentages across the four groups of speakers ($F_{3,76}$=14.66, p<0.001). Using post-hoc, the Tukey test revealed that the only significant difference was to be found between the elementary and advanced levels (p=.007). To sum up, when asked to describe the directional pictures provided, the L2 speaker pattern was similar to that of the control group in typically producing sentences with Type 1 motion constructions which formed target-like motion constructions.

However, if both L1-based and L2-based feature combinations co-exist in interlanguage syntax, this begs the question as to why low-proficiency level speakers incorrectly responded to Type 1. It could be that they are not yet used to the vocabulary (i.e. verbs). The focus now shifts to the variability in the judgments and productions of Type 2 of motion constructions.

7.2.2 Evidence for the effects of Arabic-specific feature configurations: Type 2, Mismatching (+FR)

This subsection examines whether adult Arabic-speaking learners of English were able to make appropriate judgments and produce Type 2 sentences in comparison to performance of the control group. The high rates of acceptance and production of non-target like constructions of motion suggest that the L1-type set of semantic-morphology distribution remains in L2 learner interlanguage. As previously mentioned, transferring or copying L1-based feature bundles does not always produce target like sentences.

English motion constructions sometimes appear to be related to their Arabic equivalents in terms of the particles they use. Nevertheless, as far as the relevant acquisition issues are concerned, as described in Chapter 2, this similarity can be misleading in many cases. The fact that significant differences were found among the groups, according to feature configuration types, is consistent with the statement that L1 (i.e. Arabic) and L2 (i.e. English) sometimes have different underlying representations of spatiality and these differences result in the observed persistent variability. Assuming that the L2 groups' performance in the AJT and PDT was systematic and not randomly generated this could be attributed to a more systematic process, namely, feature reassembly. As previously suggested in Chapter 4, failure to reassemble the relevant features can take three different forms: failure to substitute, failure to delete from or failure to add to the L1 set of features. The non-target like constructions which are accepted or produced by the L2 learners appear to be mirror images of L1-specifications.

As previously mentioned, the ranking by mean of accuracy scores for English for Arabic learners was Type 1 followed by Type 2c-Addition, Type 2b-Deletion and finally Type 2a-Substitution (for the AJT) and Type 1 followed by Type 2c-Addition, Type 2a-Substitution and Type 2b-Deletion (for the PDT). Given that there was a significant difference between the Type 1 and Type 2 results for both tasks, this could mean that the way in which the relevant semantic features are distributed over different lexical items has an effect on the L2 acquisition of motion constructions. This suggests that Arabic learners of English find Type 2 motion constructions with a feature configuration which does not match that of their L1 more difficult, an interpretation which is compatible with the proposed hypothesis (Hb). Evidence from the data for all three of the aforementioned Type 2 patterns is discussed in the following sections.

7.2.2.1 Evidence for failure to substitute the L1 set with that of the L2: Type 2a: [path, Px] → [path, Py]

Both tasks included motion verbs that behave differently in L1 and L2 by using non-corresponding particles; *go through, walk across, fly above, jump over* and *roll into* (in the AJT) and *jump over, go across,* and *jump onto* (in the PDT). By including this type of feature-lexicon distribution, the aim is to find out whether Arabic speakers of English reassembled the relevant semantic feature set effectively by substituting their L1 particles with the target particles. The data provided evidence of acceptance and production of non-target like patterns in which target like particles were replaced with non-target like ones. The L2 speakers recurrently mapped the relevant features onto their L1 particles, using a one-to-one literal translation technique to produce alternates for L2 particles. For example, there are examples in the data in which Arabic speakers of English substitute the particle *through* with *across*, *above* with *on/over, over* with *above/on, into* with *to/in,* etc. It is most likely that L1 feature bundles that remained unchanged in the learners' interlanguage prompted such substitution patterns. The control group, on the other hand, did not produce similar patterns in their performance.

In the AJT, the L2 group failed to reject sentences in which target particles holding [path] of motion were substituted by other non-target like particles from their L1. The manner of motion verb *fly*, for instance, takes the particle *above* to host [path] of motion in English as seen in the test item 101a. On the other hand, the Arabic equivalent of the same verb *yaṭir* 'fly' occurs with a different set of particles such as *9la* 'on', *fawqa* (over or above), etc. The L2 group, therefore, accepted the sentence in which the motion verb *fly* occurs with the particle *on* which represents a specific particle used in their L1 but not in the target language. It seems that the L2 learners treated the particle *on* as an equivalent of the Arabic particle *9la*. The control group, on the other hand, overwhelmingly rejected example (101b) for the reason that they found the construction non-target like due to the misuse of the particle (**on* instead of *above*).

(101) a. Different coloured kites flew above the big tree. AJT: Type 2a, 3

b.*The black birds flew on my head.

Furthermore, even when L2 speakers successfully rejected the sentence and seemed to have re-clustered their L1 feature set to better match the L2, when asked the reason for rejecting this kind of sentences. One learner explained that he would use the particle *up* instead of *on* which is also unacceptable in the given context.

Similarly, other learners successfully rejected the sentences but failed to replace the non-target like particles with the appropriate target ones, replacing them instead with others from their L1 or with inappropriate L2 particles as examples (102b-c and 103a-f) illustrate.

(102) a. *They walked through the Millennium Bridge. (across) AJT: Type 2a, 2
b. *They walked throughout the Millennium Bridge. (*khalal*)
c. *They walked over the Millennium Bridge. (*fawqa*)

(103) a.*The black horse jumped on eight hurdles. (over) AJT: Type 2a, 4
b.*The black horse jumped above eight hurdles. (*fawqa)*
c.*The black horse jumped up eight hurdles. (*‘9la)*
d. *The black horse jumped of eight hurdles. (*min*)
e. *The black horse jumped in eight hurdles. (*fii)*
f. *The black horse jumped to eight hurdles. (*ila)*

It seems that the learners have substituted the given L1 particle with other L1 particles that they judged to be more acceptable in the target language. Thus, feature reassembly was incomplete and consequently results in the observed non-target like constructions. However, not all the responses were ungrammatical; sometimes, the correction yielded a different reading to the one expected as illustrated by examples (104a-b). One of the L2 speakers rejected example (104a) and justified this by adding the particle *on* to the verb *walk* (104b) which indicates a locational reading not the target directional reading (for the full set of responses on the follow-up questionnaire see Appendix 6A).

(104) a. They walked over the Millennium Bridge. AJT: Type 2a, 2
b. They walked on the Millennium Bridge.

Further evidence of these substitutions patterns came from the PDT data, in which non-target like constructions were produced while describing the stimulus images. The L2 group was unable to substitute the L1-based feature bundles with the target bundles. In general, it seems that the possible explanation for L2 speaker behaviour with Type 2a test items is that they transferred some particles holding [path] of motion to the target language as thought they were exact equivalents to others from their L1 (e.g., considering the English particle *above* as equivalent to the Arabic particle '9la', *across* as equivalent to 'khilal', *over* as equivalent to '9la/fawqa', etc.). In the PDT, the manner of motion verb *roll*, for example, occurs with the particle *into* to carry [path] of motion in English as in test item 105a. The Arabic equivalent verb *y'atadḥraj* 'roll' occurs with a different set of particles, however, such as *9la* 'on', *ila* 'to', *bettejaah* 'towards', or *fii* 'in'. The L2 group, therefore, produced sentences in which the given verbs of motion are tied to non-target like particles that reflect a specific feature bundle of their L1 not the target language, as seen in examples (105b-f).[126]

(105) a. A golf ball is rolling into a hole. (*yatadḥraj ila*) PDT: Type 2a, 1
b. *A golf ball is rolling *on* a hole. (*9la)*
d. A golf ball is rolling *to* a hole. (*ila)*
e. A golf ball is rolling *towards* a hole. (*bettejaah)*
f. A golf ball is rolling *in* a hole. (*fii)*

As previously described in Chapter 2, English makes distinctions between some particles in a way which Arabic does not. For example, English might allow some particles to carry language-specific values, e.g. [path; towards-inwards] which is typically configured onto *into* together with other values, e.g. [path: directional, endpoint,]. In contrast, Arabic does not allow a single particle to bear this two-fold trajectory value: [path; towards-inwards]. When [path] is mapped onto particles in both languages which have specific trajectory values, e.g. [path: towards-inwards], the L2 speakers tend to configure [path] onto a particle with the same sets as their L1 values. Specifically, they map L1-based particles, e.g. *fii* 'in' and *ila* 'to' onto the English-specific value [path: towards-inwards] in place of *into*. It is possible that the L2 group may in fact be unsure as to the status of *across* and *through*, *over* and *above*. Some evidence of this comes from an L2 speaker, who explained why she rejected a similar sentence in the AJT. She acknowledged that she was unsure about whether to use the particle *across* instead of *through* because she had learned by

[126] Even though the L2 learner productions in this subcategory were expected to be either target like or non-target like by substituting the target like particle with a non-target like one, they also produced non-target like constructions by deleting the particle. A possible explanation for this might be that learners might find it confusing to decide which particle to use and simply omit it.

explicit classroom instruction that *across* and *through* are not equivalents in English but she could not remember exactly what the difference was between them.

As far as the proficiency levels are concerned, the average percentage at elementary level (53.13%, 17.97 SD) was found to be the lowest compared to the other levels for Type 2a-Substitution on the AJT. The mean intermediate level came next (62.12%, 18.62 SD) followed by advanced level (62.50%, 17.68 SD) showing a very similar mean percentage. Unsurprisingly, the native speaker achieved the highest mean percentage (88.75%, 13.39 SD). The 100% was only observed for the intermediate and the native speaker. The lowest percentage of 25% was seen at elementary level. The distribution within the advanced group was different from the rest. This suggests that the more advanced L2 speakers were much more successful in rejecting sentences in which particles of L2 were substituted with those from their L1. The L2 speaker percentages clustered together and were much lower than those of the native speakers.

The result of one way ANOVA confirmed a highly significant difference in the average percentages for Type 2a across the four groups ($F_{3,76}$=15.28, p<0.001). As expected, the results suggest that the L2 speakers were less accurate (59.47%) in the case of items of Type 2a-Substitution than the control group (88.75%). As a result of the existing statistically significant relationship between speakers groups and Type 2a, the control group appeared to have achieved a higher percentage than the L2 group for answering Type 2a correctly. Interestingly, the average percentages for elementary, intermediate and advanced levels were statistically the same (p>0.05) based on the Tukey HSD test. In contrast, the elementary level was some 35.63% lower than the native speaker level resulting in a highly significant difference (p<0.001). Unexpectedly, the mean difference for both the intermediate and advanced levels was approximately 26% lower than the native speaker level with a highly significant difference (p<0.001). It could be argued that lexical items that are similar but not quite the same as those in their L1 are much harder to master and, for that reason, advanced learners did not show any particular improvement. They also did not reach to the same level as the native speakers when rejecting sentences in which L2 particles were substituted by those of their L1 on the AJT.

As far as the PDT is concerned, the average percentage of elementary level was found to be low, the lowest in comparison with the remaining levels (51.56%, 23.22 SD). Both the advanced level and the native speaker produced very high levels (96.25%, 9.16 SD). The lowest percentage (25%) was observed for the elementary and intermediate levels,[127] and the variation in the percentages within the levels was high. The percentages for native speakers lay between 75% and 100% with a very low variation. In terms of the proficiency levels, the PDT data showed that for Type 2a the mean increases in tandem with the level of the learners.

The result of one way ANOVA confirmed a highly significant difference in the average percentages across the four groups ($F_{3,76}$=14.66, p<0.001). The elementary level was some 21% lower (mean difference) than the intermediate level; however, the Tukey test revealed that this difference was not significant (p=0.009). The elementary level was some 34.80% and 44.69% (mean difference) less than the advanced level and native speakers, respectively, indicating highly significant differences (p<.001 and <0.001, respectively). The intermediate level was 13.63% less (mean difference) than advanced level, but no significant difference was observed (p=0.262). The intermediate level was 23.52% less (mean difference) than the native speakers, resulting in a highly significant difference (p=0.001). Statistically, the advanced level was the same as the native speakers (p=0.604), suggesting that the advanced learners of English successfully substituted L1 based feature set with the L2.

7.2.2.2 Evidence for failure to add to the L2 feature set: Type 2b: [path, V] → [path, P]

As Chapter 5 showed, both tasks included motion verbs that behave differently in Arabic and English allowing particles to accompany motion verbs in one language but not the other. Thus English could select particles to host [path] of motion, whereas Arabic could not. The examples chosen in the AJT were *get to/*get, arrive*

[127] It is obvious that intermediate learners are no longer at the initial state of L2 acquisition of the targeted motion constructions. However, the learners' interlanguage grammars still mirror their L1 even at the intermediate level.

*in/*arrive, crash into/*crash, go out/*go* and for the PDT *climb down/*climb, ski down/*ski, crash into/*crash,* and *slide down/*slide*.

The data suggest that the L2 speakers were less accurate (60.26%) than the control group (90.63%) in the case of motion constructions with Type 2b-Deletion. As a result of the existing statistically significant relationship between speakers' groups and Type 2, the control group produced a higher percentage than the L2 group for answering Type 2b correctly. The L2 group tended to map [path] of motion onto zero particle Ø patterning of their L1-based feature set. That is, using a one-to-one literal translation technique, the L2 speakers recurrently mapped onto their L1 feature set that lacks such particles. Arabic speakers of English omit obligatory particles essential to carry [path] of motion such as *to, in, into* and *out* forming bare root verb morphology not the target morphology, VPCs.

The motion verb *arrive*, for instance, occurs with the particle *in* that hosts [path] of motion in English as seen in test item (106a-b). On the other hand, the Arabic equivalent verb *yaṣil* 'arrive' has the option to select an optional particle such as *ila* 'to' or to omit it as the verb already bears the same feature. The L2 group failed to reject the sentence in which the motion verb *arrive* does not occur with the particle *in* and does not represent the feature configuration of the target language. The best way to explain such behaviour is that the L2 group failed to add the required particles needed to host [path] of motion to the L1-based feature set resulting in these particles being deleted.

(106) a. My cousin's family arrived in Dubai yesterday. AJT: Type 2b, 2
b.*The newly married couple arrived ^ Venice. (in)

As regards the follow-up questionnaire, many L2 speakers were unable to articulate exactly why they rejected the sentences when they did so. In other cases, even when the L2 speakers successfully rejected the sentence and seemed to have reassembled the L1 feature set by adding a particle, when asked about the reason for this rejection one of the learners explained that he would add a particle but he incorrectly added the particle *to* which is a literal translation of the particle *ila*, an optional particle which can be added to the Arabic verb *yaṣil* 'arrive'. Another learner similarly acknowledged the need for a particle and stated that she would use the particle *at* which was also incorrect in the context given. Another L2 learner explained that the motion verb *crash* requires a particle but then erroneously added the particle *on* which is non-target like in English. The feature reassembly process appears to be incomplete, since some speakers appeared to have successfully rejected the non-target like constructions given but then added another non-target like particle that they deemed to be more acceptable in the target context.

Another piece of evidence consistent with the proposed hypothesis for these deletion patterns of Type 2b came from the PDT, since the L2 group failed to add essential particles to accommodate the target feature set whilst describing the animated pictures. The possible explanation for this behaviour with Type 2b test items is that the L2 group treated some motion verbs as if they did not require directional particles in the target context as was the case for their L1. The motion verb *climb*, for instance, selects the particle *down* to host [path] in English as test item 107a shows. In contrast, the Arabic verb *y'atasalaq* has the option to omit the particle or to occur with a set of different particles (directional or locational) such as *ila '9la* 'to up', *fawqa* 'over', *khelaala* 'through', *fii* 'in', and *9la* 'on'. When the L2 group were asked to describe a picture of a man climbing down a mountain, some of the learners produced sentences in which they did not select particles to accompany the verb *climb* or selected others that had been transferred literally from their L1.[128] The control group, on the other hand, did not show these patterns of deletion in their description. The following examples (107b-f) are responses produced by the L2 group with the motion verb *climb*:

(107) a. A man is climbing down. (*yatazalaj asfel*) PDT: Type 2b, 1
b.*A man is climbing to up a mountain. (*ila'ala/fawaq*)
c.*A man is climbing in a mountain. (*fii*)
d. A man is climbing on a mountain. (*9la*)
e. A man is climbing over a mountain. (*fawqa*)

[128] There was some evidence of miscomprehension of [path] of motion in two animated pictures (i.e. *climbing down* and *flying to*). One learner thought that the man was climbing up the mountain not down and thus added the particle *up*. Another learner thought the plane was flying over India rather than to India and accordingly selected the particle *to*. See Appendix 2I for screenshots of these motion events.

f. A man is climbing ^ a mountain. (Ø)

As far as proficiency levels are concerned, the average percentages for elementary and intermediate levels (57.81%, 13.59 SD and 59.47%, 17.12 SD, respectively) were close to each other and lower than the other levels on the AJT. As expected, the average advanced level (69.31%, 18.62 SD) was lower than the native speaker who produced a higher average percentage (90.62%, 10.63 SD). The lowest percentages of 25% and 37.50 were observed for the intermediate and elementary levels, respectively. The results for the advanced group were found to be more consistent than the other levels. The differences between the average percentages for levels increased as the level became higher. This suggests the more advanced L2 speakers of English were much more successful in rejecting sentences in which L2 particles were deleted. However, there was still a significant difference between advanced and native speakers. The average percentages for elementary and intermediate levels were statistically the same (p=0.984) indicating that it was very difficult to distinguish between them in terms of Type 2b (%). Elementary and advanced levels were also statistically the same (p-=0.216). The elementary level was some 32.81% lower than the native speaker level resulting in a very highly significant difference ($p<0.001$). Similarly, the intermediate and advanced levels were 31.16 % and 21.31%, respectively, lower than the native speaker level producing a very highly significant difference ($p<0.001$).

With regards to the PDT data, the average percentages for elementary and intermediate levels were found to be very low, and the lowest in comparison with the remaining levels (31.25%, 25 SD and 34.85%, 23.33 SD). The advanced level was also low (59.09%, 23.11 SD). Native speakers produced a high mean (93.75%, 11.11 SD). Interestingly, some elementary and intermediate level learners scored 0%. The native speaker percentages lay between 75% and 100%. The variation in the percentages amongst Arabic learners was higher than for native speakers. It is noted that the distribution of levels seems to be asymmetric, with the levels seeming to be skewed. This suggests that Arabic learners of English at advanced level find it difficult to delete the extra particles in L2 from their L1 feature based set. For Type 2c the mean increases as the level of the L2 speakers increases.

The result of one way ANOVA confirms that there was a highly significant difference in the average percentages across the four groups ($F_{3,76}=38.21$, $p<0.001$). As a result, a post-hoc test was used to examine pair-wise differences between all levels. The elementary level was 3.59% lower (mean difference) than the intermediate level, indicating that they were statistically the same. The elementary level was 27.84% and 62.52% (mean difference) less than the advanced and native speaker levels, respectively, indicating highly significant differences (p=.007 and <0.001, respectively). The intermediate level was 24.24% less (mean difference) than the advanced level (p=0.009). In addition, the intermediate level was 58.90% less (mean difference) than the native speaker, producing a highly significant difference (p<0.001). The advanced level differed from the native speakers by 34.66%, in favour of the latter, creating a highly significant difference between them (p<0.001). The mean difference between the elementary and intermediate levels was much smaller than that between the intermediate and advanced. Thus, it is most likely that L1 feature bundles lacking these particles drive these patterns of deletion. The control group performance, on the other hand, did not reflect these patterns of deletion. Clearly, the data suggests that deletion of particles from the feature bundles of L1 was the hardest to master.

7.2.2.3 Evidence for failure to delete from the L1 feature set: Type 2c; [path, P] → [path, V]

In contrast to the previous section, Arabic may select particles to host [path] of motion whereas English may not. Both tasks included motion verbs of a type that behave in a language-specific way in Arabic and English: **enter to, *attend to, *leave from* and **approach to/from* in the AJT and **enter to,* exist from, *leave from,* and **approach to/from* in the PDT.

The AJT data suggest that the L2 speakers were less accurate (65.91%) than the control group (95.63%) for Type 2c-Addition items. When [path] of motion is mapped onto a particle in L1 and onto zero particle (Ø) in the L2, the L2 group tends to configure [path] onto a superfluous particle in the target context. The best explanation for such behaviour is that they have failed to delete particles from the L1-based feature set in which some motion verbs occur with unneeded and superfluous particles in the target language to convey [path] of motion. Using a one-to-one literal translation technique, Arabic speakers of English may add unnecessary particles such as *to, from,* etc. forming VPCs rather than the target bare verb morphology. In the AJT, the motion verb *approach*, for instance, does not typically occur with a particle to convey [path] of motion in English as test item 108a shows. In contrast, the Arabic verb *y'aqtarib* 'approach' selects the particle *min* 'from' or *ila* 'to'. The L2 group thus failed to reject sentence (108b) in which *approach* occurs with the superfluous particle *from* which matches their L1 not the L2.

(108) a. The runners finally approached the finish line. AJT: Type 2c, 4
b. The zookeeper approached *from/ Ø the lion cautiously

These data can be usefully contrasted with comments from the follow-up questionnaire to the AJT, since many of the L2 speakers were unable to justify why they rejected the sentences. That is, although some of the L2 speakers had successfully rejected the non-target like construction and had apparently accommodated the L2 feature set, when asked to justify this rejection one of the learners explained that she would use the particle *to* which would also be unacceptable in the given context. Other learners also successfully rejected sentences in which superfluous particles were added, e.g., **enter to*, **leave from* and**attend to*. However, when justifying their rejections they chose other particles. These included *in* or even *into*, an L2-specific particle with the verb *enter,* the particle *of* with the verb *leave* and the particles *in* and *at* with the verb *attend* to form the following non-target like constructions such as **enter in, *enter into, *leave of, *attend in,* or **attend at.* All of these would have been unacceptable in the target context. The L2 speakers appear to have substituted the L1 particles with other L1 particles, without realizing that they did not need to substitute particles with others in order to accommodate the target structure but to simply delete them as they would be superfluous in the given context.

