

The Development of Suffixal Construal among Moroccan Learners of English as a Foreign Language: A Cognitive Linguistic Approach

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Received: September 19, 2026; **Accepted:** October 11, 2026; **Published:** October 31, 2026

Abstract

The acquisition of derivational suffixes is a very important aspect of language acquisition. This is especially true for English as a Foreign Language (EFL), as English is considered a highly derivational language. In line with the cognitive assumption that the meaning of a linguistic item includes the specific way its conceptual content is construed, this paper aimed to cross-sectionally examine the acquisition of the construal evoked by four suffixes: –ion, –al, –ment, and –ce. To this end, a three-task instrument (word formation, sentence completion, and interpretation tasks) was designed and administered to Moroccan EFL university students across four study levels: BA – S2, BA – S4, BA – S6, and MA – S2. Data analysis revealed several key findings. First, performance on the overall test differed among the groups, suggesting an effect of study level on the acquisition of suffixal construal. Group performance on the individual tasks showed an effect of study level in the word formation and sentence completion tasks, but performance on the interpretation task was rather similar. Furthermore, groups performed better on more frequent suffixes (–ion and –ment) than on less frequent suffixes (–al and –ce). It is concluded that the frequency of a suffix has an effect on the acquisition of its construal, providing practical implications for teaching.

Keywords: derivational suffixes, language acquisition, construal, cognitive linguistics, frequency, English as a Foreign Language

1. Introduction

Languages differ in how they present and package events. These differences are most evident in the extent to which particular aspects of a situation are highlighted. In other words, speakers of different languages conventionally express—and thus construe—events and phenomena differently (Littlemore, 2009). Therefore, learners must acquire the construals that the target language makes available to achieve successful acquisition. The pervasive nature of construal manifests not only in sentences or words but also, importantly, in smaller units such as morphemes.

A large body of research shows that morphological knowledge is closely associated with performance in various language skills, including reading comprehension, word reading, spelling, writing, and speaking (e.g., Rubin, 1991; Carlisle, 2000; Deacon & Bryant, 2006; Nagy et al., 2006; Kuo & Anderson, 2006; McCutchen et al., 2009; Kieffer & Lesaux, 2010; Goodwin et al., 2013; Zhang, 2017). Similarly, research on second language acquisition (SLA) includes extensive work on learners' ability to acquire derivational morphology (e.g., Schmitt, 1998; Dehham, 2015; Kimppa et al., 2019). Collectively, this research underscores the central role of derivational morphology in second language learning.

Yet, although there has been no shortage of research on the acquisition of L2 derivational morphology, in the researcher's judgment, little research (if any) — at least in Morocco — has been devoted to investigating the acquisition of the construal effects that derivational morphemes (i.e., suffixes) evoke (e.g., *excitement* vs *excitation*). True synonymy of two or more constructions (including morphemes) is very unlikely to be attainable. Coupled with the cognitive linguistic principle that conceptualization is pervasive in language, one would argue that two or more derivational suffixes that can be attached to the same base *must* convey different ways of describing, and, thereby, 'construing' events.

In light of this background, this study sets out to fill in this gap through investigating the acquisition of the range of construals that the four most frequent derivational suffixes (in particular, *-ion*, *-al*, *-ment* and *-ce*) evoke by Moroccan learners of English as a foreign language (EFL). In so doing, this inquiry will shed light on the extent to which Moroccan EFL learners at different levels successfully acquire the different meanings that these suffixes convey. Likewise, this study also captures the development of these learners in regards to recognizing, and differentiating between, the alternate construals expressed by different derivational suffixes.

2. Background

2.1. The Nature of Construal in Language

Language provides its users with a wide variety of ways through which events can be communicated. Speakers, for one thing, are not restricted to one single grammatical or lexical construction to express a particular situation; instead, a wide range of constructions from which they can choose the one that best conveys their meaning is available at their disposal. For another thing, when we observe a scene, some aspects are likely to be more prominent than others either because of the perspective from which we view the scene or because we are perhaps interested in those aspects more than others (Kaakinen et al., 2011). What this implies is that the choice of a specific construction instead of another is not arbitrary, but importantly reflects how the speaker conceptualizes the situation. For example, speakers are at liberty to choose *waste* or *spend* to describe how money (or time) is used, but each of these reveals how the speaker conceives of the way the object (money in this case) is used. The linguistic framing of a situation (i.e., how it is linguistically coded) is, thus, not a result of the situation in and of itself, but is rather a reflection of the speaker's conceptualization of it. In this light, speakers play a central role in how events are expressed.

This characterization of linguistic variation captures the theoretical concept of **construal** proposed within Cognitive Linguistics (CL). Construal is a central construct in this framework and aligns with the cognitive linguistic view that linguistic meaning is fundamentally rooted in conceptualization (Croft, 2009). In their discussion of the conceptual bases of grammar, Evans and Green (2006) define construal as:

the way a speaker chooses to 'package' and 'present' a conceptual representation, which in turn has consequences for the conceptual representation that the utterance evokes in the mind of the hearer. (p. 536)

Evans and Green's definition emphasizes the pivotal role of the speaker in determining how a conceptual representation is linguistically structured. This is evident, for instance, in the speaker's choice of the passive rather than the active voice, or vice versa. However, it is equally important to emphasize the fact that the language we speak also affects the way the conceptual representation is packaged and expressed. In other words, languages have highly conventional ways of expressing events to the extent that these tend to present themselves in everyday speech (Littlemore, 2009, Chapter 2). That is, despite our attempts to remain as objective as possible, languages have deep-rooted ways of how events and phenomena are expressed. This idea is

succinctly articulated by Evans and Green (2006) in the following statement: “language is rarely ‘neutral’, but usually represents a particular perspective, even when we are not consciously aware of this as language users” (p. 230). This does not mean that the language we speak determines what to think about and in what ways, but it only means that languages have a tendency to focus on, and present, information in different ways (Boroditsky, 2001; Slobin, 2003).