Further evidence of these addition patterns came from the PDT. The motion verb *enter,* for instance, does not select a particle to host [path] of motion in English as seen in example (109a). In contrast, the Arabic verb *y'adkhul* 'enter' can occur with particles such as *ila* 'to', *fii* 'in', or *9nda* 'at'. When the L2 group were asked to describe a picture of students entering a school, they produced sentences in which the motion verb *enter* occurs with superfluous particles matching a specific feature representation of their L1 that did not appear in the examples produced by the control group. Sentences (109b-e) are examples of responses produced by the L2 group for the motion verb *enter*:

(109) a. The students are entering a school. *(yadkhul*) PDT: Type 2c, 1
b.*The students are entering *to* a school. (*ila)*
c.*The students are entering *into* a school. (*fii)*
d.*The students are entering *in* a school. (*fii)*
e. *The students are entering *at* a school. (*'anda)*

The accuracy average for Type 2c-Addition seems to increase consistently, particularly from elementary to advanced level. The former group recorded the lowest average percentage of accuracy (56.25%, 19.89 SD), followed by the intermediate (65.91%, 14.75 SD) and advanced levels (76.14%, 21.98 SD). The native speakers produced a very high average (95.63%, 6.12 SD). As previously mentioned, very highly significant differences were found ($F_{3,76}$=22.66, *p*<0.001) for Type 2c averages across the four groups based on the result of one way ANOVA. This is in line with our hypothesis that the less advanced level would perform less well when rejecting sentences to which particles have been added. Applying Tukey HSD for a pair-wise comparison test produces a highly significantly difference (*p*=0.009) between the elementary and the advanced levels of about 19.89%. The comparison with the native speakers also produced a highly significantly difference (*p*<0.001) of 39.38%. No significant differences were observed for the intermediate level which was statistically similar to the advanced level, but showed a very highly significant difference in comparison with the native speaker level (*p*<0.001). With regards to advanced and native speaker levels, again a highly significant difference (*p*= 0.007) was noted with the advanced level being 19.49% lower than the native speakers. In terms of Type 2c, despite these significant differences between native speakers and advanced and intermediate levels, within this type of +FR no significant difference was observed between advanced and intermediate, a similar outcome to the performance of the levels for Type 2a.[129]

As far as the PDT is concerned, the average percentages were generally very good (over 75%); however, there were differences in the averages achieved. Intermediate level scored the lowest average (78.03%, 28.48 SD) with some participants obtaining less than 30% or even 0%. The native speaker average was very high and consistent (98.75%, 5.59 SD). The correlation between averages and levels is not the same as for previous types of mismatching. The one way ANOVA result confirmed a highly significant difference in the average percentages across the four groups ($F_{3,76}$=3.31, p<0.001). As a result, a post-hoc test is used to examine pair-wise differences for all groups. The Tukey HSD test revealed that the only significant difference was between the intermediate level and native speakers (p=.015), and was some 20.72% in favour of native speakers. The high mean results for all levels suggests that Arabic learners of English find adding particles to their L1 feature set easier than substituting or deleting directional particles. However, surprisingly, the intermediate group recorded a lower mean mark than the elementary one but this may be due to the larger number of participants classified at an intermediate level.

7.2.3 Study One conclusions

In terms of learnability tasks and predictions of attainments compared to previous studies on L2 acquisition of spatial morphology (Pavesi, 1987; Inagaki, 2001, 2002; Stringer, 2005, 2007), the L2 learners in this study have similar acquisition tasks. The Arabic L1 learners of English are similar to Pavesi's (1987) Italian learners. Owing to the variety of use of some particles in their L1 (such as *in*) and since they have probably encountered a great deal of informal English input involving *in* in both a locational and directional context, they are unable to recognize that the English *in* allows only a locational reading unlike its Arabic equivalent. English seems to be more constrained than Arabic in that it only allows directed motion verbs (e.g., *go*) to occur with a phrase encoding a goal. Arabic, on the other hand, allows a more

[129] Again, the interlanguage grammar of intermediate learners does not represent the initial state of L2 acquisition. However, the assumption behind the predictions is that the intermediate interlanguage grammars will still mirror L1 grammars.

comprehensive range of motion verbs to occur with different set of particles than English does.

Furthermore, there was evidence in the follow-up questionnaire supporting a preference for V morphology over the VPCs morphology shown by the Arabic learners of English, a finding which supports Talmy's (1985, 2000) typology of lexicalization patterns, as example (110b) illustrates. Instead of adding the particle *around* to the verb *walk* as in example (110a), one learner exchanged the verb *walk* with *cross* which is grammatically acceptable in the given context although this was not the intended meaning.

(110) a. *A group of hikers <u>walked</u> the lake. AJT: Type 1, 4
b. A group of hikers <u>crossed</u> the lake.

Another instance of an unexpected correction can be seen in (111). Rather than substituting the particle *across* with *through* in (111a), some Arabic learners of English swapped the VPC morphology *went across* with V morphology such as *crossed, passed* and *hit* as examples (111b-d) demonstrate.

(111) a.*The ball <u>went across</u> the open window and broke the vase. (through)
b.*The ball <u>crossed</u> the open window and broke the vase.
c.*The ball <u>passed</u> the open window and broke the vase.
d. #The ball <u>hit</u> the open window and broke the vase. AJT:Type 2a, 1

However, this strategy was not always successful. Sometimes, the correction that the learners provided included unacceptable bare verbs of motion that required particles in the target language. For instance, instead of adding the particle *to* to the verb *get* (112a), one of the learners exchanged this verb for *arrive,* apparently unaware that it does need a particle in English, thus producing a non-target like construction as example (112b) shows. In English both *arrive* and *get* require the addition of the particles *in/at* and *to.*

(112) a.*When they <u>got</u> ^ Tokyo, they felt very tired. AJT: Type 2b, 1
b.*When they <u>arrived</u> ^ Tokyo, they felt very tired.

One final point needs to be made that is of relevance to the study as a whole. There were other cases in which the L2 groups seem to acquire the target motion constructions incompletely but this was not due to their failure to accommodate the relevant feature clusters of L2. The data contains evidence of L2 developmental non-target like usage of motion constructions, e.g. simplification or generalization. For instance, in some cases the Arabic L1 learners of English replaced some particles (e.g. *out of*) with others (e.g. *off*), as illustrated by (113), or they overgeneralised the use of some particles (e.g., *into*) as shown in (114).

(113) *Many clowns are getting off a yellow car. (out of) PDT: Type 2c, 3

(114) *Sara got up and moved into the window to open the curtains. (to) AJT: Type 1, 3

To sum up, acquisition of motion constructions of Type 2 seems to be demanding, as these were not easily mastered by the L2 speakers and it appears a longer time is required if the relevant evidence is not accessible in the input to trigger the required adjustment to the target set of features. The L2 learners need to reassemble their L1 feature set by substituting, deleting or adding the particles that are usually attached to these motion verbs in their L1 to better match the target structure. In order to trigger such behaviour, positive and/or negative evidence is required by means of explicit classroom instruction or implicitly by exposure to native speakers.[130] Negative evidence, for instance, showing that the L1 particles are not equivalent to others in the target language and that they are no longer acceptable and have to be substituted with others in certain directional contexts, might trigger the use of target like motion constructions. Furthermore, positive evidence of examples in the input of use of target like constructions such as *go through* or *walk across* in a context would cause learners to structure their grammar appropriately. However, as inappropriate use of particles rarely impedes comprehension, correction by native speakers of English does not often occur. Hence, L1-feature based traces might remain unchanged in the learners' interlanguage grammar. The next section considers the Arabic version of

[130] See section 7.4.3 for more details.

the same tasks, focusing on the results of the English learners of Arabic and the control group of native speakers of Arabic.

7.3 Study Two: English learners of Arabic

This section discusses the results of the Arabic version of the experimental study for the English learners of Arabic (L2 group) and the native speakers of Arabic (control group). The Arabic version of the tests was intended to address the same research questions as Study One and this discussion follows a similar structure.

7.3.1 Evidence for effect of non-specific feature configurations: L1-L2 matching feature configurations: Type 1: [path, Px] → [path, Px]

As with the English version, Type 1 motion constructions include motion verbs that behave similarly in Arabic and English selecting corresponding particles.[131] It is assumed that the Type 1 motion constructions share the same feature configurations in both L1 and L2, mapping [path] of motion onto equivalent particles, and consequently this does not require FR. This discussion will consider whether Type 1 motion constructions (−FR: Matching) proved much easier than those of Type 2 (+FR: Mismatching) as was the case in Study One.

Beginning with the AJT, it is clear that Type 1 mean scores showed a greater degree of accuracy when compared with Type 2s. The scores for Type 2a-Substitution and Type 2c-Addition are very similar and higher than those for Type 2b-Deletion. For English speakers of Arabic, the ranking of accuracy scores by means across Types were Type 1, Type 2a-Substitution, Type 2c-Addition and Type 2b-Deletion (for the AJT), and Type 1, Type 2a-Substitution, Type 2b-Deletion and Type 2c-Addition (for the PDT). The Friedman test revealed a highly significant difference in the resulting scores across the four categories of Types (X^2 = 41.48, p<0.001) and (X^2 = 60.26, p<0.001) for the AJT and the PDT, respectively. The control group, however, did not show any significant difference in their performance.

[131] Throughout the remainder of this section, unless otherwise indicated, the Arabic test sentences can be assumed to be the same as the translations given for the English test sentences.

These results can be interpreted as demonstrating that the feature configuration type also has an effect in L1 Arabic L2 English as was the case for L1 English L2 Arabic. This suggests that when the same features are bundled up together onto corresponding lexical items in the L1 and L2, English speakers of Arabic performed better on Type 1 motion constructions with feature configurations matching their L1 that do not require FR. They appeared to find these much easier to master than those with feature configurations which did not match their L1, a finding which is compatible with the hypotheses proposed in Chapter 4.

In the case of the AJT, this leads us to assume that the English speakers of Arabic treated some motion verbs as if they required particles corresponding to those in their L1 (e.g., *ḥawla* for ‘around’, *ila* for ‘to’, *min* for ‘from’, etc.). The Arabic verb *y’antaqil* ‘move’, for instance, selects the particle *to* to host [path] of motion as shown in test item (115). Similarly, the English equivalent verb selects a corresponding particle *to* ‘ila’ to host the same feature. The L2 group unanimously rejected the sentence in which the particle *to* was omitted since this neither matches their L1 nor the target feature set.

(115)	*nahḍat*	*sara*	*wa*	*antaqlat*	*ila*	*alnafitha*	*letaftḥ*	*alsetarh*.
	stood	Sara	and	moved	to	the-window	to-open	the-curtains.

‘Sara got up and moved to the window to open the curtains’. AJT: Type 1, 3

In the PDT, it was evident that Type 1 recorded higher mean scores for accuracy than Type 2s, and the L2 group performed significantly better on Type 1 items. They produced sentences in which [path] of motion is mapped onto corresponding particles in both L1 and L2 as they share matching feature bundles. The motion verb *y’aṭir* ‘fly’, for instance, selects the particle *ila* ‘to’ to host [path] of motion (example 116) in an analogous way to its English equivalent. When the L2 group was asked to use the verb *y’aṭir* ‘fly’ and describe a picture of a plane flying to India, most learners frequently produced sentences in which the verb *y’aṭir* ‘fly’ occurs with *ila* ‘to’ reflecting a feature distribution shared by both their L1 and the target language (for the full set of responses for the PDT see Appendix 6D).

(116)	*taṭir*	*alṭa'yrah*	*ila*	*alhind.*	
	fly	the-plane	to	India.	
	'A plane is flying to India.'				PDT: Type 1, 1

7.3.2 Evidence for the effect of English-specific feature configurations: L1-L2 mismatching feature configurations (+FR)

As previously mentioned, Arabic motion constructions sometimes seem to be related to their English equivalents in terms of the particles they occur with. Nonetheless, as far as the relevant acquisition issues are concerned, as detailed in Chapter 2, this similarity can prove misleading in many cases. The fact that significant differences were found among the groups is consistent with the statement that the L1 (i.e. English) and L2 (i.e. Arabic) sometimes have different underlying representations of motion events and these differences cause the observed variability. The high rates of acceptance and production of non-target like constructions suggest that the L1-type set of feature distribution remains unmodified in the L2 learners' interlanguage grammar.

7.3.2.1 Evidence for failure to substitute the L1 feature set with that of the L2: Type 2a; [path, Px] → [path, Py]

The L1 English-L2 Arabic data provided further evidence of acceptance and production of non-target like patterns. The L2 speakers frequently mapped [path] of motion onto their L1 particles using a one-to-one literal translation method as alternatives for the target particles. For instance, the data shows cases in which English speakers of Arabic made a distinction between certain particles, sometimes substituting the particle *khilal* 'through' with *9bra* 'across', *9la* 'on' with *fawqa* 'above, over', etc. The control group, on the other hand, did not show these patterns of substitution in their performance.

With respect to the AJT, the manner of motion verb *y'aqfiz* (jump), for instance, can occur with the particles *9la* 'on' or *fawqa* 'above/over' to host [path] of motion in Arabic (test item 116) and these would have the same meaning in Arabic. The Arabic particle *9la* has a less restricted meaning than the English *on.* In contrast, the English equivalent of the same verb *jump* makes a distinction between these particles. The L2 group, therefore, rejected the sentence in which the motion verb *y'aqfiz* 'jump' occurred with the particle 'on' since these mirror a specific feature bundle which exists only in their L1. When asked to justify this choice on the follow-up questionnaire, L2 speakers stated that the construction was unacceptable due to the misuse of the particle *9la* 'on' and they would use *fawqa* 'above/over'; in fact, both particles would be equally acceptable in Arabic. The control group, in contrast, overwhelmingly accepted this kind of motion construction.

(116)	*qafaza*	*alḥesan*	*alswad*	*9la*	*thamaneh*	*ḥawajiz.*
	jumped	the-horse	black	on	eight	hurdles.
	'The black horse jumped over eight hurdles.'					AJT: Type 2a, 4

Further evidence of these substitution patterns came from the PDT data, in which preferred constructions were observed. The L2 group appeared to favour the L1-based feature bundles in their production. In the case of Type 2a test items, it is possible that they assumed that some particles carrying [path] of motion in the L2 correspond exactly to those in their L1. In reality, however, they do not. For instance, the Arabic particle *fawqa* 'above/over' is not equivalent to the particle *9la* 'on', nor *9bra* 'across' to *khilal* 'through', etc. as example (117) illustrates.

(117)	*taqfiz*	*alaġnam*	*9la*	*asiaj.*	
	jump	the-sheep	on	the-fence	
	'The sheep are jumping over the fence.'				PDT: Type 2a, 2

Thus, the L2 group produced sentences in which motion verbs select particles which reflect a specific representation found in their L1 not the target language. The control group, on the other hand, did not display this tendency in their production.

7.3.2.2 Evidence for failure to delete from the L1 feature set: Type 2b; [path, P] → [path, V]

On the other hand, when [path] of motion is mapped onto a particle in the learners' L1 and onto a zero particle in the target language, the L2 group tends to configure [path] onto non-compulsory particles in the L2. This performance can be explained in terms of them having added particles from the L1-based feature set in which some verbs occur with compulsory particles to host [path] of motion. Hence, the L2 speakers frequently mapped this feature onto their L1 set that allows non-compulsory particles to take place with motion verbs using a one-to-one direct mapping method. English speakers of Arabic sometimes added unnecessary particles such as *down*, *up*, etc., forming VPCs rather than the target bare verb morphology of spatiality. As previously, the control group did not produce these patterns of superfluous addition in their performance.

With respect to the AJT, the L2 group failed to accept sentences in which [path] was mapped onto zero particles in Type 2c test items. The motion verb *arrive*, for instance, typically selects the particle *in* to express [path] of motion in English. In contrast, the Arabic equivalent *y'aṣil* 'arrive' has the option of selecting a particle or not. As a result, the L2 group rejected the sentence in which *y'aṣil* 'arrive' does not occur with *fii* 'in', revealing that the morpholexical representation belongs to their L1 not the L2 as test item (118) demonstrates. This suggests that they did not realize that *y'aṣil* 'arrive' can take place in Arabic without a particle.

(118)	*waṣla*	*al9rasn*	*aljudad*	*Venice.*	
	arrived	married-couple	the-new	Venice	
	'The newly married couple arrived in Venice.'				AJT: Type 2b, 2

The results of the PDT provide further evidence of these addition patterns. For instance, as seen in example (119), the verb *y'ansaliq* 'slide' does not typically occur with particles expressing directionality in Arabic whilst the English counterpart verb *slide* can occur with particles such as *up* or *down,* as noted in Chapter 2. When the L2 group were asked to describe a picture of a fireman sliding down a pole, they frequently produced sentences in which the motion verb *y'ansaliq* 'slide' occurred with a superfluous particle to indicate [path] of motion, indicating a specific representation of their L1 that was not present in the control group production.

(119)	*a.* yansaliq*	*rajul*	*al'itfa*	*asfal*	*al9mud.*	
	sliding	man	the-fire	down	the-pole	
	'a fireman is sliding down a pole.'					PDT: Type 2b, 4

Interestingly, whilst describing the picture of the Titanic crashing into an iceberg, one learner created the particle *fii ila* 'into', which does not exist in Arabic, mixing two distinct Arabic particles together as the literal translation of the English particle *into*, as example (120) illustrates.

(120)	**taṣṭem*	*titanic*	*fi ila*	*aljalid.*	
	crash	Titanic	in to	the-iceberg	
	'The Titanic is crashing into an iceberg.'				PDT: Type 2b, 3

As far as the follow-up questionnaire comments are concerned, when the L2 speakers were asked to give reasons judging Type 2b test items incorrect and for rejecting non-target like sentences, the overwhelming response was that for the sentence to be an accurate description of the event, the English verb has to occur with a particle in order to indicate the [path] of motion, thus forming a VPC not only verb. In most cases, they successfully acknowledged that essential directional particles were omitted in compulsory contexts. Their correct responses suggest that their perception of what is unacceptable with the test sentences was the same as that provided by the control group for Type 1. On the other hand, L2 speaker responses diverged from the control group on Type 2s, providing further support for the proposed hypothesis.

7.3.2.3 Evidence for failure to add to the L1 feature set: Type 2c; [path, V] → [path, P][132]

The data for both tasks also suggest that the L2 speakers were less accurate in dealing with Type 2c-Deletion items than the control group. Unsurprisingly the control group recorded a higher percentage of accuracy than the L2 group when answering Type 2c. The L2 group tended to map [path] of motion onto the zero particle (Ø) patterning their L1 feature clusters with the use of some motion constructions. That is to say, the L2 speakers recurrently mapped [path] onto their L1 feature set that lacks these particles using a one-to-one direct mapping procedure. This resulted in the omission of obligatory particles needed to carry [path] of motion such as *min* 'from', *ila* 'to', etc., thus forming only bare verbs morphology of

[132] Types 2b and 2c of the Arabic version are the reverse of those for the English version. For instance, the particles that the English learners of Arabic had to delete in Type 2b were the same as those which the Arabic learners of English had to add to their L1 feature set.

spatiality rather than the target morphology, VPCs. The control group, on the other hand, did not display these patterns of deletion in their performance.

The verb *approach*, for instance, does not typically occur with a particle to bear [path] of motion in English. By contrast, the Arabic verb *y'aqtarib* 'approach' occurs with the particle *min* 'from', as the test item (121) shows. The L2 group, therefore, failed to reject the sentence in which the motion verb *y'aqtarib* does not occur with the particle *min*, reflecting a language specific representation belonging to their L1. In this case, the L2 group has failed to add the required particles that are supposed to host [path] of motion in their L1-based feature set.

(121)	a. **aqtarib*	*al9da'in*	*akheran*	*khat*	*alnihayah*	
	approached	the-runners	finally	line	the-finish.	
	'The runners finally approached the finish line.'					
	b. *aqtarib*	*ḥares*	*alḥadeqah*	*min*	*alasad*	*biḥathar.*
	approached	keeper	the-zoo	from	the-lion	cautiously.
	'The zookeeper approached the lion cautiously.'				AJT: Type 2c, 4	

By way of further illustration, the verb *attend* does not typically occur with any particle to hold [path] in English. Its Arabic equivalent verb *y'aḥaḍur* 'attend', however, typically occurs with the particle *ila* 'to'. The L2 group, therefore, failed to accept the sentence in which the motion verb *y'aḥaḍur* 'attend' occurs with the particle *ila* 'to' matching a feature distribution found in their L1 rather than the L2 as seen in test item (122).

(122)

**kul*	*9du*	*min*	*fareq*	*almab9at*	*ḥaḍer*	*ila*
Every	member	of	team	the-sales	attended	to $_{[pa,\ path]}$
mo'tamr	*almabi9at.*					
conferen ce	the-sales.					
'Every member of the sales team attended to the sales conference.'						AJT: Type 2c, 2

Analysis of the follow-up questionnaire comments for the AJT reveal that even when the L2 speakers successfully rejected a sentence and appeared to have reassembled their L1 future set, they were unable to provide the correct justification for their behaviour. Some learners realized that they were required to add particles to the verb in order to accommodate the L2 grammar, but still chose the incorrect particle, ultimately producing a non-target like construction. The feature reassembly process appeared to be half-finished, with L2 learners successfully teasing apart the relevant feature but when restructuring the target feature set they sometimes added a non-target like particle deemed to be acceptable in the L2 context.

The result of the PDT presents a strikingly similar picture, since the L2 group also failed to add these essential particles in the L2 construction. In the case of Type 2c test items, it is possible that the L2 speakers were treating some motion verbs as if they did not require particles in the L2 as in their L1. Similarly, even when L2 speakers seemed to know that certain motion verbs behave differently than they do in their L1, needing to occur with particles to express directionality, they still sometimes added non-target like particles which resulted in non-target like constructions such as the use of the particle *9la* 'on' instead of *min* 'from' or *ila* 'to' with the motion verb *y'aqtraib* 'approach' as exemplified by (123).

(123)	**aqtarabt*	*alsulḥfah*	*9la*	*khat*	*alnihayah*
	approached	the-turtle	on	line	the-finish
	'The turtle approached the finish line.'			PDT: Type 2c, 4	

7.3.3 Outstanding issues in the Arabic version

AJT data showed that the % accuracy of the native English speaker control group was high, indicating that sentences had been excluded where particles were optional, thus avoiding ambiguity in the English version. However, this was not possible in the Arabic version. As previously mentioned in Chapter 5, although every effort was made to exclude motion verbs allowing the optional use of directional particles in the main version of the experiment (i.e. the English version), the Arabic version did include a number of these problematic items. This means that whereas the English version only includes matching or mismatching motion constructions, the Arabic version included some motion constructions that would allow both matching and mismatching motion constructions. As a result, it was harder to categorize these as either Type 1 or Type 2.

Despite the fact that MSA allows VPCs with some motion events such as *y'adkhul ila* 'enter to', other varieties of Arabic optionally allow particle-deletion in a similar way to English verb morphology (example 124). To illustrate this point further, both *y'aṭir 9la* 'fly on' and *y'aṭir fawqa* 'fly above' are acceptable in the Arabic version of the AJT as examples (125) and (126) illustrate. This results in unexpected outcomes in the data. Both groups were not expected to reject either (125) or (126). For each motion construction, the design was intended to include one grammatical structure which would be accepted and one ungrammatical structure which would be rejected.

(124**)** *dakhala* *altulab* *(ila)* *almadrasah*
entered the-students (to) the-school.
'The students entered (to) the school'. AJT: Type 2c, 3

(125**)** *tarat* *tuyour* *sawda* *9la* *rasi*.
flew birds black on head-my
'The black birds flew above my head.' AJT: Type 2a, 3

(126**)** *tarat* *mkhtalfah* *alwan* *fwqa* *alshjrah* *alkaberah*
flew kites different coloured above the-tree the-big
'Different coloured kites flew above the big tree.' AJT: Type 2a, 3

However, due to the optionality of some particles with [path] in the Arabic context and the flexibility of many of these in Types 2b and 2c, the native speakers of Saudi Arabic did not perform as expected according to the norms of the MSA system. A large number of the native speakers of Arabic accepted both items (125) and (126) on the grounds that *y'aṭir* 'fly' can occur with a different particle such as *9la* 'on', *fawqa* 'above', etc. Similarly, the motion verbs *y'aqadir* 'leave', *y'adkhul* 'enter' and *y'aḥḍue*r 'attend' can occur with or without particles as is the case in English and both are acceptable in the Arabic context. So, the participants were not expected to reject some of the sentences in which optional particles were deleted. However, they were expected to definitely accept contexts in which these particles are optionally added. This explains why the native speakers of Arabic produced low accuracy rates for some Type 2b and 2c test items, in which particles were deleted or added due to the optionality of these particles, creating unexpected results.