In light of the current discussion, cognitive linguists, instead of viewing language as an objective reflection of the world, argue that linguistic meaning lies in cognition (Evans, 2012; Evans & Green, 2006). The latter is, accordingly, seen as a mediator between the world (i.e., the objective reality) and language (Langacker, 1987, Chapter 3). A speaker’s choice of a certain packaging of an event (including inflectional and derivational morphology, basic parts of speech and larger constructions) is evidence of how cognition interacts with language and reality. Langacker (2002) expresses this idea very accurately in the following example:

A speaker who accurately observes the spatial distribution of certain stars can describe them in many distinct fashions: as a constellation, as a cluster of stars, as specks of light in the sky, etc. Such expressions are semantically distinct; they reflect the speaker's alternate construals of the scene, each compatible with its objectively given properties. (p. 61)

This example illustrates our ability to visualize the same situation in alternate ways; in particular, what appears to be one and the same phenomenon (e.g., the distribution of stars) can be viewed differently.

2.2. Construal and L2 Acquisition

Construal acquisition in an L2 is crucial to becoming a proficient speaker of that language (e.g., Schmiedtová, 2011). That is, L2 learners have to be able to conceptually restructure scenes in new ways that may not be familiar in their first language (L1), but that are legitimate in the L2. The different construals of an event are not only motivated by a speaker’s choice of a certain packaging of it, but they may also be influenced by the language itself. That is, events in different languages are conventionally construed in different ways (Slobin, 2003). Therefore, learning an L2 will involve learning to cognitively see things in different, potentially new, ways. The following discussion is a survey of how construal operations commonly identified in the literature, and how languages differ in the construal of events.

2.3. Attention and Salience

Attention is a well-known psychological phenomenon and refers to a state wherein cognitive resources are brought into focus to certain aspects of an event, excluding others (De Pisapia et al., 2012). Attention comes in degrees, and even though it is a cognitive phenomenon, some natural properties tend to be more salient than others, and, hence, are more likely to be attended to by humans.

In language, attention is comparable to how individuals visualize events. In everyday speech, some aspects of a situation are more likely to be focused on rather than others. To illustrate one case in which two languages might have different attentional foci, consider the English preposition *in*. When English speakers talk about inserting a CD in a CD player, the preposition *in* can be used (e.g., she inserted the CD in the laptop). This implies that tightness-of-fit of an object (be it large as food or relatively tight-fitting as a CD) is not important to choosing a preposition.

In Korean, however, different prepositions are used depending on whether the object is tight-fitting or loose-fitting. For example, because a CD is a very tight-fit object, the verb *kikta* is used, but for objects like fruit in the case of putting food in a fridge, a different verb, *nehta*, is used (Littlemore, 2009; Yun & Choi, 2018). One can notice, in view of this, that the verb *kikta* is used to talk about fitting “one three-dimensional object to/from another (Lego pieces, ear plugs-ears, cassette-cassette case, top-pen, ring-finger)” (Choi & Bowerman, 1991, p.91) while the verb *nehta* is used where looser fit containers are involved. It becomes clear from this example that tightness-of-fit is important in Korean and, thus, highly salient while in English, it is less so.

The implication of this for second language acquisition (SLA) is that English learners of Korean will have to see actions involving containment in a new light. Learners, therefore, will have to acquire a different construal for accurate use of these verbs.

2.4. Perspective

Perspective is yet another widely discussed phenomena in language. It essentially refers to the position (viewpoint) from which an event is discussed. This construal operation can be likened, in the physical world, to an individual's relative position which determines how he or she sees it. For example, one would visualize the computer in a different way if seen from the front than from the back. In this example, the relative position of the person determines the way the object (the computer) is viewed. This is relevant to language in that the relative perspective of the

speaker with respect to an event is reflected in the language one speaks. To illustrate, in the following two sentences (1a-b), the same state of affairs (John's position) is viewed from different perspectives:

- (1) a. John is standing behind the tree.
b. John is standing in front of the tree.

In (1a), the tree is situated between John and the speaker. The alternate construal (1b) is obtained simply by the speaker moving to the opposite position such that John becomes situated between the tree and the speaker.

A prominent example of perspective is deixis. Deixis refers to “the phenomenon of using elements of the subject's situatedness – more specifically, the subject qua speaker in a speech event – to designate something in the scene” (Croft & Cruze, 2004, p. 59). A significant cross-linguistic difference in deixis is reflected in the degree to which egocentricity is embedded in the language. The Japanese language, for example, is highly egocentric. This is illustrated by some grammatical patterns, such as the frequent dropping of the first-person subject (Ikegami, 2000).

A clearer illustration of perspective differences is seen in the Japanese verbs *ageru* and *kureru*, both of which mean “to give”. The choice of the verb is contingent upon the role of the speaker in the giving event (i.e., whether the speaker is the giver or the receiver).