Another problematic point relating to optionality, previously highlighted in Chapter 2, is that some motion verbs in Arabic can occur with different directional particles but express the same meaning, for instance, the Arabic motion verb *y'agfiz* 'jump' can occur with *fawqa* 'over/above' or *9la* 'on'. Similarly, the verb *y'aṭir* 'fly' can occur with *fawqa* 'above' or *9la* 'on' to express [path] of motion. For this reason, participants were not expected to definitely accept either *9la* 'on' or *fawqa* 'over/above' as the participants in the English version did for this type. A further example can be seen in the use of particles such as *9bra* 'across' and *khlala* 'through' with motion verbs such as *y'asir* 'go' since both are acceptable with some verbs of motion in Arabic. The fact that participants were not expected to accept one particle and reject the other made the analysis task much harder.

In spite of these limitations of the Arabic version design which meant that it did not work as consistently as its English counterpart, overall findings still seem to support the hypothesis that the English speakers of Arabic performed significantly better on Type 1 test items than those of Type 2. Most interestingly, the results of the Arabic version have made a valuable contribution to the field of L2 acquisition since, to date, no studies have been carried out on L2 acquisition of Arabic motion constructions by English speakers. The data on L2 Arabic discussed here represents the first quantitative data set focusing on production of motion events and judgments about the acceptability of these.

7.3.4 Study Two conclusions

The results of the Arabic version of the experimental study suggest that the Arabic L1 speakers of English performed significantly better on Type 1 motion constructions with feature configurations matching those of their L1 than they did with those of Type 2 which did not match their L1. On the other hand, the control group did not show any significant differences in their performance. Type 2 motion constructions do not appear to be easily acquired by L2 speakers, unless learners successfully reconstruct their L1 feature set by substituting the non-target like particles with target like particles. This involves adding any necessary particles usually omitted with some motion verbs or omitting the non-compulsory particles that are usually attached to certain motion verbs in their L1.

7.4 Concluding Remarks

7.4.1 Major findings

This chapter has discussed the results from the AJT and PDT for L2 and native speakers in relation to the hypothesis proposed in Chapter 4. This experimental study was carried out to examine the acquisition of functional morphemes (i.e. directional particles) which commonly occur with motion verbs. The aim was to provide an explanation which would account for variability in L2 acquisition patterns in the realm of spatial morphology in Arabic and English contexts from a feature-based perspective.

In the analytical technique adopted here, semantic notions concerning motion events are presumed to be the same across languages whilst their morpholexical representations are language-specific. That is to say, the relevant features linked with the spatial representations are similar in both Arabic and English whereas the dissimilarities between these two languages are established by the specific morpholexical configuration which is designated for each directional meaning as previously shown in Chapter 2. It is assumed that the learners start the L2 acquisition task with initial configured clusters of L1 morphological knowledge. The feature reassembly account argues that L2 learners primarily observe the lexical items in the target language in terms of the configuration of features of their "morpholexical equivalents of assembled lexical items (= vocabulary items) in the L1" (Lardiere, 2009: 211). Nevertheless, the target input, for instance, shows Arabic speakers that some English constructions do not need to have a particle bound to the motion verb. The process of restructuring of the relevant construction seems to begin by identifying the [path] feature from the individual lexical parts (either verbs or particles) that comprise the target motion constructions. After having effectively teased apart [path] from the individual lexical items, L2 learners have to figure out how [path] in the L2 structure is explicitly encoded, e.g., whether by means of a verb only or by requiring a satellite to the verb.

Drawing on Lardiere's (2008, 2009) feature reassembly account, it was hypothesized that both L2 groups and control groups would perform similarly for Type 1 which do not require feature reassembly, only simple mapping. However, they would differ on

Type 2s which require feature reassembly. Furthermore, it was hypothesised that the L2 groups in both studies would perform similarly on Type 2 representations since they face similar learning tasks in mastering the target constructions, i.e. re-clustering the relevant feature bundles of their L1 to better match those of the target language. Therefore, when acquiring spatial morphology, L2 learners have to figure out the links between meanings (i.e. features) and forms (i.e. lexicons) and how they would vary in these two languages. Specifically, for this study, learners needed to be aware that the same particle of their L1 cannot always be used to convey the same meaning in the L2. It was also argued that the differences in how [path] of motion is morpholexically encoded in these two languages needed to be taken into consideration by learners, i.e. how the directional meanings are configured onto morpholexical representations in both L1 and L2. This specific description of the learning tasks is relevant since an account based on re-clustering of features would predict variability in the acquisition of the directional meanings associated with motion constructions in these two languages.

The study aimed to find out whether the learnability tasks would be simpler if the L2 lexical items mapped directly onto the L1 lexical items, meaning they would be mastered earlier and with higher rates of accuracy. Since some English motion constructions fully correspond to those in Arabic in their meaning and grammatical function, L2 learners simply have to map their L1 morphemes of these constructions onto those of the L2 without having to make substitutions, additions to or deletions from their L1 feature set. On the other hand, it was anticipated that the more complex learning tasks including feature reassembly would create greater difficulties. It was noted that mapping the L2 lexical items for Type 2s directly onto L1 lexical items would not always help the L2 learners, as sometimes the same feature-form distributions for those of the learners' L1 were not possible. It was anticipated that L2 learners would initially map their L1 morphemes onto the target morphemes on the basis of the similarities in meanings and grammatical functions. L2 learners may have been assisted to perform this mapping by explicit classroom instruction. Ultimately, evidence in the input should either prompt information about lexical slots licensing the exact features of the L2 morphemes (or about adjustment of the L1-based lexical slots so as to match the features of the L2 lexical items). Once the initial mapping has been completed, learners have to re-cluster the L1 features producing the correct L2 feature set which involves the learners having to substitute, add to, or delete from their L1 feature set to better match the target representations.

Overall, the results support affirmative responses to both RQ1 and RQ2. They confirm the prediction that L2 speakers can exhibit non-target like performance on mismatching feature bundles, due to the fact that L2 speakers have not completely reassembled the relevant features to meet the target specific arrangements. In the AJT and the PDT of both studies, the L2 speaker results provided robust evidence of misuse of the target motion constructions of Type 2s due to overlapping in the way the relevant semantic features are mapped onto the lexical items. Variability in judgments about and productions of motion constructions in this study could be attributed to variability in how the semantic features of motion events are clustered on lexical heads. On these grounds, it was predicted that for the interlanguage grammar to eventually become native-like with regard to the target motion constructions, direct meanings of L2 constructions with lexical slots holding the specific properties of their L1 must ultimately be abandoned, as discussed in Chapter 2, implying that not all Arabic particles have direct English counterparts and vice versa.

This also meant that the L2 speakers' level of judgments and productions of motion constructions of Type 2s would be different to that of the control group. If this analysis is incorrect, a divergence would be seen in the performances of L2 speakers and the control group according to the motion construction type. Thus, the L2 speakers would have a similar configuration of [path] to that of the control group for Type 1. On the other hand, the L2 speakers' performance would significantly differ from that of the control group for Type 2s.

With respect to the research questions, the most obvious finding to emerge from the aforementioned analysis of group data obtained from both tasks, is that the L2 learners in both studies performed significantly better on Type 1 (e.g. *drive to* in English and *y'aqud ila* 'drive to' in Arabic) since feature bundles similar to the speaker's L1 were easier to master. On the other hand, L2 learners displayed significantly low accuracy rates for Type 2s where the same features are mapped onto L1-L2 feature configurations which do not match those in their L1 (e.g. *approach* in English and *ya'qtarib ila/min* 'approach to/from' in Arabic). Thus, the L2 groups performed better on motion constructions with matching F and matching LEX rather than motion constructions with matching F and mismatching LEX. The L2 group was able to demonstrate what seemed to be target-like performance on motion constructions of Type 1 by transferring this knowledge from their L1. However, when they transferred the whole feature-based set from their L1, they still showed evidence of the role of the L1-specific representations on motion constructions of Type 2s.

If the L2 learners had mastered the target like lexical entry, there would not be symmetry in their performance between Type 1 contexts (which had target like performance) and Type 2s (which had non-target like performance). Explicitly, if L2 learners were not held back by the L1 feature-based clusters for the lexical items, then their judgments and productions would not vary depending on the type of motion constructions; their performance on L2 motion constructions with corresponding lexical items would not differ from that with non-corresponding lexical items. This suggests that the L2 group encountered challenges in teasing apart the L1 feature sets in directional contexts rather than restructuring them to accommodate the L2-specific morpholexical representations. The control groups, on the other hand, did not show a significant difference in their performance between types.

This assertion is strongly supported by the fact that the advanced learners of English were moderately successful on both tasks for Type 1 but Type 2s. This suggests that learners appear to experience greater difficulties in accommodating the L2 specific morphological representation in directional contexts. In the AJT, the majority of L2 learners in both studies showed they discriminated between acceptable and unacceptable sentences for Type 1 but not Type 2s. Similarly, they frequently produced target like sentences for Type 1 but not Type 2s in the PDT.

Furthermore, the qualitative data gathered using the follow-up questionnaires for the AJT is also consistent with the hypothesis that Type 1 is easier to master. When participants were asked to read a couple of sentences given to them in the AJT and to decide which word they thought was incorrect and why, not all the participants were able to identify the reason. Even when they knew that the incorrect or the missing word was the verb or the particle, some of them were still unable to produce the target like form.

It can be inferred from the follow-up questionnaire comments on the AJT that the L2 speakers were:

(i) able to reject the non-target like motion constructions and offer the target like constructions; or
(ii) only able to reject the non-target like constructions; or
(iii) unable to reject the non-target like constructions or realize what the target like constructions would look like in the target context.

These findings are interpreted as being consistent with the fact that once the L2 speakers effectively delink the semantic features from lexical items, they still have to work out how the relevant features work in the target language as they might bundle these up together with other features in a language specific way. L2 learners might successfully complete the first part but this does not ultimately guarantee a target like construction unless the second part is successfully accomplished as well. This was reflected in most of the follow-up questionnaire comments on the AJT items. However, there were a few comments on the follow-up questionnaire in which the L2 learners made no reference to the target structure but suggested that they thought it was incorrect for other reasons.

The results for the performance of the L2 speakers on Type 2s were less clear-cut and somewhat puzzling with respect to which feature reassembly among the three forms of +FR of Type 2s (i.e. substitution, addition to or deletion from the L1-based feature set) they appeared to find the hardest. Type 2 motion constructions with mismatching feature sets did not appear to necessitate the same amount of feature reassembly and the difficulty ranking for feature reassembly class was not the same across the two studies, as previously noted. The results for both AJT and PDT are reproduced in Table 43.

Table 43 Overview of the major findings

Study	*L2 Group*	*Order of Types*	*Experimental Tasks*					
			AJT	*Mean Rank*	*X2 p*	*PDT*	*Mean Rank*	*X2 p*
1	AE *n=60*	1	1-Matching	1.17	27.35 **<0.001**	1-Matching	3.13	79.75 **<0.001**
		2	2c-Addition	2.51		2c- Addition	2.93	
		3	2a-Substitution	2.17		2a-Substitution	2.50	
		4	2b-Deletion	2.16		2b-Deletion	1.43	
2	EA *n=20*	1	1-Matching	3.08	41.48 **<0.001**	1-Matching	3.40	60.26 **<0.001**
		2	2a-Substitution	2.73		2a-Substitution	2.85	
		3	2c-Addition	2.55		2b-Deletion	2.15	
		4	2b-Deletion	1.65		2c-Addition	1.60	

Note: The order of the four types is from the highest to the lowest rates of accuracy.

Based on these results, 2b-Deletion seems to be the hardest across the two studies. For the Arabic learners of English, Type 2c-Addition seemed to be the easiest whilst for the English learners of Arabic; Type 2a-Substitution occupied the same position. On the other hand, the control groups did not show any significant difference in their performance on these sub-types. Furthermore, it was noted that more feature reassembly was necessary in the English version of the study than for the Arabic version as English typically makes a distinction among a large number of particles whereas Arabic, on the other hand, allows more optionality (i.e. the use of a zero particle or a free-choice particle among many in a number of contexts). The Arabic learners of English performed better than the English learners of Arabic, possibly because the former were living in the L2 speaking country at the time of the experiment whereas the latter were not. Moreover, the number of participants could have played a role as this was smaller in the latter case. Finally, since there were some problematic items in the Arabic version, a direct comparison was not feasible.

7.4.2 L2 Learner proficiency levels and performance

The most obvious finding to emerge from the analysis is that the results showed a correlation between L2 learner proficiency levels and performance on the target motion constructions. A strong relationship between L2 performance and proficiency levels has been reported in the literature (e.g., Tahaineh, 2010). Certainly, these studies have discovered that the more the L2 speakers advance in their L2 proficiency, the better they perform on the target forms, leading towards successful acquisition of the target constructions. This means that when L2 speakers are at a lower level of proficiency, they rely more frequently on their L1 knowledge when producing target forms. Hence, L2 proficiency seems to be a significant predictor of L2 judgments and production in this study.

It was anticipated that in this study the least proficient interlanguage grammars would still mirror the speaker's L1 grammar. However, as proficiency level increased, the L2 speakers' ability to accommodate the target motion constructions would be enhanced. Thus, as learners become more proficient in the L2, the L1-based feature clusters are more accurately re-constructed to better match the L2. The overall means of accurate responses (both correct acceptance of L2 morphology and correct rejection of L1 morphology) and target like production increased in tandem with proficiency levels across all contexts. Put differently, speakers seemed to be in the process of re-clustering relevant features into language-specific clusters.

Findings from the advanced speakers, however, provided evidence that the de-linking of L1 set of features and the re-clustering of those features is possible. In the PDT, advanced learners of English demonstrated successful production of L2 constructions onto target like particles. For example, they successfully distinguished between *to* and *into* and *through* and *across*, suggesting that the advanced speakers become more proficient at re-clustering the relevant form-meanings. Mastering the surface forms associated with formal features appeared most challenging for all L2 learners, even those in their final stages of L2 acquisition; i.e. despite improvement and the fact that advanced speakers of L2 had become more proficient at distinguishing the different morphological manifestations of the target features, they still remained different from native speakers (and they were not near-native either).

7.4.3 The role of negative and/or positive evidence in the input

Shimanskaya (2015) raised an important question regarding reassembly triggers, namely, "what leads L2 learners to realize that the feature bundles mapped from the L1 do not correspond to target-like representations of L2 lexical items?" (p. 179). The FRH (Lardiere, 2008, 2009) holds that L2 speakers are induced to modify their

L1 feature set to better match the target set. However, the FRH (Lardiere, 2008, 2009) does not offer a description of the factors that make L2 learners begin their initial mapping and reassemble the relevant features and finally approach the target grammar (*ibid*). A full description of the factors that trigger feature reassembly is outside the scope of this research, leaving this question open to further investigation. Nevertheless, some tentative remarks are possible based on the results of this study.

According to Schwartz and Sprouse's (1996) FT/FA model, the developmental stages and perhaps the ultimate attainment stage vary from those of L1 acquisition since the development of an L2 system starts from speakers' L1. That is, this starting point for L2 acquisition is considered to be a key source of the dissimilarities between learners. Native speakers of different languages learning the same target language are thus likely to behave differently in the course of developing the L2 grammar because their initial representations vary. According to Choi (2009), if evidence (i.e. negative and/or positive) in the L2 input does not confirm that the L1 structures are inappropriate, the L1 impact is likely to continue beyond the initial stage of acquiring the target language. Schwartz and Sprouse (1996: 42) argue that "L2 acquirers will never be able to arrive at the TL grammar" in the absence or scarcity of target input. They go further and suggest that, in such cases, the relevant properties are assumed to possibly 'fossilize'. On the basis of this claim, there is nothing to stop adult L2 learners from achieving a native-like level of proficiency of the target language as long as L2 evidence is accessible.

The results of this study suggest that the learners can acquire some constructions, even if they are unacceptable in their L1, as a result of obtaining L2 input which provides positive evidence to support this. In line with Inagaki's (2001) claims, Arabic and English learners' accommodation to target patterns will increase as long as exposure to this kind of sentence increases. Furthermore, the results for the advanced speakers support Stringer's (2012) claim that it is possible for L2 learners to adjust the meaning of target lexical items and successfully approach patterns of motion events in the target language. It has been argued here that L2 learners have acquired the target-like configuration if they are able to successfully deliver comprehensible messages while communicating. However, Pavesi (1987) claims that since inappropriate use of some particles in directional contexts does not often impede perception (e.g., **the students entered to the school*), correction by native speakers of English is uncommon, and as a result learners would require negative evidence to stop them from using these non-target like particles in directional contexts.

This opinion gains in relevance when considering that motion verbs are not formally accessible to L2 learners as modules in either the L2 Arabic or English curriculum. Evidence to support these claims concerning the content of teaching about motion events in English and Arabic textbooks can be found in teaching materials available from two online websites that discuss particles in English. For instance, the website *One Stop English* (2015) explains that *over* frequently has a similar meaning to *above*, e.g., 'There was a mirror above/over the sink'.[133] Hence, learners might overgeneralise this information to all contexts, believing that any of these particles can be used in both locational and directional contexts.

Further evidence of the lack of appropriate input that would trigger feature reassembly can be found in explicit classroom instruction and course books that suggest that what is taught on the topic of prepositions relating to movement might have a role to play. A number of teachers of English in Saudi Arabia (n=3) were asked about how they would usually introduce directional particles in relation to movement expressions. The teachers acknowledged that they usually introduce particles as two types: temporal and spatial. Thus, they do not usually make a distinction between locational and directional particles in the classroom or link particles to the verbs with which they occur in their explanation. In terms of how they initially teach spatial particles, these are introduced in terms of their meanings and function and teachers usually attempt to find a single equivalent for each particle in Arabic so learners can easily relate to the English ones. For instance, in the course book, *Lift Off!* aimed at intermediate school students, mainly locational particles are introduced e.g. *in the box, outside the box*, etc. (p. 26) and teachers and students would usually translate them in the classroom as *fii alṣunduq, kharij alṣunduq*, etc.

[133] This example is adapted from *One Stop English* (2015).

This book introduces them as prepositional phrases in isolation from the verbs with which they might typically occur. Hence, L2 learners are implicitly exposed to these constructions in communications with their instructors or native speakers in naturalistic conditions (i.e. outside classroom settings).

Without sufficient input evidence, L2 speakers of Arabic and English are likely to encounter difficulty in mastering L2 constructions, and they will tend to develop incomplete or inappropriate representations. They might add, substitute incorrect versions for correct ones, or omit some forms altogether as seen in this study. As previously noted, this tendency explains why L2 speakers need further negative evidence about what is not in the L2. This evidence can be accessed in a number of ways, including formal instruction on L2 rules, explicit correction of L2 construction as confirmation (e.g., *Did you say* <u>*into*</u> *the big hole?*), and clarification requests, as prompts (e.g., *What was the white rat doing? You said that the white rat was running, where!?*).

Furthermore, it is possible that factors such as familiarity with certain motion events and frequency of occurrence of evidence in the target input may play a role in triggering reassembly of the relevant features. In this respect, it could be argued that the L2 learners performed better on Type 1 motion constructions because they were more frequent than those of Type 2. However, this was not the case (for details of frequency of occurrence, see Chapter 5). On the contrary, a number of the Type 2 motion constructions were more frequent than their Type 1 counterparts, but this does not appear to facilitate their mastery. However, any further research needs to take this frequency effect factor into account.

7.4.4 Lexical transfer: Parameter Resetting or Feature Reassembly

According to Shimanskaya (2015), testing the premises of the FRH empirically is crucial in order to establish why and where transfer might take place. Such research is likely to offer different opportunities to predict non-target like constructions due to transfer by L2 learners and suggest pedagogical methods which might be used to lessen any effects of negative transfer of L1 forms.[134]

This study examined L1 transfer in terms of the FRH (Lardiere, 2008, 2009) which FRH conceptualizes L1 transfer in terms of the L2 speakers initially mapping between the underlying features and the surface lexical entries of their L1 and those of the target language in a direct way. That is, the FRH visualises that L1 transfer functions in a straightforward way, allowing L2 speakers to search for one-to-one correspondences between their L1 and the target expressions (i.e. the initial mapping phase). However, the aim of the present study was not only to test the mapping phase but also to account for how the L1 feature set is eventually redistributed to accommodate the target specifications (i.e. the feature reassembly). Given that the L2 forms are commonly underspecified with regard to the sets of features they hold, it would be a complex process for L2 learners to identify the features of L2 forms even when these are present in both the L1 and L2 structures (Lardiere, 2009). In other words, L2 learners need to find out how to match the morpholexical categories of the L2 with the target specifications. Since adult L2 speakers have existing knowledge of the mapping between surface entries and semantic features of motion constructions, reconstructing different or new clusters might be more complex for them.

In line with Stringer's (2012) claims, such learnability tasks do not appear to be a matter of parametric reselection of different features or functional categories from the universal pool of syntactic properties. Also, it does not seem that languages even have a fixed pattern of functional categories with the same assembly of features. A possible explanation, then, for the variability observed in the area under investigation could be non-target like configurations of the relevant semantic features at the lexical level (*ibid*). The results of this study suggest that L1 transfer that occurs at the lexical level influences learners' usage of motion constructions in the L2. Acceptance and production of sentences with interlanguage forms might be viewed as a sign of lexical transfer.[135] L2 learners may assume that their L2 lexical items exactly correspond to those of their L1 and, hence they transfer both forms and meanings

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[134] See Chapter 8 for some pedagogical implications of the present study.
[135] For more discussion on this point refer to the work of Sprouse (2006) and Stringer (2010).

from their L1 to the target language. Stringer (2007, 2012) argues that the L2 learners may not have finalized the structuring of a lexical entry for the target language, meaning, as Choi (2009) argues, with respect to learnability, that the L2 learners could be in 'transitional stages' from the L1 lexical entry to the target lexical entry. Thus L2 learners frequently fail to delink feature sets from their L1, yielding non-target like sets of representations in the interlanguage structure.

Furthermore and more interestingly, the impact of L1 transfer at the lexical level remained regardless of proficiency levels suggesting that it would take many years to meet the L2 specifications. Generally, the findings support Stringer's (2012) claim that the presence of lexical gaps is a crucial factor in lexical transfer. For instance, there is no English direct equivalent to the Arabic verb *y'qtaḥim* (to break into) so when translating the Arabic form, English learners of Arabic fell back on lexicalising the 'into' part of [path] in a particle. Hence, wherever the lexical gap is a verb of motion, Arabic learners of English, for instance, translate the satellite-framed structure with a verb-framed structure of their L1, word by word.

Stringer (2012) argues that the growing focus on the role of features in minimalist approaches of syntactic difference, as explained by Lardiere (2009), suggests a need for a potentially inspirational reanalysis of L2 acquisition of the parametric approaches that would endeavour to describe the differences between verb-framed and satellite-framed syntax "at the level of whole languages" (p. 268). The results of this study confirm Stringer's (2012) findings which revealed that dissimilarity was established on the basis of how specific features are configured on predicates in grammar.

If the feature-based approach examined here is on the right track, the English and Arabic data provides further evidence that the language-wide parameter resetting account cannot explain variation across languages in this context. Arabic-speaking learners of English and English-speaking learners of Arabic need to adjust the specific lexical semantics of verbs and particles that might be joined in the expression of motion events, not the simple parameter-resetting for the entire language. In other words, the results are in accordance with the claim that the property which requires meaning-form reallocation appears to be the most difficult (e.g., Lardiere, 2009; Domínguez *et al*., 2011). This outcome can be more fully explained by the variations in the way that the L1 and the L2 syntax articulate the spatial meaning of [path] morpholexically. It is argued that these results are more likely to be explained by the feature reassembly account since the directional meaning which is differently configured in the learners' L1 for Type 2s received significantly lower scores.