- (2) a. *ageru*:
– watashi wa kare ni pen o ***ageta***
– I (particle) him (particle) pen (particle) give (past indicative). ‘I gave him a pen’.
b. *kureru*:
– Kare wa watashi ni pen o ***kureta***.
– He (particle) me (particle) pen (particle) give (past indicative). ‘He gave me a pen’.

Although both verbs mean “to give”, the choice of one verb over another is determined by the role of the speaker in the giving event (giver or receiver) given that Japanese is an egocentric language. Learners of Japanese, whose L1 is not as egocentric, would be expected to find difficulties when acquiring the two verbs. This highlights that L2 acquisition requires learning to conceptually view scenes in potentially new ways that align with the target language's conventional construals.

2.5. Affixes as Symbolic Assemblies

A central function of language is to express ideas. This is made possible by the use of symbols (Gerr, 1942). The latter is better termed a symbolic assembly, highlighting the conventional association between two core components, or poles: **form** (the spoken or written representation of the item) and **meaning** (the semantic content associated with the form; Langacker, 1987). Other terms used to refer to symbolic assemblies are constructions and form-meaning pairs (Evans & Green, 2006).

A fundamental assumption within CL is that symbolic assemblies are not restricted merely to grammatical structures or words; they encompass linguistic items that vary widely in size and abstractness. To illustrate this point, Goldberg (2006) provides the following table (Table 1):

Table 1. Examples of constructions, varying in size and complexity

Morpheme	e.g. <i>pre-</i> , <i>-ing</i>
Word	e.g. <i>avocado</i> , <i>anaconda</i> , and
Complex word	e.g. <i>daredevil</i> , <i>shoo-in</i>
Complex word (partially filled)	e.g. [N-s] (for regular plurals)
Idiom (filled)	e.g. <i>going great guns</i> , <i>give the Devil his due</i>
Idiom (partially filled)	e.g. <i>jog <someone's> memory</i> , <i>send <someone> to the cleaners</i>
Covariational Conditional	The Xer the Yer (e.g. <i>the more you think about it, the less you understand</i>)
Ditransitive (double object)	Subj V Obj1 Obj2 (e.g. <i>he gave her a fish taco</i> ; <i>he baked her a muffin</i>)
Passive	Subj aux VPpp (PPby) (e.g. <i>the armadillo was hit by a car</i>)

As the table shows, the continuum of constructions is wide-ranging and includes not only smaller units such as morphemes (–er, –ness and –al) but also larger and highly abstract units such as the passive construction (Subj aux VPpp). It is true that morphemes such as –al, –er and –ness have meaning potentials and can drastically change the meaning of base words they are attached to, yet Beard (1981) has presented arguments against the view that morphemes are symbolic. Indeed, his arguments seem to hold true for some types of morphemes (e.g., zero-morphemes and purely inflectional morphemes). However, as this debate is beyond the scope of this paper, this section will, instead, present evidence in favor of a symbolic view of affixes.

Throughout much of CL literature, the argument in favor of a symbolic view of affixes largely based on demonstrating that affixes exhibit properties similar to those found in lexemes (full words; Baker, 1988; Lieber, 1992; Lehrer, 1995, 1996, 2000; Panther & Thornburg, 2002; Booij, 2010, 2013). Perhaps the most influential of these works is Lehrer (2000)'s investigation of the lexeme-like properties exhibited by derivational affixes. In particular, three semantic

relations associated with lexemes seem to pervade this category as well: polysemy, antonymy, and synonymy.

2.5.1. Polysemy

It is widely acknowledged that derivational suffixes can have multiple, interrelated meanings that fit different discursual contexts to varying degrees (Lehrer, 2003; Hamawand, 2011). Lehrer (2003) argues in this regard that “[a]lthough the concepts represented by English affixes are limited, they show polysemy that is similar to that found in lexemes” (p. 229). The polysemy of a suffix is not random but reflects semantic principles that govern sense extensions, much like lexical items. Among these principles, the multiple meanings associated with a suffix can be traced back to a prototypical one. For example, the suffix *-ist* has a general meaning ‘one who does or practices something’, from which at least three specific meanings can be derived: (1) ‘one who specializes in a particular knowledge field’ (e.g., *economist*), (2) ‘one who believes in a particular ideology’ (e.g., *socialist*), and (3) ‘a person who plays the instrument indicated by the root’ (e.g., *violinist*). Less prototypical meanings in this sense network include ‘a person prejudiced against a particular group’, as in *ableist*, *ageist*.

2.5.2. Antonymy

Another sense relation that is prevalent among words is antonymy. Antonymy refers to the semantic oppositeness found among linguistic items. Antonymic relations are not exclusive to lexical items, but also encompass affixes. In English, most of antonymous affixes are found among prefixes (Table 2; data from Lehrer, 2000).

Table 2. Antonymous affixes in English

Prefixal antonyms	Examples	
Super/sub	Superordinate	Subordinate
Pre/post	Prewar	Postwar
In/out	Input	Output
Up/down	Upgrade	Downgrade

Examples of suffixal antonyms are: full/less (e.g., painless vs painful; careful vs careless)

2.5.3. Synonymy

In addition to the previously mentioned sense relations, a well-investigated area within semantics is synonymy. One word is said to be synonymous with another if one of its senses is sufficiently similar to one or more senses of the other. However, absolute synonymy—where two or more words have exactly the same meaning—is rarely attainable among lexemes (Stanojević, 2009). Historically, critics of the symbolic view have argued that affixes cannot be

symbols because they display cases of absolute synonymy, unlike lexemes, citing nominalizing affixes such as –ation, –ity, and –ness (Beard, 1990, 1995). The present analysis, however, concludes that this is largely not the case.

A closer analysis of seemingly synonymous suffixes reveals subtle but important differences in their meaning or construal. To illustrate this point, take the set of suffixes –er, –ant, –ian and –ster as an example. It is true that all these suffixes share one common semantic specification: *agenthood*. In other words, when attached to bases, these suffixes denote the *doer* of a certain action. However, each one of these suffixes evokes a different aspect of agenthood. To better understand the differences between these suffixes, the concept of agenthood needs to be clarified.

Agenthood is defined as the role a person (or entity) plays in bringing about a particular event (Hamawand, 2011). The doer of the action can be either a specialist or a non-specialist in a given field, whether positive or negative. These nuances are reflected in the suffixes discussed above: while –er denotes a person who performs a generic, non-technical action X, –ant designates a specialized role within a particular domain. This difference in scope distinguishes nouns such as *defender* and *defendant*. Although both suffixes attach to the same base, *defend*, they convey distinct meanings: *defender* refers to someone who defends another against a general threat, whereas *defendant* denotes an individual involved in a legal defense. Corpus evidence further supports this distinction. Hamawand (2011) has shown that *defender* collocates with non-technical nouns like *faiths*, *policies*, *rights*, *sports*, and *viewpoints*, while *defendant* occurs with field-specific nouns such as *conviction*, *crime*, *evidence*, *hearing*, and *trial*.

Similarly, the suffixes –ian vs –ster refer to a person performing a job or a habitual action, but with different scopes. The suffix –ian designates a specialist who does a positive job; for instance: *mathematician*, *phonetician*, *veterinarian*, *physician* etc. The suffix –ster, by contrast, has a negative connotation: *gangster*, *mobster*, *ringster*.

2.6. Construal in Suffixes

Now that the argument for the symbolic nature of morphemes has been established, it follows that they evoke their own construals when attached to word bases. Within a cognitive linguistic framework, suffixes are understood to exhibit varying degrees of polysemy, hosting different meanings and complex categories that are semantically organized around prototypical and peripheral relations. This section introduces the four suffixes whose meanings, conceptual

categories, and construal effects are examined in the study: –ion, –al, –ment, and –ce. All four are noun-forming suffixes (also known as nominal suffixes or nominalizers), bound morphemes added to a free base to form nouns. The semantic closeness of these suffixes provides an optimal context for investigating the subtle distinctions signaled by their respective construals.

2.6.1. *Process Domain Suffixes*

All four suffixes examined in this study are noun-forming and evoke the process conceptual domain, which captures a conceptual frame involving an action performed to achieve a particular result (Hamawand, 2011). Within this domain, two primary components are distinguished:

1) Action refers to the performance of a process and can be conceptualized in two ways:

- Sequential Action, in which the process unfolds step by step, following a series of ordered movements or stages; and
- Whole Action, in which the process occurs “in one shot,” as a single, complete movement or unified event.

2) Result designates the consequence that arises from an action and can take two forms:

- Instance Result: represents a specific occurrence (e.g., a discrete event or outcome); and
- Type Result: represents a general or abstract category that serves as a prototype for a class of outcomes.

2.6.2. *Construal Distinctions*

Although the suffixes (–ion, –al, –ment, and –ce) can be used to describe the process conceptual domain, a close analysis shows that the distinction between them relates to the nature of the process (i.e., how the meaning is “construed”). That is, these suffixes specify different aspects of the process domain (see figure 1).

We established that both suffixes, –ion (including variants like –ation, –sion, and –xion) and –al, primarily evoke the action component of the process domain. Although they appear to convey synonymous meanings, our analysis reveals that they carry crucially different construal effects, relating to the nature of how the action is viewed.

2.6.2.1. *The Suffix –ion (Whole Action)*

The suffix –ion is used to form nouns, typically from verbal roots. Its central meaning is “the act of doing the process referred to in the root” (Hamawand, 2011, p.124). Examples demonstrating this sense include *construction*, *restoration*, and *explanation*. A less prototypical

sense of this suffix can also denote the result of the process (*expulsion*). In terms of construal, the suffix –ion specifies the performance of the action as an overall act (or whole), meaning the action is conceived of as being carried out "in one shot". The "whole" is understood as one single movement or as encompassing all of something. This is supported by corpus evidence showing that preceding verbs denote the action is carried out wholly. Crucially, the construal of whole action explains why nouns formed by the suffix –ion do not accept time expressions that indicate extended periods of time. For example, the sentence: “*The dispersion of the gas lasted two hours” results in a semantic anomaly because the notion of whole actions conflicts with the verb phrase *lasted two hours* which indicates continuation.

2.6.2.2. The Suffix –al (Sequential Action)

The suffix –al also denotes an action within the process domain, but it conveys a conceptually salient, slightly different meaning. While –ion construes the action as being done in one shot, the suffix –al conveys that the action referred to in the root is performed in pieces.

We define the suffix –al as the sequential process of doing the action referred to in the root. This action is conveyed in a sequential way. A sequence is conceptualized as having a set of movements or being divided into parts. This sequential construal is manifest in nouns like *dispersal*, which means ‘the successive act of diffusing or being diffused over an area,’ contrasting with *dispersion*. Supporting this distinction, corpus-based evidence shows that verbs preceding –al nouns imply sequential actions (such as *attend to*, *begin*, *complete*, *involve*, *resolve*, etc.). Furthermore, unlike the suffix –ion, nouns formed by –al fit with expressions denoting extended periods of time, as shown in the example: *the dispersal of the crowd lasted two hours*.