One conjectural implication of these findings is that the Feature Reassembly account (Lardiere, 2008, 2009) offers a more precise picture of variability in the motion constructions of English and Arabic L2 speakers than the parameter-resetting account (e.g., shifting from a positive to negative value). In contrast to the parameter resetting account, which posits that non-target like L2 structures are due to unsuccessfulness in resetting/reselecting a particular feature or value that is claimed to define cross-linguistic variability, the feature reassembly account claims that the language learning difficulties originate from determining "how to reconfigure or remap features into new or different formal configurations in the L2" (Lardiere, 2008: 107). In contrasting with parameter resetting account, the feature reassembly account predicts that adult L2 learners would have difficulty in judging and producing motion constructions owing to the dissimilar configurations of the relevant features as was found in this study. Generally speaking, the hypotheses for this study are largely supported, and the overall pattern of the results is in line with the feature reassembly account (Lardiere, 2008, 2009).

Although the findings of this study provide evidence of the role of L1 influence, it is harder to prove whether this influence is due to abstract features and their arrangements onto lexical heads or to failure to memorise the correct construction. To conclude, this study recognises that the feature reassembly account involves several facets of the syntactic theory. To the best of my knowledge, no other account of the L2 acquisition of motion constructions in the Arabic and English context has treated this data systematically in this way, lexical item by lexical item. Although no direct associations can be made between this study and earlier research conducted on L2 acquisition of motion constructions, the findings here provide solid data relating to this kind of complex learnability task. In line with what Lardiere (2008, 2009) has argued, this study calls for a re-evaluation of the parameter resetting accounts to mirror the same kind of complexity which Stringer (2012: 254) calls for, “both in L1 and L2 research on motion events, the parameter-setting model should be abandoned in favour of a model of feature assembly”. Overall, the results of this study provide ample support for Stringer’s (2012: 268) conclusions that:

> (i) the syntax of motion events is tied to acquisition of the lexicon; as such, mastery of these forms is likely to take many years; (ii) there is no formal parameter involved, and therefore no subset problem; contrary to previous claims, it should be possible for learners to fine-tune the meaning of L2 lexical items and successfully converge on the syntax of motion events in a new language.

7.5 Conclusion

This chapter has discussed the results from the acceptability judgment task and the picture description task by Arabic learners of English and English learners of Arabic as well as the control groups. The aim of the study presented in this thesis was to test the hypotheses of the FRH in the realm of L2 acquisition of spatial morphology. Generally speaking, the findings are in line with the hypotheses formulated in Chapter 4, namely that L2 speakers would perform significantly better on non-specific Type 1 representations in which [path] of motion is mapped onto corresponding lexical items in L1 and L2 which appear to be more straightforward and less demanding since they do not require feature reassembly. The results of the L2 groups when compared with the control groups, however, support the claim that features that have been assembled in the L1 in a different way from the L2 are the most problematic, confirming the findings of earlier research that the most demanding constructions are those that require meaning-form restructuring. It was noted that these constructions might not be explicitly taught in classroom settings, although they could be encountered in an informal written and/or colloquial context. The conclusion that can be drawn from these results is that non-target like use of motion constructions could be considered to be a sign of persistent difficulty for learners, since only a small number of the L2 group showed that they had completely grasped the L2 specifications. The next chapter summarises the major findings and makes recommendations based on them.

Chapter 8. Conclusion

8.1 Introduction

The feature reassembly account (Lardiere, 2005, 2008, 2009) calls attention to how the primitive semantic and syntactic features are arranged and distributed across languages. Jackendoff (2002) claims a speaker is born with a set of tools for clustering grammatical structures. Nevertheless, the way in which these features are clustered is language specific. As a result, L2 learners must work out the target morpholexical configurations of the relevant features from how they are represented in their L1. Within the feature-based account (Lardiere, 2008, 2009), the learnability tasks vary with regard to mapping and reallocation of feature bundles. According to Stringer (2005, 2007, 2012), the consistent variability in how L2 learners perform on L2 motion constructions can be accounted for by a feature-based analysis with reference to how the relevant semantic feature of motion events are distributed onto lexical heads in a language-specific way. Following this line of thought, the present study attempts to account for the variability observed in the use of motion constructions in Arabic and English and the challenges in mastering them that confront adult L2 learners of these languages.

The findings of the present study suggest that motion constructions of Type 1 (Matching) were acquired early since English and Arabic have the exact corresponding morphemes with the same feature distributions, whereas motion constructions of Type 2 (Mismatching) pose a greater difficulty for the reason that their L1-L2 feature sets were not identical, and, hence, L2 learners were required to reassemble the relevant sets of features. On the basis of the findings of the present study, it seems fair to suggest that feature reassembly poses a great challenge in L2 acquisition of motion constructions. The results of the experimental study on motion constructions by adult L2 learners of Arabic and English were shown to support the Feature Reassembly Hypothesis (Lardiere, 2008, 2009). The findings suggest that the divergent performance on both types of L2 motion constructions can largely be captured by the feature reassembly account. Besides confirming this conclusion, the results give rise to a number of issues for further investigation. Discussion of these outstanding issues is offered here in this chapter, where section 8.2 reviews the findings of the empirical study on motion constructions in Arabic and English contexts. Section 8.3 comments on the limitations of the experimental study. Section 8.4 suggests some possible avenues for future research. On the basis of the findings of the present study, some pedagogical implications are presented in section 8.5. Finally, section 8.6 summarises the main conclusions of this thesis.

8.2 Summary of the major findings

The purpose of this study was to examine the L2 acquisition of motion constructions in Arabic and English from a feature-based perspective. The core goal was to investigate the two research questions outlined in Chapter 4, and repeated below in (RQ1) and (RQ2):

> **RQ1** Do L2 speakers find motion constructions with feature configurations that match their L1 unproblematic?
>
> **RQ2** Do L2 speakers find motion constructions with feature configurations that do not match their L1 problematic?

In this study, the proposed degrees of difficulty were established based on whether feature reassembly is required or not on the basis of the (dis)similarities of the underlying representations of the L1 and L2 (Lardiere, 2005, 2008, 2009). The hypotheses are repeated below:

> H: If the learning task for L2 speakers engages feature reassembly, i.e., [PATH, LEX-L1] → [PATH, LEX-L2], the meaning demanding feature reassembly will constitute a source of difficulty for L2 speakers. That is:
>
> (Ha) Motion representations with matching F + matching LEX-L2 are unproblematic in L2 acquisition.
>
> (Hb) Motion representations with matching F + mismatching LEX-L2 are problematic in L2 acquisition.

Following Stringer (2005, 2007, 2012), I have examined a learnability problem that involves more closely figuring out how matrices of features are in relation to morphological representations. The results suggest that success in the L2 acquisition of motion constructions appears to be established by whether or not [path] of motion must be reconfigured to accommodate the target specifications. Findings suggest that it is more challenging to acquire motion constructions with feature sets that have been clustered differently in the L1 and L2. Furthermore, the findings suggest that the most challenging learning task is when the same feature is encoded onto two different lexical items in the L1 and L2; hence, feature reassembly is required. The study provides evidence that L2 learners of English and Arabic are likely to encounter difficulties with redistributing existing features of the L1 into L2-specific configurations, which suggests that it might take learners a long time to master these constructions - a similar conclusion to the one drawn by Stringer (2012). On the other hand, the findings suggest that L2 speakers find motion constructions with matching feature bundles to their L1 more straightforward to master.

Investigation of RQ1 and RQ2 was conducted by means of a quantitative and qualitative experimental study of judgments and productions of motion constructions in L2 Arabic and English. An acceptability judgement task and a picture description task were developed to collect the relevant data in addition to a follow-up questionnaire on the acceptability judgement task allowing for the qualitative analysis. Two groups of L2 learners of English and Arabic took part in the study. The former was subdivided into three proficiency groups: elementary, intermediate and advanced. In addition, there were two control groups of native speakers of Arabic and English.

An affirmative answer to RQ1 shows that the L2 learners of both studies (i.e., L2 learners of Arabic and L2 learners of English) find motion constructions with matching feature configurations to their L1 unproblematic, as they only require simple mapping with no feature reassembly involved. An affirmative answer to RQ2 shows that L2 speakers find motion constructions with mismatching feature configurations to their L1 problematic, as they require L2 learners to re-cluster the semantic features of motion events onto the target morpholexical specifications. H1a and H1b were confirmed by both the acceptability judgement and picture description data, which offer evidence of the role of L1 lexical transfer in L2 acquisition. The advanced learners' results present evidence that L2 acquisition of motion constructions can take place if the relevant features are redistributed over lexical items in line with L2 specifications. More importantly, evidence of the advanced learners showing target like judgments on Type 2s demonstrates that they can redistribute the relevant features.

The current study on the judgments and productions of motion constructions provides a case of L2 acquisition that illustrates how the feature reassembly account sheds more light on the nature of L2 learning difficulties. The learning challenges confronting L2 speakers arise from language-specific feature bundles linked with particular configurations. Note that at least all the semantic features related to lexicalising motion events are present in both the L1 and the L2. It seems evident that the source of the observed variability with the use of motion constructions in Chapter 6 is perhaps located in the way the relevant features are dissimilarly configured onto surface forms in language-specific ways. That is, L1 knowledge appears to have an effect on the L2 acquisition process if the L2 input indeed provides direct evidence about the target representations. All things considered, it seems reasonable to assume that the predictions, formulated within the feature reassembly approach, explain such developmental patterns.

To sum up, the discussion of the findings stated in the previous chapters points to two key conclusions. First, this study provides ample support for Lardiere (2005, 2008, 2009) and Stringer (2005, 2007, 2012), who claim that feature reassembly is the root of difficulty for L2 speakers. In the case of the current study, attainment in the L2 acquisition of Arabic and English spatial morphology appears to be determined by whether [path] need to be redistributed to accommodate the L2 specifications. The feature reassembly approach which takes into account the specific morphological configurations of spatially-related formal features makes appropriate predictions in the L2 acquisition of Arabic and English spatial morphology. Feature reassembly is a promising account that captures the observed consistent variability and offers much explanation for learners' interlanguage grammar. Mainly, it can explain the asymmetry detected in the L2 acquisition of the different meanings linked with Arabic and English spatial morphology.

Second, the findings are in line with Stringer's (2012) twofold conclusion. First, these is no parameter resetting involved in L2 development; accordingly, L2 learners of English and Arabic are likely to adjust the meanings of the target lexical items and appropriately acquire the L2 morpholexical representations of motion events. Second, the L2 acquisition syntax of motion events is linked to that of the lexicon; hence, adjusting the relevant constructions is expected to take time for adult learners of English and Arabic.

8.3 Limitations

Experimental research of the type I carried out here is, of necessity, empirically restricted. Hence, further testing the predictions of the FRH will continue to yield interest and more debates in the field of L2 development.

In general, the findings of the present study are in line with research that has presented evidence of the effectiveness of the account that takes the semantic feature bundles into consideration (Stringer, 2005, 2007, 2012). Nevertheless, I acknowledge that there are some limitations with the present study. One of the shortcomings lies in the fact that there were low numbers of participants in some of the L2 groups of the study (i.e. A total of 20 in the English learners of Arabic group), and, due to this, no comparison between proficiency levels was allowed, especially as far as the English speakers of Arabic were concerned.

A second limitation of the study, as already pointed out in Chapter 7, originates from the fact that there were a few problematic test items which might have negatively influenced the results, especially the Arabic version of the test. The Arabic version turns out to include a number of flaws because it was a literal translation of the English version. Testing the English learners of Arabic could yield more robust findings with a design of its own which would take into consideration the unique nature of Arabic that allows optionality in countless contexts. Furthermore, the formality of the testing method may have influenced the participants' responses. It would be interesting to repeat this study in other informal settings or with other informal materials (e.g., description of video games) to see if production of motion constructions would be different. The following section suggests further avenues for future research.

8.4 Directions for future research

I have taken a closer look at the nature of adult interlanguage grammar and attempted to offer a justification for a particular structure that I found in the interlanguage development of Arabic-speaking learners of English and English-speaking learners of Arabic. This study charts a potential course for further research within the generative-oriented framework. Despite the promising results of this study, many questions remain.

While future research should undoubtedly retest the prognostic power of the feature reassembly account, there is also a considerable need to account for other factors influencing it. While recent research has paid considerable attention to lexical transfer and its role in L2 acquisition, the findings here suggest that there remains a need for in-depth linguistics-oriented analyses of the L2 speaker's linguistic development during the course of L2 acquisition. The current study is the first attempt at examining L2 acquisition of motion constructions in Arabic and English context, and it has only touched on the issue of feature reassembly in this context for the first time. This study strongly indicates the applicability and usefulness of this approach. Thus, in future research it would be interesting to expand this line of investigation and further investigate the effectiveness of the feature reassembly account on the acquisition of a different variety of grammatical structures in these languages. More studies should be conducted to investigate how semantic features are dissimilarly configured and mapped onto language-specific morpholexical elements across other languages and within different constructions to examine how the divergence found between these languages influences L2 acquisition. Future studies about the reconfiguration of L1 feature sets will offer further views into L2 acquisition domain.

One of the next challenges for experimental research in L2 acquisition is to develop a more refined design to tap into learners' performance. In order to determine the generalisability of the findings of this research, more studies comparing L2 speakers from different L1 backgrounds are needed in order to determine whether these findings can be applied to the L2 acquisition of other languages with different morpholexical configurations.

Comparing the results of the tasks of this study with the results of other tasks from other studies would be an interesting area for further research. Further studies could replicate the results in a larger population and with different language combinations of L1s and L2s. A further related area for fruitful investigation in the future concerns the advantages of including speakers from Verb-framed languages (e.g., German, Dutch, and Swedish) and Satellite-framed languages (e.g., Turkish, Hebrew, and Spanish) as a point of comparison. I suggest a study includes a group of L2 speakers whose L1 and L2 belong to different language families (e.g., Danish learners of Hebrew as well as another group of L2 speakers whose L1 and L2 belong to the same family (e.g., Arabic learners of Hebrew) and a control group of native speakers (e.g., Hebrew native speakers)). More precisely, comparing L2 learners might demonstrate that the divergence between their developmental paths with respect to L2 spatial morphology mirrors exactly the divergence between their L1s. In particular, while it would be interesting to explore if speakers from the same language typology encounter the same difficulties while learning the opposite language type, such comparison would be considered an interesting yardstick of the scope of L2 development. Furthermore, it would also be interesting to see whether English-type speakers who are highly proficient in Arabic receive some benefit when they acquire another Verb-framed language such as Turkish.

Further to this, another possible avenue of inquiry would be to include different age groups, including early learners. In relation to different proficiency levels, future studies should involve larger groups of participants, especially English speakers of Arabic. Another question for future research is to address whether a longitudinal study by repeating investigations of the same variables as in this study would yield the same results over a long period of time.

8.5 Pedagogical implications

The characteristics of the feature-centric hypothesis seem advantageous for understanding how teachers can minimise possible non-target like constructions in L2 acquisition through the organisation of error-preventive strategies with regard to spatial morphology on the grounds of the predictive nature of this framework. Some might argue that it is not reasonable to suggest that teachers can adapt their teaching on the basis of 'features', and question its practicality. However, there is evidence of learners being more successful on L2 constructions where the context is ample (Cho and Slabakova, 2015). This finding has several pedagogical implications.[136]

The present study demonstrates how complex the learners' tasks are in mastering L2 motion constructions, and how challenging it is for them to overcome the L1 effect. The low levels of the learners' accuracy on motion constructions with mismatching feature set to their L1 can be attributed to a more complex learning task: feature reassembly rather than parameter resetting. Given that English Type 2s motion constructions do not correspond exactly to those of Arabic, this suggests that some of the L2 learners might be at the phase of figuring out the specific feature reallocation required for acquiring these Type 2 constructions. More recently, Cho and Slabakova (2015: 20) claim that

> [S]ince deleting features is essentially unlearning (features), positive input alone would not be sufficient. Learners would need negative evidence to notice that the L2 feature combination is a subset of their L1 feature combination. Ideally, language teachers should be aware of which functional lexicon items they are teaching present more difficulty to learners than others and why they are more difficult (Lardiere, 2012; Slabakova, 2013).

Teaching motion constructions or directional particles separately would be an immensely problematic task, especially for those who work with learners from a range of linguistic backgrounds. The results of this study showed that L2 learners

[136] Pedagogical implications offered in this section are most relevant for those who teach Arabic learners of English and English learners of Arabic because the data of the current study originate from that population. However, they might be applicable to other L2 learners from other linguistic backgrounds. These pedagogical implications are possible in classrooms where all learners speak the same L1.

frequently misjudge or misuse these constructions despite the fact that the experimental instruments of the current study involved motion constructions that are quite commonly used. Bearing in mind that directional particles contribute to the meanings of the motion verbs accompanying them, explicit teaching of directional particles might be helpful for learners to assist them in becoming aware that particles might express different meanings, and that motion constructions in their L1 and L2 may vary based on how the relevant semantic meanings are encoded in lexical slots. At this point, then, one might ask how motion constructions would be taught to best assist learners to appropriately use them. The present study does not offer a direct answer for this question; nevertheless, some facets of the present findings have pedagogical implications, which I now briefly raise.

All things considered, it seems reasonable to suggest that motion constructions should be offered in classrooms in abundant and unambiguous contexts as Inagaki (2002:3) suggests, "positive evidence need not only be available but also be frequent and clear in order to be used by L2 learners to broaden their interlanguage grammar". It seems that exposure to L2 input would facilitate achieving high accuracy with the target motion constructions; however, full attainment of an L2 is not always guaranteed, as Arabic learners might fail to notice positive evidence for the target construction and, hence, would not accommodate the L2 specification, which would be similar to the case of Inagaki's (2002) Japanese learners.

Explicit classroom instruction of L2 motion constructions should not always be compared with those of the learners' L1 because learners might be held back with their L1 specific representations. According to the results of the current study, L2 learners' accuracy significantly declines when L2 motion constructions are unequal to those of their L1. The results suggest that if a tutor has knowledge of learners' L1s, s/he might be able to detect motion constructions that are likely to be challenging for the learners. One may argue that it would be difficult and unrealistic to form a list that embraces all motion constructions which are different from those of the learners' L1 equivalents. The list is likely to be extremely extensive if all corresponding motion constructions are offered on a single list. Furthermore, it would take much time and effort to teach and memorise the constructions.

Nevertheless, if motion constructions could be classified based on their category (Matching vs. Mismatching) just as they were classified in this study[137], the number of examples of each motion construction would be finite, and manageable. For example, mismatching motion constructions can be offered by category of particle. The three categories that were used in the instruments of this study and the examples listed for each class are typically the target motion constructions to present in classroom contexts.

The suggested list of examples of motion constructions will be helpful if they include the most highly frequent motion constructions. The list in particular would comprise of motion verbs that are very commonly used in daily usage and academic contexts, and, as revealed in the study, learners often erroneously use the particles with them. Teachers can compare examples of motion constructions that still behave the same in the L2 as they do in the learners' L1, and, those they behave differently and require adjustment. Specifically, they can explain that while some motion verbs still behave the same way in the L2 as they do in the L1 (e.g., *walk around)*, others do not need particles in the L2 to express directionality even though a particle may be required in the L1 (e.g., *enter*). On the other hand, teachers can emphasise the fact that some motion verbs do need particles in the L2 to indicate directionality even if they do not in their L1 (e.g., *climb down*). For example, the teacher can explain that even though the verb *climb* only indicates moving upwards in Arabic, it indicates two directions of movement in English, either moving upwards or downwards. Hence, the L2 learners have to use a particle (either *up* or *down*) with the English verb *climb.*

Furthermore, teachers must draw the learners' attention to the fact that some motion verbs might behave differently in the L2 even though they would indicate the same meaning. For example, the verbs *reach* and *arrive* might indicate the same directional meaning as examples (127a-b) illustrate. However, the first verb does not require a particle (Ø) in English, whilst the other verb does (*in/at*). The only Arabic equivalent of these verbs, on the other hand, occurs with a free-choice particle *y'aṣil fii/ila* 'reach in/to', or leaves out the particle altogether.

[137] See Table 12 and Table 14 from Chapter 5.

(127) a.*They bought tickets, when they reached in/to Orlando. (Ø)
b.*They bought tickets, when they arrived ^ Orlando. (in)

Furthermore, another class that is commonly neglected and which teachers must consider covering is motion verbs that occur with particles in both the L1 and L2 but, yet, are not identical (e.g., *jump on* vs. *jump over*).[138] I suggest teaching motion verbs that occur with different particles separately from other types of deletion and addition of particles owing to their more complicated and problematic nature. The teacher can explain that the particle *on*, for instance, is not equal to *over* or *above* in certain contexts, and, hence, they cannot use it in all contexts. Moreover, each particle would indicate different meanings with the same motion verb (i.e., either directional or locational).

A further issue that it is important to consider while teaching motion constructions is that some motion verbs in English might not directly correspond to their Arabic equivalents based on the context they occur in. In this study, some L2 learners had problems with this class of motion constructions (e.g., *enter* (*to*)). It could be that learners are not aware that these motion verbs can occur either with or without particles based on the context they occur in, as they allow a certain amount of optionality. The reason why I suggest that these kinds of motion verb are presented separately from the other two is that, by doing so, teachers can explain to learners that it is only certain kinds of motion verbs that behave this way. Motion verbs frequently tend to be treated as a single type (i.e., corresponding or non-corresponding).

In a nutshell, presenting motion verbs by type (i.e. corresponding vs. non-corresponding) and explaining how each of them is (dis)similar in terms of the directional particle it occurs with can aid learners to stop making erroneous generalisations about motion constructions in the target language. Going over the prepared list by motion construction category and explaining to the L2 learners how

[138] The motion construction *jump on* is acceptable in locational contexts in English (e.g., *the sheep jumped on the grass*), however, it is unacceptable in directional contexts (e.g., *the gymnast jumped over/*on the trampoline*).

they are used in real contexts would aid in increasing their accuracy with these constructions. Explaining to L2 learners how the same motion verbs are used in different directional routes in different contexts would not only solve this issue but, likewise, assist in increasing the learners' sensitivity to these constructions in different contexts. Providing the required evidence (i.e., positive and/or negative) would trigger the required adjustments.

However, we should bear in mind that these adjustments are unconscious tasks and explicit information provided by teaching is conscious. There is a hot debate within the field of theoretical L2 acquisition about whether conscious metalinguistic knowledge of L2 leads to unconscious acquisition of L2 (e.g., Krashen, 1977; Ellis, 2007; among others).[139] Yet, discussion of these opposing views on this issue is beyond the scope of this present study.

8.6 Conclusions

The current study provides new data on the role of the learners' L1 on L2 acquisition of spatial morphology within the feature-based framework. The study examined how feature bundles developed in the learners' L1 affect the L2 acquisition of motion constructions, and in doing so, I considered how the semantic features of motion events are clustered onto lexical items in Arabic and English. This study aims to explain learners' variability in the judgments and productions of spatial morphology in L2 Arabic and English contexts, applying Lardiere's (2008, 2009) feature-based approach.

The results showed that L2 learners' judgments and productions of particles holding [path] of motion were affected by how the individual lexical items were mapped onto the relevant features in their L1, observing that L1 transfer arises at the lexical level. In spite of L2 proficiency levels, learners appear to be consistently less accurate with L2 mismatching constructions to their L1(that appear to be language-specific) than the matching constructions, and it was found that the latter were more easily acquired

[139] For more discussion on the role of classroom instruction in L2 knowledge, refer to Whong *et.al* (2013).

since the acquisition of the former necessitates reconfiguration of the L2 feature set. The results suggest that having to reconfigure the relevant features delayed mastering motion constructions with mismatching feature sets. The results, furthermore, suggest that knowledge of both types of motion constructions enhanced the learners' levels of proficiency. The learners' non-target-like usage with the L2 motion constructions presented in the current study challenged the predictions of the parametric account.