In contrast to the suffixal pair –ion, –al, the suffixes –ment and –ce evoke the subdomain of result within the process domain. Prototypically, both describe a result (or consequence) that occurs as the outcome of a particular action. However, the key difference between them lies in how the result is construed: either a type result or an instance result characteristic.

2.6.2.3. The Suffix –ment (Type Result)

This suffix conveys the idea that the result is a type. Its central meaning is "the result of the process referred to by the root" (Hamawand, 2011, p.124). This meaning is reflected in nouns such as *excitement*, *retirement*, and *accomplishment*. For example, *excitement* denotes the result of having strong feelings of happiness and enthusiasm. The type of a result serves to establish the basis for including different entities under the same class, but it is not restricted to any

particular instance of that class. Consequently, the suffix –ment can be redefined as ‘the general result conveyed by the verbal root’.

2.6.2.4. The Suffix –ce (Instance Result)

The suffix –ce (including its variants: –ance, –ence, –se) conveys a different construal within the result subdomain. It also holds the meaning: "the result of the process indicated by the root". This sense is common in nouns like *observance*, *preference*, *transcendence*, and *transference*. this suffix focuses, in contrast, on an instance of the result which is used in a definite context. For example, *observance* means "the compliance with the requirements of law, morality or ritual," contrasting with general compliance. This distinction can be illustrated with the minimal pair *deterrence* vs. *determent*, both derived from *deter* ("to discourage by instilling doubt or fear of consequences"). *Deterrence* (–ce) refers to a context-specific result of deterring, often used in criminal or military settings—e.g., maintaining deterrence through strong defense. *Determent* (–ment), by contrast, conveys a more general sense of prevention, used in broader contexts such as measures taken as a deterrent to truancy. This difference confirms how the construal phenomenon is highly relevant to suffixes, allowing them to specify different aspects of the process domain.

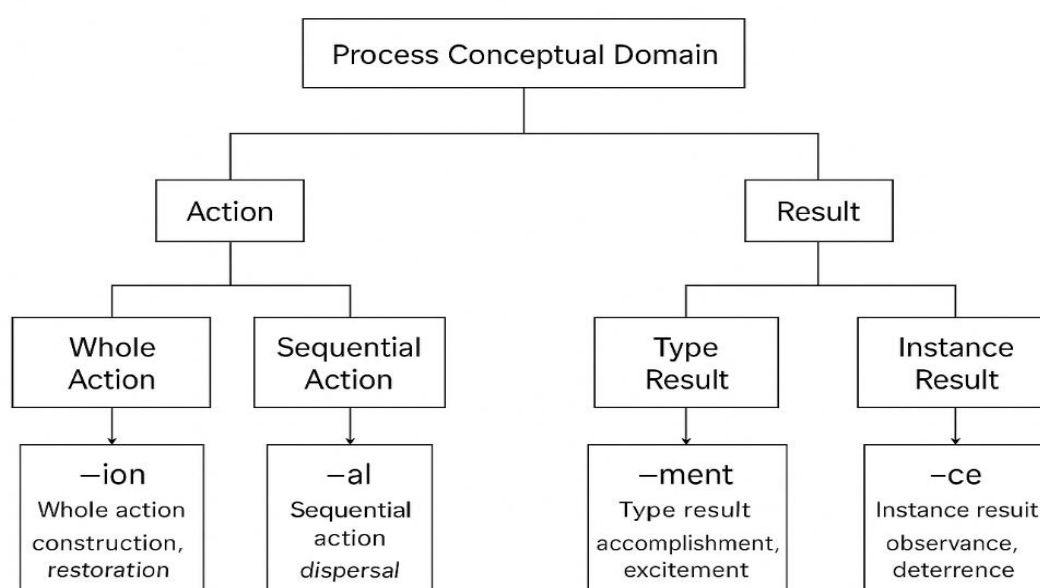


Figure 1. A diagram illustrating the different construals of the four suffixes within the process domain

2.7. Suffixes and Frequency

With the rise of cognitive linguistics, the usage-based model has developed as a response to traditional generative approaches (Bybee, 2010; Bybee & Beckner, 2009; Goldberg, 2006; Langacker, 2008; Tomasello, 2003). A central claim of this model is that language acquisition

improves through language use (Croft & Cruse, 2004). Ellis (2002) notes in this respect that “humans are sensitive to the frequencies of events in their experience” (p. 145). While frequency is not the sole factor in language learning, its effects pervade the different aspects of language acquisition.

Research has shown frequency effects at multiple linguistic levels—from morphemes (e.g., Bowden et al., 2010) through words (e.g., Richards et al., 2008) to multi-word units (e.g., Janssen & Barber, 2012; Arnon & Priva, 2013) and constructions (e.g., Ellis et al., 2014). Thus, frequency is central to the acquisition process. Based on this, the study presents corpus-based and frequency-based lists of the targeted suffixes. Table 3 summarizes the corpus-based list developed by Bauer and Nation (1993) from their analysis of the 1,000,000-token Lancaster-Oslo-Bergen corpus. The classification of suffix levels was not determined by corpus frequency alone but by eight criteria, including frequency, productivity, predictability, and regularity in both spoken and written forms. As Bauer and Nation (1993) note, these levels are approximate and serve only as “easily identified steps along a cline” (p. 257).

Table 3. *Bauer and Nation’ (1993) list of affixes*

Level	Affix(es)
1	n/a; a different form is a different word
2	Plural, 3rd person singular present tense, past tense, past participle, -ing, comparative, superlative, possessive
3	-able, -er, -ish, -less, -ly, -ness, -th, -y, non-, un-
4	-al, -ation, -ess, -ful, -ism, -ist, -ity, -ize, -ment, -ous, in-
5	-age, -al, -ally, -an, -ance, -ant, -ary, -atory, -dom, -eer, -en, -ence, -ent, -ery, -ese, -eque, -ette, -hood, -i, -ian, -ite, -let, -ling, -ly, -most, -ory, anti-, ante-, arch-, bi-, circum-, counter-, en-, ex-, fore-, hyper-, inter-, mid-, mis-, neo-, post-, pro-, semi-, sub-, un-
6	-able, -ee, -ic, -ify, -ion, -ist, -ition, -ive, -th, -y, pre-, re-
7	Classical roots and affixes

Since this study focuses on four suffixes, our analysis is confined to the frequency of –ion, –al, –ment, and –ce, including their variants. Table 4 presents frequency data for these suffixes based on Bauer and Nation (1993). The table ranks each suffix and its variants according to their frequency in the corpus, providing two figures for each: type and token frequency. Type frequency refers to the number of distinct words containing a suffix, while token frequency counts every occurrence, regardless of repetition. For instance, in the set *prediction, operation, operation, construction, regulation, prediction, construction, inclusion, regulation*, the suffix –ion has a type frequency of five, even if some words occur more than once. Conversely, the token frequency includes all instances, repeated or not. The final column of the table reports the total number of tokens in the corpus for each suffix, combining all its variants.

Table 4. Frequency-based list of process domain suffixes

Suffix	Variants	Frequency		
		Type	Token	Total (token)
-ion	-ion	475	6748	11670
	-ation	451	4463	
	-ition	25	459	
-ment	—	129	2678	2678
-ce	-ance	43	779	1552
	-ence	33	773	
-al	—	30	334	334

3. The Present Study

Despite the abundance of research on L2 derivational morphology acquisition, there remains a notable gap in the literature, particularly within the Moroccan context, regarding the investigation of the construal effects evoked by derivational morphemes (suffixes). Given the cognitive linguistic principle that conceptualization pervades language, it is argued that two or more derivational suffixes that can affix to the same base (e.g., *excitement* vs. *excitation*) must necessarily convey distinct ways of describing and, thus, ‘construing’ events.

In line with the quantitative turn characterizing CL research since 2008, this study adopts a cross-sectional design to investigate the success patterns of learners at varying study levels in acquiring suffixal construals. Study level serves as the operationalization of proficiency level for the purposes of comparison. As no prior study of this nature is known, the findings derived from this inquiry seek primarily to identify the acquisition patterns of these suffixes among Moroccan EFL learners. Ultimately, establishing a clear understanding of construal acquisition will provide language practitioners—such as teachers, curriculum designers, and material writers—with empirically-oriented, research-based techniques for teaching the language from a cognitive perspective. For these purposes, the current study addressed the following research questions (RQs):

- (1) Is there any effect of study level on the acquisition of the construals evoked by the four suffixes by Moroccan EFL learners?
- (2) Is there any effect of study level on the performance on the individual tasks of the test by Moroccan EFL learners?¹

¹ This general question incorporates sub-questions related to the word formation task (RQ1a), the sentence completion task (RQ1b), and the interpretation task (RQ1c)

(3) Is there any effect of frequency of a suffix on the acquisition of its construal?

3.1. Methods

3.1.1. Participants

The study was conducted within the Moroccan academic context, targeting students from the Faculté des Sciences de l'Éducation (FSE) at Université Mohammed V de Rabat (UM5R). Participants were recruited from both undergraduate and graduate programs. Undergraduate students were enrolled in a three-year BA program designed to prepare them for educational careers while developing linguistic foundations and communicative competence. Graduate students were enrolled in the MA program in Applied Linguistics and English Language Teaching. In total, 132 students participated in the study, distributed across four academic levels:

- BA-S2 (33 students, 25%),
- BA-S4 (28 students, 21.2%),
- BA-S6 (45 students, 34.1%), and
- MA-S2 (26 students, 19.7%).

Additionally, participants were drawn from intact classes; no selection procedure was applied since students were already assigned to their respective groups.

3.1.2. The Instrument

To achieve the stated objectives, a three-task instrument was developed and administered. The instrument comprised 60 items distributed equally (15 items each) among the four target suffixes across three distinct tasks designed to measure morphological knowledge:

- Word Formation (WF) Task: required participants to derive nouns from given words using one or more of the four suffixes, assessing their ability to associate the base word with the suffixal construals.
- Sentence Completion (SC) Task: required participants to select the appropriate noun from a given pair (reflecting competing suffixal construals, e.g., governance vs. government) to fill a gap in a naturally occurring sentence, thus checking if they could match the construal with the semantic context.
- Interpretation Task (IT): presented participants with sentences containing an underlined suffixed noun, requiring them to choose one of two provided interpretations that best captured the suffix's meaning, specifically addressing the conceptual domain aspects.

Data collected from these tasks were statistically analyzed (using SPSS) to address the research questions, which investigate the effect of study level on the overall acquisition of suffixal construals and the effect of suffix frequency on their acquisition.