The present study supports the claims by Lardiere (2008, 2009) and Stringer (2012) that the L1 effect goes much deeper than the parameter resetting. The L1 effect filtered deep down to the level of separable lexical entries that form these constructions. Furthermore, the study has revealed that acquiring L2 motion constructions is a more complex task than what was formerly defined by the parametric approach. The novel insights attained from this study should certainly be significant for approaching the objective of having a more comprehensive view of L2 acquisition of motion constructions by speakers of different languages.

The study also supports the claim that the feature reassembly framework puts forwards more precise analyses of L2 constructions from speakers of different linguistic backgrounds than the parametric approach, providing ample support to previous researchers (Choi, 2009; Domínguez *et al.*, 2011; Yaun and Zhao, 2011; Stringer, 2005, 2007, 2012; Gil and Marsden, 2013; Hwang and Lardiere, 2013; Spinner, 2013; Cho and Slabakova, 2009, 2015), who argue that the feature reassembly approach can explain persistent L2 learning challenges beyond parameter resetting models. That is, if I hold the lexical parameter perspective of syntax of motion constructions, whereby all parametric variations are attributed to variation at the lexicon level, it seems no reason for making a distinction between properties of the L1 that cannot transfer and those that can. The feature reassembly account holds that the feature reassembly part of L2 acquisition has a key role in explaining learners' interlanguage grammar, since it calls for teasing apart the clustered features onto the surface elements of the learners' L1, and then re-clustering these features within the surface elements of the target language (Lardiere, 2008, 2009).

In other words, the results provide ample evidence that the meanings that require feature reconfiguration were the most difficult ones to acquire. The findings of this study are in line with Stringer's (2005, 2007, 2012) claim that variability in spatial morphology can be explained by the differences in the processes by which relevant semantic features are configured between an L1 and an L2, which is consistent with the main claim of the FRH (Lardiere, 2008, 2009). The feature reassembly account highlighted the nature of L1 effects on L2 acquisition of motion constructions, and, in turn, the learnability tasks that those learners are likely to encounter to master these constructions. The findings overwhelmingly support the claim that learners' difficulties with L2 judgments and productions of motion constructions were due to language-specific clusters of the relevant semantic features in Arabic and English. The findings also suggest that L2 learners show a tendency to link the spatial morphology of L2 constructions with the way the relevant semantic features are encoded onto individual lexical items in the learners' L1, and this brought about inaccurate judgments and productions of motion constructions.

To sum up, the contribution of this study is two-fold. First, it contributes to the emerging research on testing predictions of the feature reassembly approach. The current study contributes to the literature on L2 acquisition of English motion constructions by learners of differing typological languages: Arabic and English. The present research provides quantitative and qualitative experimental data on motion construction judgments and productions in a new context: Arabic-English and English-Arabic interlanguage. The study attempts to outline the exact learnability tasks that L2 English and Arabic learners may encounter. It sheds light on how a feature reassembly account contributes to our understanding of learnability problems. Second, a significant contribution of the present research is that it strongly supports Stringer's (2012) conclusions in that the L2 acquisition of syntax of motion events is linked to that of the lexicon; hence, successfully mastering motion constructions of the target language is likely to take plenty of time and most interestingly, there is no parameter resetting engaged in the process of L2 development.

Finally, in line with Cho and Slabakova's (2015) conclusion, the present study maintains the value of examining the L2 acquisition of semantic features and the relevant functional morphology, besides their pedagogical implications. For L2 learners and teachers who frequently wonder why motion constructions appear to be difficult to acquire, this study offers a more accurate account of learnability tasks that L2 learners are likely to encounter and what it takes for learners to effectively acquire the target motion constructions. However, this account does not ease the difficulty for learners or guarantee attainments of L2 motion constructions. Yet, presenting exactly what learners are required to endure should better help learners. The image of the learners' tasks, that was vague has been made more precise and detailed by the present study, hence this should better direct not only learning but also the teaching of these motion constructions.

Appendices

Appendix 1: Ethical Forms and the Pre-task Questionnaires

About this appendix:

This appendix relates to the ethical forms and the pre-task questionnaires. The following appendices are offered:

- Appendix 1A: Information sheet for participation in a research study.
- Appendix 1B: Informed consent form for participation in a research study.
- Appendix 1C: Participant's background information questionnaire (for NNS).
- Appendix 1D: Participant's background information questionnaire (for NS).

Appendix 1A: Ethics Forms

THE UNIVERSITY of York

LANGUAGE AND
LINGUISTIC SCIENCE
Heslington, York, YO10 5DD, UK

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Information Sheet for Participation in a Research Study

PLEASE KEEP THIS INFORMATION SHEET AND A SIGNED COPY OF THE CONSENT FORM FOR YOUR RECORDS

You are invited to take part in a research study. Before you decide whether to participate it is important for you to understand why the research is being done and what it will involve. Please take the time to read the following information carefully. If there is anything you do not understand, or if you want more information, please ask the researcher.

- **Title of project:** Second language acquisition of English by speakers of Arabic.
- **Principal Researcher**: Rashidah Albaqami
- **Supervising Faculty Members:** Dr. Heather Marsden / Dr. Peter Sells.

I . This section presents details of the study you will be participating in:

1. **What is the research about?** The experiments, in which you are being invited to participate, are parts of a research study that is intended to examine issues related to the first language influence on the second language acquisition. By carrying out this study, the researcher hopes to gain a better understanding of how second language learners acquire the target language grammar.
2. **Who is carrying out the research?** This research study is carried out by a PhD student at the Department of Language and Linguistic Science at the University of York. This study has been reviewed and approved by the Departmental Ethics Committee of the Department of Language and Linguistic Science at the University of York. If you have any questions

regarding this, you can contact the chair of the L&LS Ethics Committee, Dom Watt (**email:** dominic.watt@york.ac.uk; **Tel:** (01904) 322671).

3. **Who can participate?** This study is for Arabic-speaking learners of English and native English speakers
4. **What does the study involve?** If you agree to take part in this research, you will be invited to complete a questionnaire and three tests today (only two for the native speakers) in this location. The tasks will take approximately an hour for Arabic-speaking learners of English and half an hour for native speakers of English. I will ask you to complete a proficiency test and a self-reported questionnaire on your linguistic background. Your participation will consist of a judgment task in which I will ask you to judge whether sentences in English are correct or not. Finally, I will invite you to participate in a picture description task. I will ask you to describe some short animated film clips.

II. This section gives description to your rights as a research participant:

1. **Do I have to take part?** You do not have to take part in the study. Your participation in this research study is completely voluntary. If you do decide to take part you will be given this information sheet to keep and will be asked to sign two copies of the consent form (one copy is for you to keep). If you decide to take part you will still be free to withdraw without giving a reason, even during the session itself. If you withdraw from the study, we will destroy your data and will not use it in any way. However, you will still be eligible to receive the agreed payment for participation in the study.
2. **What are the possible risks of taking part?** There are no risks for participation in this research study.
3. **Are there any benefits to participating?** The benefit of your participation is to contribute information that might assist the researcher to understand certain syntactic issues regarding how first language influences second language, In addition, as thanks for your participation in this study, you will receive £5.

4. **What will happen to the data I provide?** The data you provide will be used alongside the data of other participants to be presented in a PhD thesis.
5. **What about confidentiality?** Your identity will be kept strictly confidential. No real names or personal information will be disclosed in my thesis. The data you provide will be handled, stored and later destroyed securely. All of your information and responses will be kept confidential in a safe location in the University of York, Department of Language and Linguistic Science and destroyed securely. The researcher will not share them with anyone except the research supervisors.
6. **Will I know the results?** Only group results will be given. A summary of the results will be available to you upon request.
7. **What if I have more questions?** You can ask any questions regarding the research procedures. If you have further concerns or questions, please feel free to contact:

Rashidah Albaqami.
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University of York, Heslington, York, YO10 5DD
Email: ***rma514@york.ac.uk***

Thank You for Your Assistance!

Appendix 1B: Informed Consent Form for Participation in a Research Study

THE UNIVERSITY *of York*

DEPARTMENT OF LANGUAGE AND LINGUISTIC SCIENCE

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- **Title of project:** Second language acquisition of English by speakers of Arabic.
- **Principal Researcher**: Rashidah Albaqami.

I. This section shows that you are giving your informed consent to take a part in this research study:

This form is for you to state whether or not you agree to take part in the study. Please read and answer every question. If there is anything you do not understand, or if you want more information, please ask the researcher.

1. Have you read and understood all the aforementioned information on the study?	Yes ❐ No ❐
2. Have you had an opportunity to ask questions about the study and have these been answered satisfactorily?	Yes ❐ No ❐
3. Do you understand that the information you provide will be held in confidence by the researcher, and your name or identifying information about you will not be mentioned in any publication?	Yes ❐ No ❐
4. Do you understand that you may withdraw from the study at any time before the end of the data collection session without giving any reason, and that in such a case all your data will be destroyed?	Yes ❐ No ❐
5. Do you agree to participate in the study?	Yes ❐ No ❐
6. Do you agree to the researcher's keeping your contact details after the end of the current project, in order that she may contact you in the future about possible participation in other studies? *(You may take part in the study without agreeing to this).*	Yes ❐ No ❐

By signing below I acknowledge that I have read and understand the above information. I have received a copy of the above consent and desire of my own free will to participate in this study. My signature below indicates my consent.

Participant's name (in BLOCK letters):__________________________________

Email: ____

Your signature: ____

I certify that the informed consent procedure has been followed, and that I have answered any questions from the participant above as fully as possible.

Researcher's name: Rashidah Albaqami

Date: ____

Thank You for Your Assistance!

Appendix 1C: Participant's Background Information Questionnaire (for NNS)

To the best of your knowledge, please answer the following questions:

I. BIOGRAPHICAL INFORMATION

- Age (in years): ________________________
- Year of birth: ________________________
- Place of birth: ________________________
- Gender: □Male □Female
- Previous Educational System: □Public □Private
- Major of study: ________________________

II. LANGUAGE BACKGROUND INFORMATION

Q1.Check your native language: (If you grew up with multiples language, please specify)

□ Arabic □ English □ Other (specify)________________________

Q2. Check your home language:

□ Arabic □ English □ Other (specify)________________________

Q3. Check if anyone in your family is a native speaker of English:

□ Mother □ Father □ Grandparent(s) □ Other (specify)________________________

Q4. Check how many years have you studied English:

□Less than 5 years □ 5 to 10 years

□11 to 15 years □More than 20 years

Q5. Check how long have you stayed in an English speaking country:

□No experience □Less than one year

□One or two years □Three or four years

□More than 5 years

Q6. If you have stayed in other countries for more than two months, please provide the following information.

Country	Age	Length of stay	Purpose of stay	Language used

Q7. Check the language in which you received education for each level:

Education	Arabic	English	Other (specify)
Primary School			
Secondary School			
High School			
College			
Others (specify)			

Q8. Check how did you learn English: (check all that apply)

Means	Mostly	Frequently	Occasionally
throughout formal classroom instruction			
throughout interaction with people			
A combination of both			
Other (specify)			

Q9. Indicate the age at which you started to learn English in the following situations:

Situations	Age
At home	
In school/college	
In an English-speaking country	
Other (specify)	

Q10.If you have taken a standardized test of proficiency for English (e.g., IELTS International English Language Testing System or TOEFL (Test of English as a Foreign Language), please provide the scores you achieved for each.

Test	Skills				Overall Score
	Listening	Reading	Writing	Speaking	
TOEFL					
IELTS					
Other (specify)					

Q11. Do you have any speech or hearing problems? □Yes □No

If yes, please Specify____

If there is anything else that you think is interesting or important regarding your language background or use, please comment below.

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Thank you for your assistance!

Appendix 1D: Participant's Background Information Questionnaire (for NS)

To the best of your knowledge, please answer the following questions:

III. BIOGRAPHICAL INFORMATION

- Age (in years): ________________________
- Year of birth: ________________________
- Place of birth: ________________________
- Gender: □Male □Female
- Previous Educational System: □Public □Private
- Major of study: ________________________

IV. LANGUAGE BACKGROUND INFORMATION

Q1.Check your native language: (If you grew up with multiples language, pleases specify)

□ Arabic □ English □ Other (specify)________________________

Q2 Check your home language:

□ Arabic □ English □ Other (specify)________________________

Q3 Check if anyone in your family is a non-native speaker of English:

□ Mother □ Father □ Grandparent(s) □ Other (specify)________________________

Q4. Check how many years have you studied your second language:

□Less than 5 years □5 to 10 years
□11 to 15 years □More than 20 years

Q5. Check how long have you stayed in a non-English-speaking country:

□No experience □Less than one year

□One or two years □Three or four years

□More than 5 years

Q6. If you have stayed in other countries for more than two months, please provide the following information.

Country	Age	Length of stay	Purpose of stay	Language used

Q7 Check the language in which you received education for each level:

Education	English	The 2nd language	Other (specify)
Primary School			
Secondary School			
High School			
College			
Others (specify)			

Q8 Check how did you learn the second language: (check all that apply)

Means	Mostly	Frequently	Occasionally
throughout formal classroom instruction			
throughout interaction with people			
A combination of both			
Other (specify)			

Q9 Indicate the age at which you started to learn the second language in the following situations:

Situations	Age
At home	
In school/college	
In an l2-speaking country	
Other (specify)	

Q10.If you have taken a standardized test of proficiency for the second language, please provide the scores you achieved for each.

Test	Skills				Overall Score
	Listening	Reading	Writing	Speaking	

Q11 Do you have any speech or hearing problems? □Yes □No

If yes, please Specify____

- If there is anything else that you think is interesting or important regarding your language background or use, please comment below.

____

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Thank you for your assistance!

Appendix 2: Experimental Materials

About this appendix:

This appendix relates to the experimental work, and should be used in combination with Chapter 5. The following appendices are offered:

- Appendix 2A: Test sentences for Arabic learners of English for the AJT.
- Appendix 2B: Answer sheet used by Arabic learners of English for the AJT.
- Appendix 2C: Test sentences used by Arabic learners of English in the PDT.
- Appendix 2D: Follow-up questionnaire paper used by Arabic learners of English on the AJT.
- Appendix 2E: Test sentences for English learners of Arabic for the AJT.
- Appendix 2F: Answer sheet used by English learners of Arabic for the AJT.
- Appendix 2G: Test sentences used by English learners of Arabic for the PDT.
- Appendix 2H: Follow-up questionnaire paper used by English learners of Arabic on the AJT.
- Appendix 2I: Test pictures used by learners of English and Arabic in the PDT.

Appendix 2A: Acceptability Judgment Task (English Version):

Note:

i) For convenience, the sentences that are given below did not appear on sheet in the actual test. They appeared one by one on a computer screen.

(ii)See Appendix 2B for the answer sheet of the 4-point scale accompanied this task.

(iii) '−FR' in the index indicate items that do not require feature reassembly, whereas '+FR/A', '+FR/D', and '+FR/S' in the index indicate items that require feature reassembly addition, deletion and substitution, respectively.

(v) The test type can be identified by the item index. For example, index '+FR/A01' is Type +FR/A, Token 1; '+FR/S02' is Type +FR/S, Token 2, etc.

(vi)The 'Item no.' columns indicate the number of each item in the test orders. Hence, for example, index ++FR/S01was item no. 2 in Set 1, and item no. 39 in Set 2.

(iv)Example items ('EX' in the index = 'Example'), Distractor items ('D' in the index = 'Distractor').

(v)As described in Chapter 5, the test battery was divided into two sets. The item number within each set is indicated for each test item in the 'Set 1' and 'Set 2' columns, below.

Instruction: Please read each sentence appears on the computer screen, and consider whether or not the sentence is correct English. Then, circle the number which best describes your response to the sentence.

Index	Sentences	Item number	
		Set 1	Set 2
EX01	This is a lovely sentence.	a	b
EX02	This sentence is badder.	b	A
−FR 01	Group of hikers walked the lake.	1	40
+FR/S01	The black birds flew on my head.	2	39
−FR02	Sara got up and moved to the window to open the curtains.	3	38
D01	The children were very happily to see their grandmother.	4	37
+FR/A01	My cousin's family arrived in Dubai yesterday.	5	36
+FR/A02	A small plane crashed into the new building.	6	35
+FR/A03	Sam overslept because he went out last night.	7	34
−FR03	The young lady asked the beggar where he came.	8	33
−FR04	A group of tourists walked around the town for two hours.	9	32
D02	Mrs. Beck's yellow hat looked very beautiful.	10	31
+FR/D01	Mrs. Smith left the room because she was angry.	11	30
+FR/S02	Thirty-five soldiers walked across the field three times.	12	29
+FR/D02	The students entered to the school building.	13	28
−FR05	A 35 year old man drove Edinburgh in a stolen car.	14	27

Index	Sentences	Item number	
		Set 1	Set 2
D03	Her husband was very careful while driving.	15	26
+FR/S03	Different coloured kites flew above the big tree.	16	25
D04	Maria was very happy with her exam results.	17	24
+FR/S04	The train went through the tunnel five minutes ago.	18	23
+FR/A04	She was upset because her son went a lot.	19	22
+FR/D03	The zookeeper approached from the lion cautiously.	20	21
−FR06	Mark felt lonely because he moved a new school.	21	20
+FR/A05	When they got Tokyo, they felt very tired.	22	19
+FR/D04	Sara attended French classes regularly.	23	18
D05	The truck driver was very carefully.	24	17
+FR/S05	They walked through the Millennium Bridge.	25	16
D06	The woman in black seemed very angrily at Ann.	26	15
+FR/A06	Because of the ice, the driver crashed the house.	27	14
−FR07	Edward drove to London in his van to see his family.	28	13
+FR/D05	The runners finally approached the finish line.	29	12
D07	Her parents seemed very angry because she was late.	30	11
+FR/D06	Ruby and her friends entered the science museum.	31	10
+FR/S06	The ball went across the open window and broke the vase.	32	9
+FR/S07	The white cat jumped over the couch.	33	8
+FR/A07	The newly married couple arrived Venice.	34	7
−FR08	The stranger told the villagers where he came from.	35	6
+FR/A08	When he got to Paris, he called his parents.	36	5
D08	The red roses looked very beautifully.	37	4
+FR/D07	He left from the room to get a drink of water.	38	3
+FR/D08	Every member of the sales team attended to the sales conference.	39	2
+FR/S08	The black horse jumped on eight hurdles.	40	1

Appendix 2B: Answer Sheet for the AJT (English Version)

Example:

Sentence no.	I'm Sure this is incorrect	I think this is Incorrect	I think this is Correct	I'm Sure this is correct
1	1	2	3	4
2	1	2	3	4

Main Task

Sentence no.	I'm Sure this is incorrect	I think this is Incorrect	I think this is Correct	I'm Sure this is correct
1	1	2	3	4
2	1	2	3	4
3	1	2	3	4
4	1	2	3	4
5	1	2	3	4
6	1	2	3	4
7	1	2	3	4
8	1	2	3	4
9	1	2	3	4
10	1	2	3	4
11	1	2	3	4
12	1	2	3	4
13	1	2	3	4
14	1	2	3	4
15	1	2	3	4
16	1	2	3	4
17	1	2	3	4
18	1	2	3	4
19	1	2	3	4
20	1	2	3	4
21	1	2	3	4
22	1	2	3	4
23	1	2	3	4
24	1	2	3	4
25	1	2	3	4
26	1	2	3	4
27	1	2	3	4
28	1	2	3	4
29	1	2	3	4
30	1	2	3	4

Sentence no.	I'm Sure this is incorrect	I think this is Incorrect	I think this is Correct	I'm Sure this is correct
31	1	2	3	4
32	1	2	3	4
33	1	2	3	4
34	1	2	3	4
35	1	2	3	4
36	1	2	3	4
37	1	2	3	4
38	1	2	3	4
39	1	2	3	4
40	1	2	3	4

Appendix 2C: Picture Description Task (English Version)

Note:

(i) See Appendix 2I for the pictures that accompanied each test item.

(ii) For convenience, the test sentences appear on sheet but the test pictures appear on a computer screen one by one following the same order of the sheet items.

Instructions: Look at the animated pictures and then fill in the blanks using the verbs given in brackets:

Examples**:**

1. A mouse (**dream**) ……………………………………………… about cheese.
   A mouse is dreaming about cheese.

2. A dolphin (**jump**) ………………………………………………… a hoop.
   A dolphin is jumping through a hoop.

What is going on?

1. A director (**shout**) ………………………………………………a megaphone.
2. A shark (**swim**) …………………………………………………a man.
3. The Titanic (**crash**) ………………………………………………an iceberg.
4. Three cats (**sing**) …………………………………………………together.
5. A fireman (**slide**) …………………………………………………a pole.
6. A turtle (**approach**) ……………………………………………the finish line.
7. An owl (**sleep**) ……………………………………………………a branch.
8. A golf ball (**roll**) …………………………………………………a hole.
9. The sheep (**jump**) ………………………………………………… the fence.
10. A rabbit (**daydream**) ……………………………………………………a carrot.
11. The clowns (**leave**) ……………………………………………the yellow car.
12. Newton (**think**) …………………………………………………an apple.

13. The students (**enter**) …………………………………………………a school.

14. A plane (**fly**) …………………………………………………the world.

15. Cars and buses (**go**) …………………………………………………a bridge.

16. A baby (**cry**) …………………………………………………

17. A hippo (**jump**) …………………………………………………a lake.

18. An African lion (**blink**) …………………………………………………

19. A train (**exit**) ………………………………………………… a tunnel.

20. A man (**climb**) …………………………………………………a mountain.

21. A train (**move**) ……………………………………………… a Christmas tree.

22. Birthday candles (**burn**) …………………………………………………

23. A plane (**fly**) …………………………………………………India.

24. A man (**ski**) …………………………………………………a slope.

Appendix 2D: Acceptability Judgment Task (Arabic Version)

Note:

9i) The Arabic phrases were given in Modern Standard Arabic in Arabic script as they were in the actual test.

(ii) For convenience, the sentences that are given below did not appear on sheet in the actual test. They appeared one by one on a computer screen.

(iii)See Appendix 2E for the answer sheet of the 4-point scale accompanied this task.

(iv) '−FR' in the index indicate items that do not require feature reassembly, whereas '+FR/A', '+FR/D', and '+FR/S' in the index indicate items that require feature reassembly addition, deletion and substitution, respectively.

(v) Example items ('EX' in the index = 'Example'), Distractor items ('D' in the index = 'Distractor').

(vi) The Arabic version of the test used the sentences given below as translations of the English.

تعليمات: أنظر إلى كل جملة تظهر على الشاشة، ثم قرر ما إذا كانت الجملة صحيحة او خاطئة واضعا دائرة حول الرقم الذي يناسبها:

Index	الجمل	Item number	
		Set 1	Set 2
EX01	هذه العبارة جيدة	a	b
EX02	هذه العبارة أخطأ	b	a
−FR 01	مشى مجموعة من المتنزهين البحيرة	1	40
+FR/S01	حلقت طيور سودا ء على رأسي.	2	39
−FR02	نهضت سارة وانتقلت إلى النافذة لتفتح الستارة.	3	38
D01	كان الأطفال بسعادة جدا لرؤية جدتهم.	4	37
+FR/A01	وصلت أسرة ابن عمي في دبي أمس.	5	36
+FR/A02	اصطدمت طائرة صغيرة في المبنى الجديد.	6	35
+FR/A03	تأخر سام في النوم لأنه ذهب خارجا الليلة الماضية.	7	34
−FR03	سألت السيدة شابة المتسول حيث أتى.	8	33
−FR04	سار مجموعة من السياح حول المدينة.	9	32
D02	بدت قبعة السيدة بيك الصفراء جميلة جدا.	10	31
+FR/D01	غادرت السيدة سميث الغرفة لأنها كانت غاضبة.	11	30
+FR/S02	سار خمسة وثلاثون جنديا عبر الميدان.	12	29
+FR/D02	دخل الطلاب إلى مبنى المدرسة.	13	28
−FR05	قاد رجل ذو خمسة وثلاثون عاما سيارته مدينة ادنبره.	14	27
D03	كان زوجها حذرا جدا أثناء القيادة.	15	26
+FR/S03	حلقت طائرات ورقية مختلفة الالوان فوق شجرة كبيرة.	16	25
D04	كانت ماريا سعيدة جدا بنتائج امتحانها.	17	24
+FR/S04	مضى القطار عبر النفق قبل خمس دقائق.	18	23
+FR/A04	كانت مستاءة لأن ابنها ذهب كثيرا.	19	22

Index	الجمل	Item number	
		Set 1	Set 2
+FR/D03	اقترب حارس الحديقة من الأسد بحذر.	20	21
−FR06	شعر مارك بالوحدة لأن انتقل مدرسة جديدة.	21	20
+FR/A05	شعروا بالتعب الشديد عندما وصلوا طوكيو.	22	19
+FR/D04	حضرت سارة حصص الفرنسية بانتظام.	23	18
D05	كان سائق الشاحنة بعناية فائقة.	24	17
+FR/S05	ساروا عبر جسر المليننيوم.	25	16
D06	بدت المرأة في الحلة السوداء غاضبة جدا من آن.	26	15
+FR/A06	صدم السائق المنزل بسبب الجليد.	27	14
−FR07	قاد إدوارد شاحنته إلى لندن لرؤية عائلته.	28	13
+FR/D05	اقترب المتسابقين أخيرا خط النهاية.	29	12
D07	بدا والديها غاضبين جدا لأنها كانت متأخرة.	30	11
+FR/D06	دخلت روبي وصديقاتها متحف العلوم.	31	10
+FR/S06	ذهبت الكرة عبر النافذة مفتوحة وكسرت المزهرية	32	9
+FR/S07	قفز القط الأبيض فوق الأريكة.	33	8
+FR/A07	وصل العرسان الجدد مدينة البندقية.	34	7
−FR08	أخبر الغريب القرويون من حيث أتى.	35	6
+FR/A08	اتصل بوالديه عندما وصل إلى باريس.	36	5
D08	بدت الورود الحمراء بشكل جميل جدا.	37	4
+FR/D07	غادر من الغرفة للحصول على شربة ماء.	38	3
+FR/D08	حضر كل عضو من أعضاء فريق المبيعات إلى مؤتمر المبيعات.	39	2
+FR/S08	قفز الحصان الأسود على ثمانية حواجز.	40	1

Appendix 2E: Answer Sheet on the AJT (Arabic Version)

متأكد انها صحيحة	اعتقد انها صحيحة	اعتقد انها خاطئة	متأكد انها خاطئة	رقم الجملة
4	3	2	1	1
4	3	2	1	2

Main Task

متأكد انها صحيحة	اعتقد انها صحيحة	اعتقد انها خاطئة	متأكد انها خاطئة	رقم الجملة
4	3	2	1	1
4	3	2	1	2
4	3	2	1	3
4	3	2	1	4
4	3	2	1	5
4	3	2	1	6
4	3	2	1	7
4	3	2	1	8
4	3	2	1	9
4	3	2	1	10
4	3	2	1	11
4	3	2	1	12
4	3	2	1	13
4	3	2	1	14
4	3	2	1	15
4	3	2	1	16
4	3	2	1	17
4	3	2	1	18
4	3	2	1	19
4	3	2	1	20
4	3	2	1	21
4	3	2	1	22
4	3	2	1	23
4	3	2	1	24
4	3	2	1	25
4	3	2	1	26
4	3	2	1	27
4	3	2	1	28
4	3	2	1	29
4	3	2	1	30
4	3	2	1	31
4	3	2	1	32
4	3	2	1	33

رقم الجملة	متأكد انها خاطئة	اعتقد انها خاطئة	اعتقد انها صحيحة	متأكد انها صحيحة
34	1	2	3	4
35	1	2	3	4
36	1	2	3	4
37	1	2	3	4
38	1	2	3	4
39	1	2	3	4
40	1	2	3	4

Appendix 2F: Follow-up questionnaire on the AJT (English Version)

Note: Please read each sentence below, which word did you decide incorrect and why? Underline it!

1) A group of hikers walked the lake.
2) The black birds flew on my head.
3) Sara got up and moved to the window to open the curtains.
4) The children were very happily to see their grandmother.
5) My cousin's family arrived in Dubai yesterday.
6) A small plane crashed into the new building.
7) Sam overslept because he went out last night.
8) The young lady asked the beggar where he came.
9) A group of tourists walked around the town for two hours.
10) Mrs. Smith left the room because she was angry.
11) Thirty-five soldiers walked across the field three times.
12) The students entered to the school building.
13) A 35 year old man drove Edinburgh in a stolen car.
14) Her husband was very careful while driving.
15) Different coloured kites flew above the big tree.
16) Maria was very happy with her exam results.
17) The truck driver was very carefully.
18) The train went through the tunnel five minutes ago.
19) Her parents seemed very angry because she was late.
20) She was upset because her son went a lot.
21) The zookeeper approached from the lion cautiously.
22) Mark felt lonely because he moved a new school.
23) When they got Tokyo, they felt very tired.
24) Sara attended French classes regularly.
25) They walked through the Millennium Bridge.
26) The woman in black seemed very angrily at Ann.
27) Because of the ice, the driver crashed the house.
28) Edward drove to London in his van to see his family.
29) The runners finally approached the finish line.
30) Ruby and her friends entered the science museum.
31) The ball went across the open window and broke the vase.
32) The white cat jumped over the couch.
33) The newly married couple arrived Venice.
34) The stranger told the villagers where he came from.
35) When he got to Paris, he called his parents.
36) The red roses looked very beautifully.
37) He left from the room to get a drink of water.
38) Mrs. Beck's yellow hat looked very beautiful.
39) Every member of the sales team attended to the sales conference.
40) The black horse jumped on eight hurdles.

Appendix 2G: Follow-up questionnaire on the AJT (Arabic Version)

(i) The Arabic phrases were given in Modern Standard Arabic in Arabic script as they were in the actual test.

تعليمات: ضع خط أسفل الكلمة التي جعلتك تقرر بأن الجملة خاطئة موضحا السبب؟

1. مشى مجموعة من المتنزهين البحيرة.
2. حلقت طيور سوداء على رأسي.
3. نهضت سارة وانتقلت إلى النافذة لتفتح الستارة.
4. كان الأطفال بسعادة جدا لرؤية جدتهم.
5. وصلت أسرة ابن عمي في دبي أمس.
6. تحطمت طائرة صغيرة في المبنى الجديد.
7. تأخر سام في النوم لأنه خرج الليلة الماضية.
8. سألت السيدة شابة المتسول حيث أتى.
9. سار مجموعة من السياح حول المدينة.
10. غادرت السيدة سميث الغرفة لأنها كانت غاضبة.
11. سار خمسة وثلاثون جنديا عبر الميدان.
12. دخل الطلاب إلى مبنى المدرسة.
13. قاد رجل ذو خمسة وثلاثون عاما سيارته مدينة ادنبره.
14. كان زوجها حذرا جدا أثناء القيادة.
15. حلقت طائرات ورقية مختلفة الالوان فوق شجرة كبيرة.
16. كانت ماريا سعيدة جدا بنتائج امتحانها.
17. كان سائق الشاحنة بحذر جدا.
18. مضى القطار عبر النفق قبل خمس دقائق.
19. بدا والديها غاضبين جدا لأنها كانت متأخرة.
20. كانت مستاءة لأن ابنها يخرج كثيرا.
21. اقترب حارس الحديقة من الأسد بحذر.
22. شعر مارك بالوحدة لأنه انتقل إلى مدرسة جديدة.
23. شعروا بالتعب الشديد عندما وصلوا طوكيو.
24. حضرت سارة حصص الفرنسية بانتظام.
25. ساروا عبر جسر الميلينييوم.
26. بدت المرأة في الحلة السوداء غاضبة جدا من آن.
27. صدم السائق المنزل بسبب الجليد.
28. قاد إدوارد شاحنته إلى لندن لرؤية عائلته.
29. اقترب المتسابقين أخيرا خط النهاية.
30. دخلت روبي وصديقاتها متحف العلوم.
31. دخلت الكرة عبر النافذة المفتوحة وكسرت المزهرية.
32. قفز القط الأبيض على الأريكة.
33. وصل العرسان الجدد مدينة البندقية.
34. أخبر الغريب القرويون من حيث أتى.
35. اتصل بوالديه عندما وصل إلى باريس.
36. بدت الورود الحمراء بشكل جميل جدا.
37. انصرف من الغرفة للحصول على شربة ماء.
38. بدت قبعة السيدة بيك الصفراء جميلة جدا.
39. حضر كل عضو من أعضاء فريق المبيعات إلى مؤتمر المبيعات.
40. قفز الحصان الأسود على ثمانية حواجز.

Appendix 2H: Picture Description Task (Arabic Version)

Note:

(i) See Appendix 2I for the pictures that accompanied each test item.

(ii) The test sentences appeared on sheet but the test pictures appeared on a computer screen one by one.

(iii) The Arabic version of the test used the sentences given below as translations of the English.

(iv)The test was given in Modern Standard Arabic in Arabic script as they were in the actual test.

شاهد الصور المتحرك ومن ثم املأ الفراغات باستخدام الأفعال الواردة ما بين الأقواس :

أمثلة :

1 . (يحلم) الفأر .... بقطعة جبن.

يحلم الفأر بقطعة من الجبن.

2 . (يقفز) الدلفين .... طوق .

يقفز الدلفين من خلال الطوق .

1 . (يصرخ) المخرج .... مكبر للصوت.

2 . (تسبح) سمكة القرش... الرجل.

3 . (تصدم) سفينة تيتانيك... جبل جليدي.

4 .(تغني) ثلاث قطط... سويا.

5 . (ينزلق) رجل الإطفاء... العمود .

6 .(تقترب) السلحفاة... خط النهاية .

7 . (تنام) البومة... فرع شجرة.

8 . (تتدحرج) كرة الغولف... حفرة .

9 . (تقفز) الأغنام... السياج.

10 . (يتخيل) الأرنب .... جزرة .

11 .(يغادر) المهرجين... سيارة اجرة.

12 .(يفكر) نيوتن... تفاحة.

13 .(يدخل) الطلاب... المدرسة.

14 . (تطير) الطائرة... العالم.

15 (تسير) السيارات والحافلات...الجسر.

16 (يبكي) الطفل ....

17 (يقفز) فرس النهر... البحيرة.

18 .(يغمض) أسد الأفريقي...

19 . (يخرج) القطار... النفق .

20 . (يتسلق) الرجل... الجبل.

21 . (يتحرك) القطار... شجرة عيد الميلاد.

22 .(تشتعل) شموع عيد الميلاد...

23 . (تطير) الطائرة... الهند.

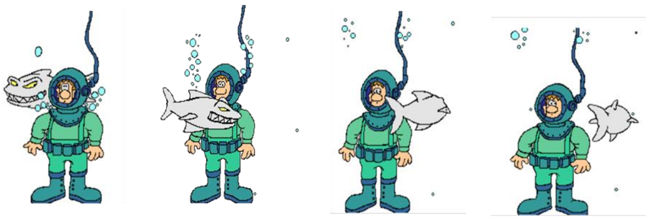
24 . (يتزلج) الرجل... المنحدر .

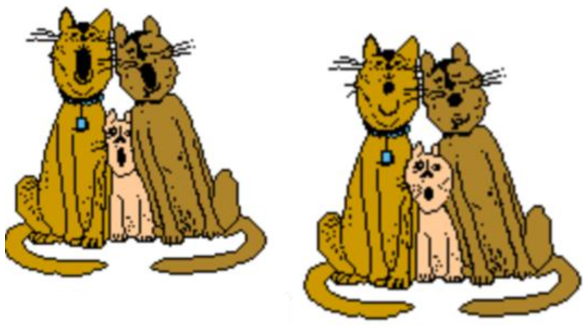
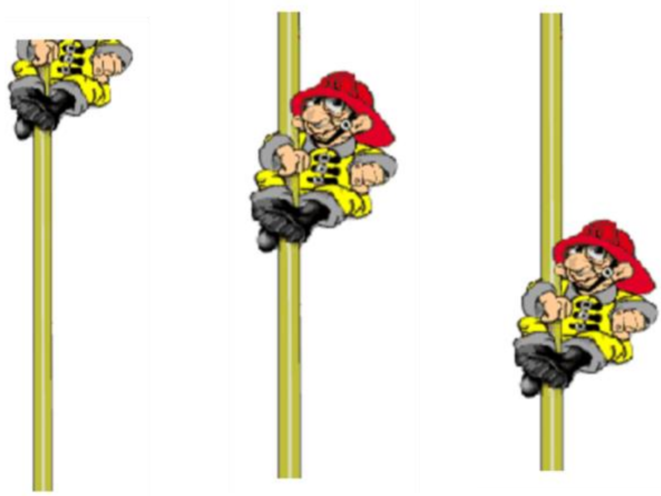
Appendix 2I: Animated Pictures Used in the PDT in Both Versions

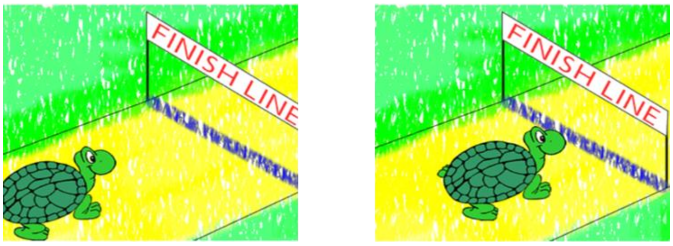
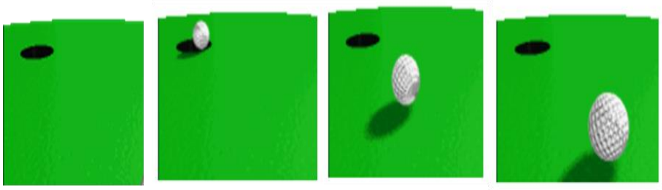
Note:

1. For convenience, the descriptions that are given with the pictures in the table below did not appear in the actual test.
2. The table below presents the written English context for each test item, along with its Arabic translation, without Romanized Arabic and glosses, since these are not crucial for understanding the test. Glosses of the test sentences are also left out.
3. A series of screen shots of all stimuli can be found in the table below. The pictures in the actual test were colored animated GIF (Graphics Interchange Format) images that allow replications. GIF was used to facilitate comprehension of the pictures. Please contact the author about viewing the pictures movements and colors, if necessary.
4. ‘−FR’ in the index indicate items that do not require feature reassembly, whereas ‘+FR/A’, ‘+FR/D’, and ‘+FR/S’ in the index indicate items that require feature reassembly addition, deletion and substitution, respectively.
5. The test type can be identified by the item index. For example, index ‘+FR/A01’ is Type +FR/A, Token 1; ‘+FR/S02’ is Type +FR/S, Token 2, etc.
6. The ‘Item no.’ columns indicate the number of each item in the test orders. Hence, for example, index +FR/D01 was item no. 3 in Order 1, and item no. 22 in Order 2.
7. Example items (‘EX’ in the index = ‘Example’), Distractor items (‘D’ in the index = ‘Distractor’).

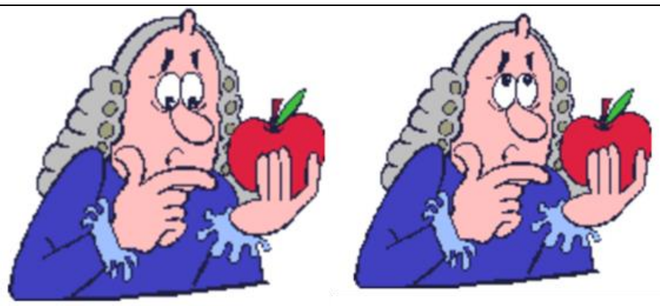
Index	*Context*	*Description*	*Oder*	
			1	*2*
EX01	 (يحلم) الفأر .... بقطعة جبن. A mouse (dream)…… about cheese.	A mouse having sweet dreams about cheese.	a	b

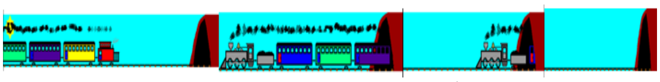
Index	*Context*	*Description*	*Oder*	
			1	*2*
EX02	 (يقفز) الدلفين .... طوق. A dolphin (jump)……… a hoop.	A dolphin jumping through a loop.	b	a
D01	 (يصرخ) المخرج.......................مكبر للصوت. A director (shout)……a megaphone.	A director shouting through a megaphone	1	24
−FR 01	 (تسبح) سمكة القرش.........................الرجل. A shark (swim) ………..…a man.	A shark swimming around a man	2	23

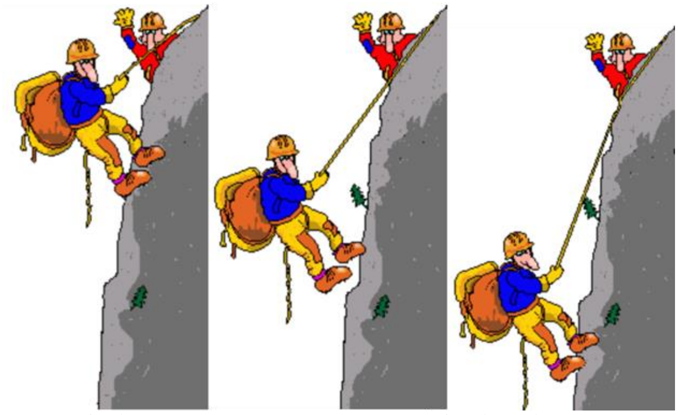
Index	*Context*	*Description*	*Oder*	
			1	*2*
+FR/D 01	 (تصدم) سفينة تيتانيك.................. جبل جليدي. The Titanic (crash) …..an iceberg.	The Titank crashing into an iceberg.	3	22
D02	 (تغني) ثلاث قطط.............................. سويا. Three cats (sing) …………together.	Three cats together singing.	4	21
+FR/D 02	 (ينزلق) رجل الإطفاء......................... العمود. A fireman (slide) ……………a pole.	A fireman sliding down a pole.	5	20

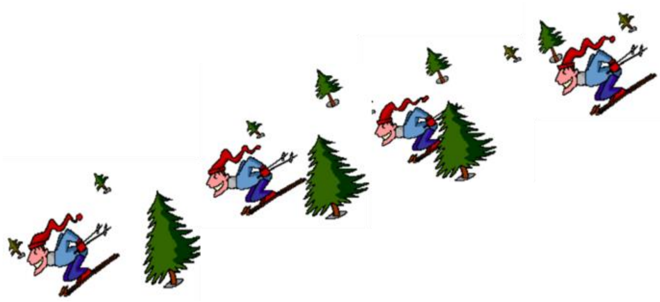
Index	*Context*	*Description*	*Oder*	
			1	*2*
01	 (تقترب) السلحفاة.......................خط النهاية. A turtle (approach) …the finish line.	A turtle approaching a finish line.	6	19
D03	 (تنام) البومة...........................فرع شجرة. An owl (sleep) ……………a branch.	An awl sleeping on a branch.	7	18
+FR/S0 1	 (تتدحرج) كرةالغولف.........................حفرة. A golf ball (roll) …………..a hole.	A gulf ball rolling into a hole.	8	17

Index	*Context*	*Description*	*Oder*	
			1	*2*
+FR/S02	 (تقفز) الأغنام.................................. السياج. The sheep (jump) ……….. the fence.	Sheep jumping over a fence.	9	16
D04	 (يتخيل) الأرنب .... جزرة. .A rabbit (daydream) ……….a carrot	A rabbet daydreaming about a carrot.	10	15
+FR/A02	 .(يغادر) المهرجين....................... سيارة اجرة The clowns (leave) …the yellow car.	Clowns leaving a yellow car.	11	14

Index	*Context*	*Description*	*Oder*	
			1	*2*
D05	 (يفكر) نيوتن.................................. تفاحة. Newton (think) …………an apple.	Newton thinking about an apple.	12	13
+FR/A 03	 (يدخل) الطلاب........................... المدرسة. The students (enter) ………a school.	Students entering an American school.	13	12
−FR02	 (تطير) الطائرة............................... العالم. A plane (fly) ……………the world.	A plane flying around the world.	14	11
+FR/S0 3	 والحافلات.................الجسر (تسير) السيارات. Cars and buses (go) ………a bridge.	Cars and buses going across a bridge.	15	10

Index	*Context*	*Description*	*Oder*	
			1	*2*
D06	 (يبكي) الطفل .... A baby (cry)……………….	A baby crying with arms open.	16	9
+FR/S04	 النهر.......................... البحيرة (يقفز) فرس A hippo (jump) ……………a lake.	A hippo jumping into a lake.	17	8
D07	 (يغمض) أسدالأفريقي................................. An African lion (blink)………………	An African lion blinking.	18	7
+FR/A04	 (يخرج) القطار................................. النفق A train (exit) …………… a tunnel.	A train existing a tunnel.	19	6

Index	*Context*	*Description*	*Oder*	
			1	*2*
+FR/D 03	 (يتسلق) الرجل................................ الجبل A man (climb) …………a mountain.	A man climbing down a mountain.	20	5
−FR03	 (يتحرك) القطار................. شجرة عيد الميلاد A train (move) … a Christmas tree.	A train moving around a Christmas tree.	21	4
D08	 (تشتعل) شموع عيدالميلاد............................ Birthday candles (burn)………………	Birthday candles burning on a pink dish with chocolate topping.	22	3

Index	*Context*	*Descriptio n*	*Oder*	
			1	*2*
−FR04	 الهند ....الطائرة (تطير). A plane (fly) ………………..India.	A plane flying to India.	23	2
+FR/D 04	 المنحدر. ....الرجل (يتزلج) .A man (ski) ………………a slope	A man skiing down a slope	24	1

Appendix 3: Proficiency Tasks

About this appendix

This appendix comprises the following two sections:

- Appendix 3A: The Cloze test used for Study 2.
- Appendix 3B: Cloze test answers (Arabic version).
- Appendix 3C: The original Cloze test (English version).

The actual test is on the following two pages. The English version of the cloze test below is provided for reference. It was not used in the actual proficiency test.

Appendix 3A: Cloze Test (Arabic Translation of the Proficiency Test Passage)

Note: A cloze passage with 40 blanks based on Slabakova (2001) was translated into Arabic and used to assess the participants' proficiency. The original passage was in English and was adapted from Advanced Student's Book by O'Neill *et al*. (1981) as described in Slabakova (2001).

3A.i. Arabic translation of the proficiency test passage:

أملأ الفراغات في القطعة التالية بما يناسبها. يجب أن يكون لكل فراغ كلمة واحدة فقط.

جاء جو الى المنزل بعد __________ من العمل يوم الجمعة. كان يوم الراتب الشهري ،لكنه لم يكن __________ بالحماس لذلك. كان يعلم أن __________ أن يجلس ويدفع __________ ويوضع جانبا المال __________ الخاص بمشتريات مركز التموين، __________ للسيارة و__________ صغير في حساب مدخراته ،لم __________ الكثير ل__________.