3.2. Data Collection Procedure

The data collection phase was executed during the winter semester of the academic year 2022/2023. To facilitate this process, meetings were arranged with professors at the faculty, spanning from March 17 to March 22, 2022, depending on class availability.

Before the administration of the instrument to the participants of each level, a short introduction to the study and clear instructions were provided. No time limit was imposed on the participants during test completion, but the average time for test completion was 45 minutes. Specific instructions detailing the required response mode were emphasized for each of the three tasks:

- For WF, participants were explicitly told that some base words allowed for more than one derived noun, and they were required to write both nouns when this case occurred.
- For SC, participants were instructed to choose one noun from the provided pair to fill the gap in the sentence.
- For IT, strict instructions required participants to tick one and only one choice that most accurately captured the underlined word's meaning.

These distinct tasks allowed the researchers to gain a clear picture of the acquisition of the targeted suffixal construals, thereby providing the necessary foundation for testing the hypotheses put forward in the study.

4. Results

The findings of the present study address the three research questions by comparing the performance of Moroccan EFL students across four study levels (BA – S2, BA – S4, BA – S6, and MA – S2).

4.1. Effect of Study Level on Overall Acquisition (RQ1)

The first research question investigated whether there was any effect of study level on the overall acquisition of the construals evoked by the four suffixes (–ion, –al, –ment, and –ce).

The Overall Test Score was submitted to Welch's ANOVA, as the assumption of homogeneity of variance was violated. The test result indicated a statistically significant difference between the groups, $F(3, 64.042) = 12.627, p < .001$.

This finding leads to the conclusion that performance on the overall test is different among the groups, suggesting that there is an effect of study level on the acquisition of suffixal construal. Consequently, the null hypothesis, which posited no effect of study level, was rejected.

Further analysis using Games-Howell post-hoc comparisons pinpointed the specific pairwise differences:

- Lower study levels (BA – S2 and BA – S4) differed significantly from the upper study levels (BA – S6 and MA – S2).
- No significant differences were found between BA – S2 and BA – S4, nor between BA – S6 and MA – S2. This suggests that performance tends to converge in clusters.

4.2. Effect of Study Level on Individual Tasks (RQ2)

The second research question aimed to determine if the effect of study level varied across the three individual tasks (WF, SC, and IT).

4.2.1. Word Formation Task (RQ 2a)

The groups' scores on the WF Task were compared using the non-parametric Kruskal-Wallis H test due to the violation of the normality assumption. The test yielded a highly statistically significant difference between the groups, $H(3) = 41.933, p < .001$, indicating that there is an effect of study level on participants' performance on this productive task. Hence, the null hypothesis was rejected. Pairwise comparisons confirmed statistically significant differences between the lower levels (BA – S2 and BA – S4) and the upper levels (BA – S6 and MA – S2).

4.2.2. Sentence Completion Task (RQ 2b)

Performance on the SC Task was also analyzed using the non-parametric Kruskal-Wallis H test, also due to data distribution. The test revealed a statistically significant difference between groups, $H(3) = 10.289, p = 0.016$.

This finding confirms that there is an effect of study level on performance in this receptive task, supporting the rejection of the null hypothesis. Significant differences were located between BA – S4 and BA – S6 ($p = .044$), and between BA – S4 and MA – S2 ($p = .003$), as well as between MA – S2 and BA – S2 ($p = .020$).

4.2.3. Interpretation Task (RQ 2c)

To compare performance on the IT, a One-way ANOVA was conducted, as the assumptions of normality and homogeneity of variance were maintained. The test revealed no statistically significant difference between the groups, $F(3, 124) = .481, p = .696$. This suggests that groups'

performance on the task is rather similar. The null hypothesis (that there is no effect of study level on performance on this task) was therefore maintained.

4.3. Effect of Frequency on Acquisition (RQ3)

The final research question sought to determine if there was any effect of frequency of a suffix on the acquisition of its construal. This was addressed by comparing the performance of all participants across the four suffixes. A repeated-measures ANOVA was run. Since Mauchly's test indicated a violation of the sphericity assumption ($\chi^2(5) = .915, p = .043$), the Greenhouse-Geisser adjustment was applied.

The repeated-measures ANOVA indicated a highly statistically significant difference in the mean scores of the four suffixes, $F(2.844) = 71.747, p < .001$. Therefore, it is concluded that the frequency of a suffix has an effect on the acquisition of its construal acquisition. The null hypothesis was thus rejected. In addition, the post-hoc analysis supported a frequency-based account of performance; to wit, Participants performed better on more frequent suffixes (–ion and –ment) than on less frequent suffixes (–al and –ce). However, no statistical difference was found in performance between the two most frequent suffixes, –ion and –ment ($p = 1.000$). Statistically significant differences were found between:

- –ion and –al ($p < .001$).
- –ion and –ce ($p < .001$).
- –ment and –al ($p < .001$).
- –ment and –ce ($p < .001$).
- –ce and –al ($p = .002$), where performance on –ce was statistically higher than performance on –al.

5. Discussion

The findings derived from the statistical analysis allow for a rigorous examination of the research questions concerning the acquisition of construal effects evoked by the target derivational suffixes (–ion, –al, –ment, and –ce) among Moroccan EFL learners. The discussion interprets these results in light of the developmental stages (operationalized by study level) and the influence of suffix frequency, drawing upon the principles of Cognitive Linguistics and the Usage-Based Model.