فكر بالخروج ل__________ العشاء في مطعمه المفضل ،لكنه لم يكن في مزاج __________. تجول __________ شقته وأكل شطيرة. __________ فترة من الوقت ،لم يستطع ان يمنع نفسه __________ القلق بشأن الوضع المالي.

أخيرا، استقل سيارته وبدأ __________. لم يكن لديه وجهة __________ ،لكنه كان يعلم أنه يريد __________ بعيد عن المدينة __________ يعيش فيها. __________ سيارته __________ قرية هادئة. المناظر الطبيعية جعلته يشعر ب __________. كان شارد الذهن بينما كان يقود سيارته __________ مزارع صغيرة وبدأ __________ بالعيش على قطعة __________ خاصة به ويصبح مكتفي ذاتيا. لطالما __________ دائما حلم بالنسبة __________ ،لكنه لم يفعل __________ لجعله واقع. فكر بالموضوع من __________ النواحي . تمعن في مزايا و__________ العيش __________ الريف و__________ الغذاء بنفسه. تصور __________ مجهزه بأحدث __________ الزراعية لإنتاج محصول. تخيل ان محصوله الزراعي سيكون __________ في __________ السوق وسيجني أموال __________ نتيجة __________

فجأة، توقف جو __________ التفكير وضحك __________ عال __________ ، قائلا "أنا حقا سـ__________ ذلك؟ "

Appendix 3B: Cloze Test Answers

Answers to cloze test items:

1) انتهائه
2) يشعر
3) عليه
4) الفواتير
5) الخاص
6) مبلغ
7) مبلغ
8) يبقى
9) نفسه
10) تناول
11) جيد
12) داخل
13) مرت
14) من
15) القيادة
16) محددة
17) مكان
18) التي
19) قاد
20) نحو
21) الراحة
22) بين
23) يفكر
24) زراعية
25) كان
26) له
27) شيء
28) جميع
29) عيوب
30) بـ
31) انتاج
32) مزرعته
33) الآلات
34) الافضل
35) طائلة
36) مجهوده
37) عن
38) بصوت
39) جدا
40) أفعل

Appendix 3C: Cloze Test (Original Text)

Please fill in the blanks in the following passage. Each blank must have only one word.

Joe came home from work on Friday. It was payday, but he wasn't ____even__ excited about it. He knew that __when___ he sat down and paid his ___bills___ and set aside money for groceries, __gas__ for the car and a small ___deposit____ in his savings account, there wasn't ___too___ much left over for a good __life____.

He thought about going out for ____dinner____ at his favorite restaurant, but he ___just___ wasn't in the mood. He wandered __around____ his apartment and ate a sandwich. ___For_____ a while, he couldn't stop himself __from___ worrying about the money situation. Finally, ____he__ got into his car and started ___driving___. He didn't have a destination in ___mind___, but he knew that he wanted ___to__ be far away from the city ____where____ he lived.

He drove into a quiet country ___road____. The country sights made him feel ___better___. His mind wandered as he drove ___past____ small farms and he began to __imagine_____ living on his own piece of _____land___ and becoming self-sufficient. It had always __been___ a dream of his, but he ___had____ never done anything to make it ___a____ reality. Even as he was thinking, ___his___ logical side was scoffing at his __impractical____ imaginings. He debated the advantages and ___disadvantages_____ of living in the country and _____growing___ his own food. He imagined his __farmhouse____ equipped with a solar energy panel __on__ the roof to heat the house ____in____ winter and power a water heater. ___He___ envisioned fields of vegetables for canning __and___ preserving to last through the winter. ___If___ the crops had a good yield, _maybe______ he could sell the surplus and ___buy__ some farming equipment with the extra ___money____.

Suddenly, Joe stopped thinking and laughed ___out____ loud, "I'm really going to go through with this?"

Appendix 4: Motion Constructions in English and Arabic

About this appendix

This appendix comprises the following two sections:

- Appendix 4A: Some English Particles and their Arabic Counterparts.
- Appendix 4B: Motion Constructions Targeted in the Pilot Study.

Appendix 4A: Some English Particles and their Arabic Counterparts

English Particles	Meaning	Example of English context	Their Arabic counterparts	Example of Arabic context
in	[path: inwards]	The mouse ran in the hole.	*/fii/*	*rakḍa allfar fii aljuḥar.*
into	[path: towards-inwards]	The mouse ran into the hole	*/fii/ila/ila dakhil/*	*rakḍa allfar fii/ila/ila dakhil aljuḥar.*
on	[path: onwards]	The mouse jumped on the sofa.	*/fawqa/ala/*	*qafaza allfar fawqa/9la/ila/alarik.*
onto	[path: towards-onwards]	The mouse jumped onto the sofa.	*/fawqa/9la/ila/*	*qafaza allfar ila alarika.*
over	[path: onwards]	The mouse jumped over the sofa.	*/fawqa/ala/*	*qafaza allfar fawqa /9la alarika.*
up	[path: upwards]	The mouse climbed up the ladder.	*/?9la/*	*tasalaq allfar 9la alsulam.*
down	[path: downwards]	The mouse climbed down the ladder.	*/asfel/*	*tasalaq allfar asfal alsulam.*

Appendix 4B: Motion Constructions Targeted in the Pilot Study

1. The table lists all the motion constructions pre-the main study including those the investigator used in the pilot study.
2. The table shows the Arabic motion constructions and their English counterparts.
3. The examples are given in English contexts if FR does not take place and the L1 feature based of the L2 learners remained unchanged.
4. The last three columns on the right show whether FR is needed or not [+/−] and if it is needed what type of FR is required; Substitution (S), Addition (A) and Deletion (D) of particles with [path]. Description specifies the targetlike particle needed in the given context.
5. For example, the motion verb *y'qtaḥim* 'break-into' has the English counterpart *break into.* Hence, feature reassembly is needed and in the case of Arabic learners of English, for instance, they have to add the particle *into* to the verb in order to accommodate the target feature set…etc.
6. The suggested FR avenues here are from L1 Arabic L2 English. The other way around will apply to L1 English L2 Arabic.

no.	Arabic con.	English con.	Example of L2 production of English con.	FR	FR avenue	Description
.1	*y'qtaḥim* 'break-into'	*break into*	**A bugler broke the house.*	+	A	*into*
.2	*y'rkudu ila* 'run to'	*run into*	*A mouse ran into the hole.*	+	S	*into*
.3	*y'ṭir* min 'fly from'	*fly out of*	*The bees flew out of the beehive.*	+	S	*out of*
.4	*y'hrub min* 'escape'	*run away from*	*A thief ran away from the jail.*	+	A	*away from*
.5	*y'khruj min* 'exit from'	*come out of*	*The yellow bird came out of the birdhouse.*	+	S	*out of*
.6	*y'ṣil* 'arrive'	*arrive in*	** The Simmons arrived Paris.*	+	A	*in*
.7	*y'tzalaj* 'ski'	*ski down*	**Bill skied a slope*	+	A	*down*
.8	*y't'slq* q'climb'	*climb up*	*lizard climbed a mountain.*	+	A	*up*
.9	*y't'slq* 'climb'	*climb down*	*Noah climbed a mountain.*	+	A	*down*
.10	*y'nzil* 'drop'	*drop down*	*A spider dropped on a web*	+	A	*down*
.11	*y'nzaliq* 'slide'	*slide down*	*A fireman slid a pole.*	+	A	*down*
.12	*y'qfiz fii* 'jump in'	*jump into*	*A hippo jumped in the lake.*	+	S	*into*
.13	*y'qfiz 9la* 'jump on'	*jump onto*	*A frog jumped on a lilly pad.*	+	S	*onto*
.14	*y'ġadir min* 'leave from'	*leave*	**Clowns left from a taxi.*	+	D	*Ø*
.15	*y'ṭir* 'fly'	*fly up*	*Balloons flew to the sky.*	+	A	*up*
.16	*y'tḥr'k ḥawla* 'move around'	*move around*	*A train moved around a tree.*	−		*n/d*
.17	*y'sbh ḥawla* 'swim around'	*swim around*	*A shark swam around a man.*	−		*n/d*
.18	*y'adkhul ila* 'enter to'	*enter*	**The goose entered to the barn.*	+	D	*Ø*
.19	*y'akhruj min* 'exit from'	*exit*	**The actress exited from the stage.*	+	D	*Ø*
.20	*y'qt'rib min* 'approach from'	*approach*	**A turtle approached from the finish line.*	+	D	*Ø*
.21	*y'qudu ila* 'drive to'	*drive to*	*Max drove to London.*	−	*n/d*	*n/d*
.22	*y'taḥark ila* 'move to'	*move to*	*A dragonfly moved to the window.*	−	*n/d*	*n/d*
.23	*y'sir ḥawla* 'walk around'	*walk around*	*Summer walked around the lake.*	−	*n/d*	*n/d*
.24	*y'ṣṭim* 'crash'	*crash into*	**The plane crashed the building.*	+	A	*into*
.25	*y'qfiz 9la* 'jump on'	*jump over*	**A kangaroo jumped on the fence.*	+	S	*over*

no.	**Arabic con.**	**English con.**	**Example of L2 production of English con.**	**FR**	**FR avenue**	**Description**
.26	*y'sir 9la* 'go on'	*go across*	**The cars went on the bridge.*	+	S	*across*
.27	*y'tadaḥ raj fii* 'roll in'	*roll into*	*The gulf ball rolled into the hole.*	+	S	*into*
.28	*y'ṭir ila* 'fly to'	*fly to*	*The plane flew to India.*	−	*n/d*	*n/d*
.29	*y'ta* ḥ*ark ḥawla* 'move around'	*move around*	*The train moved around the tree.*	−	*n/d*	*n/d*
.30	*y'ṭir ḥawla* 'fly around'	*fly around*	*The plane flew around the world.*	−	*n/d*	*n/d*
.31	*y'sir abra* 'Go across'	*go through*	**Jack went across the forest.*	+	S	*through*
.32	*y'sir abra* 'walk through'	*walk across*	**Lucy walked through the desert.*	+	S	*across*
.33	*y'ṭir 9la* 'fly on'	*fly above*	**Abigail flew on the city.*	+	S	*above*
.34	*y'ṣil* 'get'	*get to*	**How to get the train station?*	+	A	*to*
.35	*y'khruj*'go'	*go out*	**Last Friday night, Olivia went with her friends*	+	A	*out*
.36	*y'rkudu kalif* 'run behind'	*run after*	*The wolf ran after the sheep.*	+	S	*after*
.37	*y'9wdu ila* 'return to'	*return*	**Sophie returned to home late.*	+	D	*Ø*
.38	*y'siru 9la* 'follow on'	*follow*	**Eve followed on her mother's steps.*	+	D	*Ø*
.39	*y'thh'b* 'go'	*go on*	**Lee went a trip.*	+	A	
.40	*y'thh'b ila* 'go to'	*go*	**Ed went to home happily.*	+	D	*Ø*
.41	*y'dkhul fii d'khel* 'enter in inside'	*get in*	**Get in inside the car!*	+	D	*Ø*
.42	*y'gfiz khlal* 'jump across'	*jump through*	*A dolphin jumped through a loop.*	+	S	*through*
.43	*y'squṭ* 'fall'	*fall down*	*A camel skated and fell.*	+	A	*down*
.44	*yanqaḍ 9la* 'attcked on'	*fly down*	*A hawk flew to attack its prey.*	+	A	*down*
.45	*y'khruj min*'exit from'	*come out of*	*A huge worm came from the mud.*	+	S	*out of*
.46	*y's9d* 'ascend'	*go up*	*Vertical bar with white ants went up one after another.*	+	A	*up*
.47	*y'dkhul fii*'enter in'	*go in*	*A basketball entered the hoop.*	+	S	*in*

no.	Arabic con.	English con.	Example of L2 production of English con.	FR	FR avenue	Description
.48	*y'aqfiz min* 'pop from'	*pop out of*	*A deer popped up of a box.*	+	S	*out of*
.49	*y'asir nazilan* 'walk decending'	*walk down*	*Soldiers walked downhill.*	+	A	*down*
.50	*y'aḍhar min* 'came from'	*came up out of*	*Little hedgehog came up out of a stocking.*	+	S	*up out of*
.51	*y'ahbeṭ* 'rappel'	*rappel down*	*David rappelled down a rope.*	+	A	*down*
.52	*y'qfiz* 'jump'	*jump up and down*	*A monkey jumped up and down.*	+	A	*up and down*
.53	*y'hrub min* 'escape from'	*run away from*	*An elephant ran away from an arrow.*	+	S	*away from*
.54	*y'qfiz min*'jump from'	*jump out of*	*A white bunny jumped out of a top hat.*	+	S	*out of*
.55	*y'arkaab* 'ride'	*ride up*	*A happy bunny rode a carrot rocket up to the stars.*	+	A	*up*
.56	*y'arkaab* 'ride'	*ride down*	*A penguin rode on a snowboard down the hill.*	+	A	*down*
.57	*y'anzil* 'descend'	*run down*	*A package ran down a ladder.*	+	A	*down*
.58	*y'ḍṭaji*9 lay'	*lay down*	*Eric lay down.*	+	A	*down*
.59	*y'azḥaf min*'crawl from'	*crawl out of*	*A rabbet crawled out of a large pocket.*	+	S	*out of*
.60	*y'aqif* 'get'	*get up*	*A lion got up and walked away.*	+	A	*up*
.61	*y'squṭ fii* 'fall in'	*fall into*	*A hamster fell into a hole.*	+	S	*into*
.62	*y'aqfiz min* 'hop from'	*hop out of*	*A goldfish hopped out of the water.*	+	S	*out of*
.63	*y'nḥani*'bend'	*bend down*	*A giraffe bent and looked around.*	+	A	*down*
.64	*y'ta'zlj*'sled'	*sled down*	*A fox sled down a hill.*	+	A	*down*
.65	*y'qif* 'stand'	*stand up*	*A cat stood up for some milk.*	+	A	*up*
.66	*y'aḍhher min* 'emerge from'	*emerge from*	*A pig emerged from his house.*	–	*n/d*	*n/d*
.67	*y'lḥaq*'chase'	*chase away*	*A dog chased a cat away.*	+	A	*away*
.68	*y'khruj min* 'exist from'	*get out of*	*A criminal tried to get out of a jail cell by opening the door.*	+	S	*out of*

no.	Arabic con.	English con.	Example of L2 production of English con.	FR	FR avenue	Description
.69	*y*’*nzil* ‘descend’	*go down*	*A ladybird went down.*	+	A	*down*
.70	*y’jles* ‘sit’	*sit up*	*A baby in a carriage sat up and cried.*	+	A	*up*
.71	*y’khli* ‘clear’	*bail out*	*The pilot bailed out swiftly from the burning aircraft.*	+	A	*out*

Appendix 5: Results on Distractor

About this appendix:

This appendix relates to the qualitative results, and should be used in combination with Chapter 7. The following appendices are offered:

- Appendix 5A: Results of the AJT Distractor Items by AE and EE.
- Appendix 5B: Results of the PDT Distractor Items by AE and EE.
- Appendix 5C: Results of the AJT Distractor Items by EA and AA.
- Appendix 5D: Results of the AJT Distractor Items by EA and AA.

Appendix 5A: Results of the AJT Distractor Items by AE and EE.

groups	Q04 ID1	result	Q14 CD1	result	Q16 CD2	result	Q17 ID2	result	Q19 CD3	result	Q26 ID3	result	Q36 ID4	result	Q38 CD4	result
AE																
		42		39		58		34		46		52		43		41
%		70		65		96		56.6		76.6		86.6		71.6		68.3
EE																
		19		18		19		19		19		20		17		20
%		95		90		95		95		95		100		85		100

Appendix 5B: Results of the PDT Distractor Items by AE and EE.

groups	Q01		Q04		Q07		Q10		Q12		Q16		Q18		Q22	
	D1	result	D2	result	D3	Result	D4	Result	D5	Result	D6	result	D7	result	D8	result
AE																
		19		60		38		29		42		60		59		59
%		31.6		100		63.3		48.3		70		100		98.3		98.3
EE																
		19		20		19		20		19		20		20		20
%		95		100		95		100		95		100		100		100

Appendix 5C: Results of the AJT Distractor Items by EA and AA.

groups	Q04 ID1	result	Q14 CD1	result	Q16 CD2	result	Q17 ID2	result	Q19 CD3	result	Q26 ID3	result	Q36 ID4	result	Q38 CD4	result
EA		1		1		0		1		0		0		0		1
		7		15		15		10		10		14		5		10
%		35%		75%		75%		50%		50%		70%		25%		50%
AA		1		1		1		1		1		0		0		1
		13		19		17		18		15		13		5		15
%		65%		95%		85%		90%		75%		65%		25%		75%

Appendix 5D: Results of the AJT Distractor Items by EA and AA.

groups	Q01 D1	result	Q04 D2	result	Q07 D3	result	Q10 D4	result	Q12 D5	result	Q16 D6	result	Q18 D7	result	Q22 D8	result
EA																
		16		18		20		0		9		20		20		18
%		80		90		100		0		45		100		100		90
AA																
		20		20		20		20		20		20		20		19
%		100		100		100		100		100		100		100		95

Appendix 6: Qualitative Results

About this appendix:

This appendix relates to the qualitative results, and should be used in combination with Chapter 7. The following appendices are offered:

- Appendix 6A: Responses on the follow-up questionnaire by the Arabic speakers of English.
- Appendix 6B: Responses on the PDT by the Arabic speakers of English.
- Appendix 6C: Responses on the follow-up questionnaire by the English speakers of Arabic.
- Appendix 6D: Responses on the PDT by the English speakers of Arabic.

Appendix 6A: Responses on the Follow-up questionnaire by the Arabic Speakers of English

The table below shows the set of sentences for the follow-up questionnaire on the AJT, the expected response and the actual responses given by the L2 speakers. Other irrelevant responses were ignored.

FR [+/−]	THE CONTEXT	TARGETLIKE FORMS	FORMS GIVEN BY THE AE GROUP						
−FR	A group of tourists walked around the town for two hours.	*walk around* ‘y’asir ḥawla’							
	*A group of hikers walked the lake.		to	around	*through	*throughout	*cross	In/on	beside
	The stranger told the villagers where he came from.	*come from* ‘y’a?ti min’							
	*The young lady asked the beggar where he came.		from						
	Edward drove to London in his van to see his family.	*drive to* ‘y’aqudu ila’							
	*A 35 year old man drove Edinburgh in a stolen car.		to						
	Sara got up and moved to the window to open the curtains.	*move to* ‘y’atḥark ila’							
	*Mark felt lonely because he moved a new school.		to	*into					
Type 2a (+FR)	Different coloured kites flew above the big tree.	*fly over* ‘y’aṭir fawqa’							
	*The black birds flew on my head		over	*to	*above	*up			

	Thirty-five soldiers walked across the field three times.	*walk across* ‘y’asir 9bra’							
	*They walked through the Millennium Bridge.		across	*throughout	*on	*over			
	The train went through the tunnel five minutes ago.	*go through* ‘y’ḏahbat 9bra/min khilal’							
	*The ball went across the open window and broke the vase.		through	into	*across to				
	The white cat jumped over the couch.	*jump over* ‘y’aqfiz fawqa’							
	*The black horse jumped on eight hurdles.		*above	*of	*through	*to	*in	*Ø	*up
Type 2b (+FR)	Sam overslept because he went out last night.	*‘go out’*							
	*She was upset because her son went a lot.		out	*for					
	When he got to Paris, he called his parents.	*get to* ‘y’aṣil ila’							
	*When they got Tokyo, they felt very tired.		to						
	A small plane crashed into the new building.	*crash into* ‘y’aṣṭdim (fii/9la)’							
	*Because of the ice, the driver crashed the house.		into	*on	*in				
	My cousin's family arrived in Dubai yesterday.	*arrive in* ‘y’aṣil’							

	*The newly married couple arrived Venice.		*at	*to					
	Ruby and her friends entered the science museum.	*enter* 'y'adkhul ila'							
	*The students entered to the school building.		Ø	*in	*into				
	The runners finally approached the finish line.	*approach* 'y'aqtarib min/ila'							
Type 2c (+FR)	*The zookeeper approached from the lion cautiously		Ø	*to					
	Mrs. Smith left the room because she was angry.	*leave* *'y'aġadir min'*							
	*He left from the room to get a drink of water.		Ø	*of					
	Sara attended French classes regularly.	*attend* *'y'aḥdur ila'*							
	*Every member of the sales team attended to the sales conference.		Ø	*in	*at				

Appendix 6B: Responses on the PDT by the Arabic Speakers of English

Note:

(i)The table below presents the responses for each animated picture by AE. English forms are in bold whilst their Arabic equivalent forms are given between brackets.

(ii) For each test item, the target motion construction is given in both English and Arabic. The picture description is provided in English followed by the responses given by the AE in English.

FR[+/−]	*English Con.*	*Their Arabic counterparts*	*Responses of the Arabic learners of English on the PDT*
−FR	swim around	*y'asbaḥ ḥawla*	Picture description: A shark swimming around a man. Responses: a. A shark is swimming **around** a man (*ḥawla*) b. *A shark is swimming ^ a man. c. *A shark is swimming **to** a man. (*ila*) d. *A shark is swimming **over** a man.(*9la*)
	fly around	*y'aṭir ḥawla*	Picture description: A plane flying around the world. Responses: a.A plane is flying **around** the world. (*ḥawla* b. A plane is flying **over** the world. (*9la*) c. *A plane is flying ^ the world.

FR[+/−]	*English Con.*	*Their Arabic counterparts*	*Responses of the Arabic learners of English on the PDT*
	move around	*y'ataḥrak ḥawla*	Picture description: A train moving around a Christmas tree. Responses: a. A train is moving **around** a Christmas tree. (*ḥawla*) b. *A train is moving ^ a Christmas tree.
	fly to	*y'aṭir ila*	Picture description: A plane flying to India. Responses: a. A plane is flying **to** India. (*ila*) b. *A plane is flying ^ India.(*yaṭir*) c. A plane is flying **throughout** India. (*khelaala)* d. A plane is flying **above** India. (*fawqa)* e. A plane is flying **over** India. (*9la)* f. A plane is flying **across** India.(*9bra)*
Type 2a (+FR)	roll into	*y'atadḥraj ila*	Picture description: A golf ball rolling into a hole. Responses: a. A golf ball is rolling **into** a hole. (*fii*) b. *A golf ball is rolling **on** a hole. (*9la*) c. *A golf ball is rolling ^ a hole. d. A golf ball is rolling **to** a hole. (*ila)* e. A golf ball is rolling **towards** a hole. (*bettejaah)* f. A golf ball is rolling **in** a hole. (*fii)*
	jump over	*y'aqfiz fawqa/9la*	Picture description: Sheep jumping over the fence. Responses: a. The sheep is jumping **over** the fence.*(fawqa)*

FR[+/−]	*English Con.*	*Their Arabic counterparts*	*Responses of the Arabic learners of English on the PDT*
			b. *The sheep is jumping **up** the fence. (*9la)* c. *The sheep is jumping **above** the fence. (*fawqa)* d. *The sheep is jumping **to** the fence. (*ila)* e. *The sheep is jumping **through** the fence. (khelaala*)* f. The sheep is jumping **on** the fence. (9la*)* g. The sheep is jumping ^ the fence.
	go across	*y'asir fawaq/9la*	Picture description: Cars and buses going across a bridge. Responses: a. Cars and buses are going **across** bridge. (*9bra*) b. *Cars and buses are going **under** a bridge. (*tahta*) c. *Cars and buses are going **by** a bridge. (*biwasiṭat*) d. *Cars and buses are going **through/throughout** a bridge. (*khelaala*) e. *Cars and buses are going **into** a bridge. (*fii*) f. *Cars and buses are going **inside** a bridge. (*beddakhel*) g. *Cars and buses are going **above** a bridge. (*fawqa*) h. *Cars and buses are going ^ a bridge. i. Cars and buses are going **on** a bridge. (*9la*) j. Cars and buses are going **over** a bridge. (*fawqa*)
	jump into	*y'aqfiz fii*	Picture description: A hippo jumping into a lake. Responses: a. A hippo is jumping **into** a lake. (*fii*) b. *A hippo is jumping **over** a lake. (*fawqa*)

FR[+/−]	*English Con.*	*Their Arabic counterparts*	*Responses of the Arabic learners of English on the PDT*
			c. *A hippo is jumping **on** a lake.(*9la*) d. *A hippo is jumping ^ a lake. e. *A hippo is jumping **to** a lake. (*ila*) f. A hippo is jumping **in** a lake. (fii)
Type 2b (+FR)	crash into	*y'aṣṭadam (bii/fii)*	Picture description: The Titanic crashing into an iceberg. Responses: a. The Titanic is crashing **into** an iceberg. (*fii*) b. *The Titanic is crashing **at** an iceberg.(*9la*) c. * The Titanic is crashing **with** an iceberg. (*bii*) d. *The Titanic is crashing **in** an iceberg. (*fii*) e. *The Titanic is crashing **by** an iceberg. (*biwasiṭat*) f. *The Titanic is crashing ^ an iceberg. g. The Titanic is crashing on an iceberg. (*9la*)
	slide down	*y'anzaliq 9la*	Picture description: A fireman sliding down a pole. Responses: a. A fireman is sliding **down** a pole. (*asfal*) b. A fireman is sliding **on** a pole. (*9la*) c. *A fireman is sliding **from** a pole. (*m*in) d. *A fireman is sliding **over** a pole. (*fawqa*) e. *A fireman is sliding **through** a pole. (*khelaala*) f. *A fireman is sliding **in** a pole. (*fii*) g. *A fireman is sliding **into** a pole. (*fii*) h. *A fireman is sliding **with** a pole. (*bii*)

FR[+/−]	*English Con.*	*Their Arabic counterparts*	*Responses of the Arabic learners of English on the PDT*
			i. A fireman is sliding **by** a pole. (*biwasiṭat*) j. *A fireman is sliding ^ a pole.
	climb down	*y'atasalaq*	Picture description: A man climbing down a mountain. Responses: a. A man is climbing **down** a mountain. (*asfel*) b. *A man is climbing **to up** a mountain. (*ila'ala/fawqa*) c. *A man is climbing **in** a mountain. (*fii*) d. A man is climbing **on** a mountain. (*9la*) e. A man is climbing **over** a mountain. (*fawqa*) f. A man is climbing ^ a mountain.
	ski down	*y'atazalaj*	Picture description: A man skiing down a slope. Responses: a. A man is skiing **down** a slope.(*asfel*) b. A man is skiing **in** a slope.(*fii*) c. A man is skiing **over** a slope.(*fawqa*) d.*A man is skiing **among** a slope.(*bina*) e.*A man is skiing **with** a slope.(*bii*) f.*A man is skiing **from** a slope.(*min*) g.*A man is skiing **at** a slope.(*9nda*) h.*A man is skiing **through** a slope.(*khelaala*) i.*A man is skiing **by** a slope.(*bi/biwaiṭat*) j. A man is skiing **on** a slope.(*9la*) k. A man is skiing **along** a slope.(*9la ṭool*)

FR[+/−]	*English Con.*	*Their Arabic counterparts*	*Responses of the Arabic learners of English on the PDT*
			l.*A man is skiing ^ a slope.
Type 2c (+FR)	*approach*	*y'aqtarib min/ila*	Picture description: A turtle approaching the finish line. Responses: a. A turtle is approaching the finish line. b.*A turtle is approaching **to** the finish line. (*ila*) c.*A turtle is approaching **in** the finish line. (*fii*) d.*A turtle is approaching **on** the finish line. (*9la*) e.*A turtle is approaching **across** the finish line. (*9bra*) f.*A turtle is approaching **through** the finish line. (*khelaala*)
	leave	*y'uġadir min*	Picture description: Clowns leaving the yellow car. Responses: a. The clowns are leaving the yellow car. b.*The clowns are leaving **from** the yellow car. (*min*) c.*The clowns are leaving **out** the yellow car. (*khaarej*)
	enter	*y'adkhul ila/fii*	Picture description: Students entering a school. Responses: a. The students are entering a school. b.*The students are entering **to** a school. (*ila*) c.*The students are entering **into** a school.(*fii*) d.*The students are entering **in** a school. (*fii*) e.*The students are entering **at** a school. (*9nda*)

FR[+/−]	*English Con.*	*Their Arabic counterparts*	*Responses of the Arabic learners of English on the PDT*
	exit	*y'akhruj min*	Picture description: A train exiting a tunnel. Responses: a. A train is exiting a tunnel. b. A train is exiting **out** a tunnel. (*kharij*) c.*A train is exiting **through** a tunnel. (*khilala*) d.*A train is exiting **of** a tunnel. (*min*) e.*A train is exiting **into** a tunnel. (*fii*) f.*A train is exiting **to** a tunnel. (*ila*) g.*A train is exiting **cross** a tunnel. (*9bra*) h. A train is exiting **from** a tunnel. (*min*)

Appendix 6C: Responses on the Follow-up questionnaire by the English Speakers of Arabic

(i) The table below shows the set of sentences for the follow-up questionnaire on the AJT, the expected response and the actual responses given by the L2 speakers .

(ii) Other irrelevant responses were ignored.

(iii) The Arabic phrases were given in Modern Standard Arabic in Arabic script as they were in the actual test.

FR [+/−]	The context	Targetlike forms	forms given by the EA group				
−FR	A group of tourists walked around the town for two hours.	*y'asir ḥawla* 'walk around'	*ila*				
	*A group of hikers walked the lake.		*ila*	*fii*	*naḥwa*	*lel*	
	The stranger told the villagers where he came from.	*y'a?ti min* 'come from'					
	*The young lady asked the beggar where he came.		*min*				
	Edward drove to London in his van to see his family.	*y'aqudu ila* 'drive to'					
	*A 35 year old man drove Edinburgh in a stolen car.		*ila*	*fii*	*naḥwa*	*dakhil*	*mutajihan ila*
	Sara got up and moved to the window	*y'aṭhark*	*naḥwa*	*bitijah*			

FR [+/−]	The context	Targetlike forms	forms given by the EA group				
	to open the curtains.	*ila* 'move to'					
	*Mark felt lonely because he moved a new school.						
Type 2a (+FR)	Different coloured kites flew above the big tree.	*y'aṭir fawqa* 'fly over'	*ḥawla*				
	*The black birds flew on my head		*ḥawla*	*fawq*	**min 9la*		
	Thirty-five soldiers walked across the field three times.	*y'asir 9bra* 'walk across'	*ḥawla*	*fii*	*dakhil*		
	*They walked through the Millennium Bridge.		*fawq*	*fii*	*min 9la*		
	The train went through the tunnel five minutes ago.	*ḏahbat 9bra/min khilal* 'go through'	*dakhil*				
	The ball went across the open window and broke the vase.						
	The white cat jumped over the couch.	*y'aqfiz fawqa* 'jump over'	*fawqa*				
	*The black horse jumped on eight		*fawqa*	Ø			

FR [+/−]	The context	Targetlike forms	forms given by the EA group				
	hurdles.						
Type 2b (+FR)	Sam overslept because he went out last night.	‘go out’					
	*She was upset because her son went a lot.						
	When he got to Paris, he called his parents.	*y’aṣil ila* ‘get to’					
	*When they got Tokyo, they felt very tired.		*ila*				
	A small plane crashed into the new building.	*y’aṣṭdim (fii/9la)* ‘crash into’	*9la*				
	*Because of the ice, the driver crashed the house.						
	My cousin's family arrived in Dubai yesterday.	*y’aṣil* ‘arrive in’	*ila*				
	*The newly married couple arrived Venice.		*ila*				
	Ruby and her friends entered the science museum.	*y’adkhul ila*	*fii*	*ila*			

FR [+/−]	The context	Targetlike forms	forms given by the EA group				
Type 2c (+FR)	*The students entered to the school building.	‘enter’	*fii*	Ø			
	The runners finally approached the finish line.	*y’aqtarib min/ila* ‘approach’	*li*	Ø	*ila*	*min*	
	*The zookeeper approached from the lion cautiously		*fii*	Ø	*min*		
	Mrs. Smith left the room because she was angry.	*y’aġadir min* ‘leave’			*min*		
	*He left from the room to get a drink of water.			Ø			
	Sara attended French classes regularly.	*y’aḥdur ila* ‘attend’	*9la*				
	*Every member of the sales team attended to the sales conference.		*9la*	Ø			

Appendix 6D: Responses on the PDT by the English Speakers of Arabic

Note:

1. The table below presents the responses for each animated picture by EA. Arabic forms are in bold whilst their English equivalent forms are given between brackets.
2. For each test item, the target motion construction is given in both Arabic and English. The picture description is provided in English followed by the responses given by the EA in Arabic.
3. For convenience, the Arabic phrases were actually given in Modern Standard Arabic in Arabic script, but are quoted here in transliteration in order to make them accessible for non-Arabic readers.

[+/−]FR	Arabic Con.	Their English counterparts	Responses of the English learners of Arabic on the PDT
−FR	*y'asbaḥ ḥawla*	swim around	Picture description: A shark swimming around a man. Responses: a. *tasbaḥ smakaht alqresh* ***ḥawla*** *arajul.(around)* b.**tasbaḥ smakaht alqresh* ***m9*** *arajul.(with)* c. *tasbaḥ smakaht alqresh* ***amam*** *arajul.(in front of)* d. *tasbaḥ smakaht alqresh* ***bijaneb*** *arajul.(beside)* e. *tasbaḥ smakaht alqresh* ***9bra*** *arajul.(across)*
	y'aṭir ḥawla	fly around	Picture description: A plane flying around the world. Responses: a. *taṭir alṭ?rah* ***ḥawla*** *al9alam.(around)* b. *taṭir al ṭ?rah* ***fii*** *al9alam.(in)* c. *taṭir alṭ?rah ^ al9alam.* d. *taṭir al ṭ?rah* ***9bra*** *al9alam.(across)*
	y'ataḥrak ḥawla	move around	Picture description: A train moving around a Christmas tree . Responses: a. *y'atḥark alqiṭar* ***ḥawla*** *shajerat 9id almilad.(around)* b. *y'atḥark alqiṭar* ***min ḥawla*** *shajerat 9id almilad.(from around)* c. *y'atḥark alqiṭar* ***tahat*** *shajerat 9id almilad.(under)* d.**y'atḥark alqiṭar* ***9la*** *shajerat 9id almilad.(on)*

[+/−]FR	Arabic Con.	Their English counterparts	Responses of the English learners of Arabic on the PDT
−FR	*y'aṭir ila*	fly to	Picture description: A plane flying to India. Responses: a. *taṭir alt?'erah* ***ila*** *alhind.(to)* b. *taṭir alt?''erah* ***min*** *alhind. (from)* c. *taṭir alt?erah ^ alhind.* d. *taṭir alt?'erah* ***fawqa*** *alhind. (above)* e. *taṭir alt?'erah* ***9bra*** *alhind.(across)* f. *taṭir alt?'erah* **mtwajih** *llhind. (towards)*
Type 2a (+FR)	*y'atadḥraj ila*	roll into	Picture description: A golf ball rolling into a hole . Responses: a. *tadḥrajat kurat algulf* ***ila*** *alḥufrah.(to)* b. *tadḥrajat kurat algulf* ***fii*** *alḥufrah. (in)*
	y'aqfiz fawqa	jump over	Picture description: Sheep jumping over the fence. Responses: a. *taqfiz alaġnam* ***9la*** *asiaj*. (on) b. *taqfiz alaġnam* ***fawqa*** *asiaj*.(over)
	y'asir fawaq/9la	go across	Picture description: Cars and buses going across a bridge. Responses: a. *tasir al-siarat wa al-ḥaflat* ***fawqa*** *aljser. (above)* b. *tasir alsiarat wa al-ḥaflat* ***9la*** *aljser. (on)* c. *tasir alsiarat wa alḥaflat* ***9bra*** *aljser. (across)* d. *tasir alsiarat wa alḥaflat* ***fii*** *aljser.(in)* f. *tasir alsiarat wa alḥaflat ^ aljser.*
	y'aqfiz fii	jump into	Picture description: A hippo jumping into a lake. Responses: a. *yagfiz faras alnahar* ***fii*** *albuḥerah.(in)* b. *yagfiz faras alnahar* ***ila*** *albuḥerah.(to)* c. *yagfiz faras alnahar* ***nazla*** *albuḥerah.(down)*
Type 2b (+FR)	*y'aṣṭadam (bii/fii)*	crash into	Picture description: The Titanic crashing into an iceberg. Responses: a. *taṣṭadem safinat Titanic* ***fii*** *jabal jalidi. (in)* b. *taṣṭadem safinat Titanic* ***tahta*** *jabal jalidi. (under)* c. *taṣṭadem safinat Titanic* ***min*** *gebal jabal (by)jalidi.* d. *taṣṭadem safinat Titanic* ***besabab*** *jabal jalidi.(because)* e. *taṣṭadem safinat Titanic* ***9la*** *jabal jalidi.*

[+/−]FR	Arabic Con.	Their English counterparts	Responses of the English learners of Arabic on the PDT
	y'aṣṭadam (bii/fii)	crash into	*(on)* f. *taṣṭadem safinat Titanic* ***fii ila*** *jabal jalidi.(in to)* g. *taṣṭadem safinat Titanic* ***min*** *jabal jalidi.(from)*
	y'anzaliq 9la	slide down	Picture description: A fireman sliding down a pole. Responses: a. *y'anzaliq rajul al'tfa* ***9la*** *al9mud.(on)* b. *y'anzaliq rajul al'tfa* ***ila*** *al9mud.(to)* c. *y'anzaliq rajul al'tfa* ***9bra*** *al9mud.(across)* d .*y'anzaliq rajul al'tfa* ***fii*** *al9mud.(in)* e. *y'anzaliq rajul al'tfa* ***min*** *al9mud.(from)* f. *y'anzaliq rajul al'tfa* ***bi*** *al9mud.(with)* g. *y'anzaliq rajul al'tfa* ***betaregat*** *al9mud.(by)* h. *y'anzaliq rajul al'tfa* ***9la*** *al9mud.(on)* i. *y'anzaliq rajul al'tfa ^ al9mud.*
Type 2b (+FR)	*y'atasalaq*	climb down	Picture description: A man climbing down a mountain. Responses: a. *y'ataslaq arajul* ***9la*** *aljabal.(on)* b. *y'ataslaq arajul* ***min*** *aljabal.(from)* c. *y'ataslaq arajul* ***fii*** *aljabal.(in)* d. *y'ataslaq arajul* ***min fawq*** *aljabal.(from up)* e. *y'ataslaq arajul* ***ila fawq*** *aljabal.(to up)* f. *y'ataslaq arajul ^ aljabal.* g. *y'ataslaq arajul* ***asfal*** *aljabal.(down)*
	y'atazalaj	ski down	Picture description: A man skiing down a slope. Responses: a. *y'atazlaj arjul* ***fii*** *almunḥdar.(in)* b. *y'atazlaj arjul* ***ila*** *almunḥdar.(to)* c. *y'atazlaj arjul* ***min*** *almunḥdar.(from)* d. *y'atazlaj arjul* ***sar9an*** *almunḥdar.(quickly)* e. *y'atazlaj arjul* ***9la*** *almunḥdar.(on)* f. *y'atazlaj arjul* ***fawqa*** *almunḥdar.(over)* g. *y'atazlaj arjul* ***asfal*** *almunḥdar.(down)* h. *y'atazlaj arjul* ***tijah*** *almunḥdar.(towards)*
Type 2c (+FR)	*y'aqtarib min/ila*	approach	Picture description: A turtle approaching the finish line. Responses: a. *tagtraib alsulḥfat* ***min*** *khat alnihayah.(from)* b. *tagtraib alsulḥfat* ***ila*** *khat alnihayah.(ila)* c.**tagtraib alsulḥfat* ***9bra*** *khat*

[+/−]FR	Arabic Con.	Their English counterparts	Responses of the English learners of Arabic on the PDT
Type 2c (+FR)	*y'aqtarib min/ila*	approach	*alnihayah.(across)* d.**tagtraib alsulḥfat* ^ *khat alnihayah.* e. *tagtraib alsulḥfat **9la** khat alnihayah.(on)* f.**tagtraib alsulḥfat **fawqa** khat alnihayah.(above)* g.**tagtraib alsulḥfat **min khilal** khat alnihayah.(throughout)*
	y'uġadir min	leave	Picture description: Clowns leaving the yellow car. Responses: a. *y'uġadir almuharjin **min** siarat al?jrah.(from)* b. *y'uġadir almuharjin **9in** siarat al?jrah. (about)* c.**y'uġadir almuharjin **ila** siarat al?jrah.(to)* d.**y'uġadir almuharjin **yakhruj** siarat al?jrah.(exit)*
	y'adkhul ila/fii	enter	Picture description: Students entering a school. Responses: a. *y'adkhul alṭulab **ila** almadrasah.(to)* b. *y'adkhul alṭulab **fii** almadrasah.(in)* c. *y'adkhul alṭulab* ^ *almadrasah.* d.**y'adkhul alṭulab **min** almadrasah.(from)* e. *y'adkhul alṭulab **jwa** almadrasah.(inside)*
	y'akhruj min	exit	Picture description: A train exiting a tunnel. Responses: a. *y'akhruj alqiṭar **min** alnafaq.(from)* b.**y'akhruj alqiṭar **fii** alnafaq.(in)*

Glossary of Terms, Abbreviations, and Symbols

AA	Native speakers of Arabic
Adv	Advanced speakers of L2
AE	Arabic learners of English
AJT	Acceptability Judgment Task
ANOVA	Analysis Of Variance
Asterisk*	Stands for an ill-formed sentence (ungrammatical)
BNC	British National Corpus
CA	Classical Arabic
CAH	Contrastive Analysis Hypothesis
cf.	“Compare or consult” used to deliver contrasting information
CI	Confidence Interval
D	Distrctor
df	Degrees of Freedom
EA	English learners of Arabic
EE	Native speakers of English
EFL	English Foreign Language
E-Language	Equipollent-framed Language
Elem	Elementary speakers of L2
et al.	And others
etc.	*et cetera*
EX/e.g.,	Example
F	Feature
FAH	Feature Assembly Hypothesis
FQ	Frequency
FR	Feature Reassembly
FST	Feature-based Substitute Test
FT/FA	Full Transfer/Full Access
GIF	Graphics Interchange Format
H	Hypothesis
HSD	Tukey’s Honestly Significant Difference
i.e.,	“id est” used to offer precise explanation

ibid.	"ibidem" used to make refrence again to the last author formerly cited in text
Int	Intermediate speakers of L2
Interlingual	L1
Intralingual	L2
IPA	International Phonetic Alphabet
ISO	International Organization for Standardization
L1	First Language
L2	Second Language
LEX	Lexicon
M	Mean
MP	Minimalist Program
MSA	Modern Standard Arabic
N	Total number in sample
NNS	Non-native Speaker
NS	Native Speaker
OQPT	Oxford Quick Placement Test
P	Path
Parentheses ()	Stands for optional elements
PDT	Picture Description Task
Pound sign #	Stands for a pragmatic or semantic or ill-formed sentence
PPs	Prepositional Phrases
RQ	Research Question
SAT	Satellite
SD/ Std. Deviation	Standard Deviation
Sig.	Significant Difference
SLA	Second Language Acquisition
SPSS	Statistical Package for the Social Sciences
Square brackets []	Stands for semantic features
SUB	Subordinate
Type 1	L1-L2 matching feature set
Type 2	L1-L2 mismatching feature set

Type 2a	L1-L2 mismatching feature set- Substitution
Type 2b	L1-L2 mismatching feature set- Deletion
Type 2c	L1-L2 mismatching feature set- Addition
UK	United Kingdom
V	Verb
VPC	Verb-Particle Construction/Combination
vs.	Versus
X^2	Chi-square test value

Arabic Alphabet and their Transliterations

In this thesis, words or phrases are not quoted in Modern Standard Arabic (abbreviated MSA) in Arabic script, but in transliteration in order to make the thesis accessible for non-Arabic readers. The characters used in transliterating the Arabic alphabet are symbolized by single Latin letters, usually with diacritics. MSA transliteration lacks universal standards. Hence, there are numerous other ways of transliterating MSA (Versteegh, 1997). The transliteration provided in the table below is adapted from the ISO (International Organization for Standardization) (ISO, version 1984). The table below illustrates the way in which the International Phonetic Alphabet (*IPA*) symbolizes the MSA. Pronunciation varies on the basis of the inherent variety of the speakers, as MSA variety is not anybody's mother tongue (*ibid*).

huruf *Letter(s)*			*The closest English Counterpart(s)*	*Transliteration(s)*	*IPA Sign*
Arabic Script	*Name*				
ا	ألف	’alif	***a**nt*	ā / ’ / ̓ / ’	[æː]
ب	باء	bā’	***b**at*	B	[b]
ت	تاء	tā’	***t**ea*	T	[t]
ث	ثاء	thā’	***th**ree*	ṯ / th	[θ]
ج	جيم	Jīm	***j**oker*	ǧ / j / g	[ʤ] / [g]
ح	حاء	ḥā’	*No equivalent*	ḥ / ħ	[ħ]
خ	خاء	khā’	*lo**ch** (in Scottish/ Welsh English)*	ḫ / kh / x	[x]
د	دال	Dāl	***d**oor*	D	[d]
ذ	ذال	Dhal	***th**e*	ḏ / dh / ð	[ð]
ر	راء	rā’	***r**at*	R	[r]
ز	زاي	zayn/zāy	***z**ero*	Z	[z]
س	سين	Sīn	***s**word*	S	[s]
ش	شين	Shin	***sh**ell*	š / sh	[ʃ]
ص	صاد	ṣād	*No equivalent*	ṣ	[sˤ]
ض	ضاد	ḍād	*No equivalent*	ḍ	[dˤ]
ط	طاء	ṭā’	*No equivalent*	ṭ	[tˤ]
ظ	ظاء	ẓā’	*No equivalent*	ẓ / ḍh	[ðˤ] / [zˤ]
ع	عين	‘ayn	*No equivalent*	‘ / ʿ / ‘ / ᶜ / 9	[ʕ] / [ʔˤ]
غ	غين	Ghayn	*French **R***	ġ / gh	[ɣ] / [ʁ]
ف	فاء	fā’	***f**ood*	F	[f]
ق	قاف	Qāf	***g**ulf*	Q	[q]

huruf *Letter(s)*			*The closest English Counterpart(s)*	*Transliteration(s)*	*IPA Sign*
Arabic Script	*Name*				
ك	كاف	Kāf	***ca****t*	K	[k]
ل	لام	Lām	***l****ock*	L	[l]
م	ميم	Mīm	***m****onkey*	M	[m]
ن	نون	Nūn	***n****ight*	N	[n]
ه	هاء	hā’	***h****orse*	H	[h]
و	واو	Wāw	***wh****ale*	w, ū	[w] , [uː]
ي	ياء	yā’	**y**acht	y , ī	[j] , [iː]
ء	همزه	Hamza	**u**h	’ / ʾ / ’	[ʔ]

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