5.1. Acquisition and Study Level (RQ1)

The statistical test conducted on the Overall Test Score yielded a statistically significant difference between the groups, $F(3, 64.042) = 12.627, p < .001$. This result leads to the rejection of the null hypothesis and confirms that there is an effect of study level on the acquisition of suffixal construal. This finding aligns with established research demonstrating that morphological knowledge follows a developmental pattern and tends to be refined as learners advance in their proficiency level (e.g., Freyd and Baron, 1982; White et al., 1989; Alotaibi, 2017).

Further analysis identified specific convergence patterns: the lower study levels (BA – S2 and BA – S4) performed similarly, and the upper study levels (BA – S6 and MA – S2) clustered together. Significant differences were only located when comparing the lower cluster against the upper cluster. The lack of statistical difference between BA – S2 and BA – S4 is consistent with the notion of a *plateauing effect* often observed in L2 acquisition settings (e.g., Jiang, 2000, 2002). To be precise, Learners make initial rapid progress but may enter a phase where improvement is slower. Plateauing effect is not new, but has been observed in many language acquisition studies. In accordance with this, Lightbown and Spada (2021) argue that “[l]earners have bursts of progress, then seem to reach a plateau for a while before something stimulates further progress” (p. 80). In a similar vein, the lack of difference between BA – S6 and MA – S2 suggests that these advanced levels may be approaching a *ceiling effect*, where further progress is minimal or not detectable by the instrument employed (a similar conclusion was reached in Nagy, 1993).

5.2. Effect of Study Level on Individual Tasks (RQ2)

The detailed analysis of the individual tasks revealed a critical divergence in the developmental trajectory of different aspects of morphological knowledge. For example, the results for the WF task (a productive measure) and the SC task (a receptive contextual discrimination measure) both demonstrated a statistically significant effect of study level on performance. This indicates that, developmentally, learners successfully acquire the ability to associate suffixes with base words and differentiate between rival construals when contextual cues are strong. However, this developmental pattern failed to emerge in the IT (RQ2c). This task specifically targeted the participants' capacity to identify the distinct conceptual domain aspects evoked by the suffixes (e.g., contrasting whole action vs. sequential action or specific result vs. general result). The One-way ANOVA revealed no statistically significant difference in performance across any of the four study levels, $F(3, 124) = .481, p = .696$. This suggests that while learners gain mastery over the productive and context-matching functions of the suffixes, the underlying explicit

conceptual knowledge of the construals remains largely uniform, and resistant to refinement, even with increased exposure in the upper study levels. This finding is of high significance as it underscores a cognitive constraint in which achieving functional accuracy is prior to— but does not guarantee— the acquisition of subtle semantic construal differences inherent in the target suffixes (a similar finding was reported by Rothman & Iverson (2008) though their study adopted a Universal-Grammar framework).

5.3. Effect of Frequency on Acquisition (RQ4)

The final research question, investigating the relationship between suffix frequency and acquisition, strongly supported a usage-based account of morphological learning. The repeated-measures ANOVA comparing performance across the four suffixes demonstrated a highly statistically significant difference in mean scores, $F(2.844) = 71.747, p < .001$.

This finding aligns with the central tenet of the Usage-Based Model, which holds that the human cognitive apparatus is highly sensitive to the distribution and frequency of linguistic items in the input, which, in turn, strongly influences the strength of cognitive representations.

The subsequent pairwise comparisons confirmed a clear frequency hierarchy:

- High Frequency: performance on the two most frequent suffixes, –ion and –ment, was statistically insignificant ($p = 1.000$).
- Low Frequency: performance on both –ion and –ment was significantly better than performance on the less frequent suffixes, –al and –ce.
- Relative Frequency: a significant difference was also found between the two less frequent suffixes, where performance on –ce was statistically higher than performance on –al ($p = .002$).

This comprehensive pattern of results strongly rejects the null hypothesis and confirms that the frequency of a suffix has a profound effect on the acquisition of its construal. Learners successfully acquire the construals of more frequent suffixes earlier and with greater facility than those of less frequent suffixes.

6. Limitations and Future Directions

The current inquiry is not without its weaknesses, and several methodological constraints should be acknowledged. Principally, the study adopted a cross-sectional design. Collecting data as a 'snapshot' from students across four distinct study levels at one single time limits the capacity to make strong claims about the cause-effect relationship between study level and the

development of suffixal construals. Future research should thus prioritize utilizing a longitudinal design.

Furthermore, the scope of the study was constrained only to four process domain suffixes, insufficient to provide a comprehensive picture of acquisition patterns for derivational suffixes in different conceptual domains. In view of this, future studies should be extended to suffixes in other conceptual domains.

Lastly, this work did not aim to analyze the receptive-productive dichotomy of students' knowledge, even though both receptive and productive task types were employed. Filling this lacuna by comparing performance on receptive versus productive tasks remains a key direction for further studies.

7. Pedagogical implications

The current findings present both practical and pedagogical implications. Teachers and material writers must carefully consider the materials to be presented to EFL learners. New language items, like suffixes, should be introduced in a gradual way. Because successful acquisition of construal effects is a lengthy process, more frequent suffixes must be introduced initially, alongside sufficient input to secure their construals. Consequently, instructors should not set overly high expectations for the acquisition of the construals of less frequent suffixes, particularly in lower study levels.

Disclosure Statement

The authors declare that there is no conflict of interest regarding the publication of this article. No financial, personal, or professional relationships have influenced the research, analysis, or conclusions presented in this work.

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