

Conceptual salience of prefixes in L2 acquisition and processing: a reading-time study within context

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1. Introduction

The basic idea of this study is related to the fact that a large part of current psycholinguistic literature seeking to determine the representation and processing of constructed words has somehow neglected to take into account both their internal structure and the relationships they bear with other lexical units. The wealth of linguistic literature on the field of morphology (among others, Corbin 1987/1991; Aronoff 1994, 2007; Aronoff & Fudeman 2005; Blevins 2006; Marantz 2013 and many others) provides us with an uncontroversial definition: morphology deals both with the internal structure of words (i.e., syntagmatic dimension) and the systematic form-meaning correspondences between them (i.e., paradigmatic dimension). Aside from linguistic debates about which dimension is responsible for the other, i.e., lexeme-based approach *vs* morpheme-based approach, the study of the cognitive processes underlying recognition and comprehension of complex words has to take into account both aspects, i.e., the internal structure and the various kinds of relationships morphologically complex words bear with each other.

At this point it has to be noted that the strict dichotomy between bottom-up (perception) and top-down (production) models has not helped to take into account this double aspect of constructed words. This dichotomy has been so strong that it has somehow prevented researchers from working on phenomena and through materials/conditions likely to make observations and generate data from a “window” situated in an intermediate position.

It is acknowledged that lexical access studies usually adopt an exclusively orthographic bottom-up view, which is quite restrictive for studying the central levels of L2 processing, given that the priority is given to form and visual factors. On the other hand, top-down protocols (e.g., word production) seem difficult to apply to particular categories of words, e.g. morphologically complex words, as well as to the study of cross-linguistic differences or similarities (among others, Dijkstra et al. 2010), which could be very enlightening with respect to the question of the organising principles of the bilingual lexicon. We therefore observe that in the domain of morphological processing, the bottom-up approach¹ starting from perception (lexical access) data, attributes the primacy to the levels situated at the first stages of processing, i.e., to the formal levels. As a consequence, it focuses mostly on orthographic processes (i.e., Casaponsa & Duñabeitia 2016, on language activation with bilinguals), neglecting the conceptual and semantic levels.

This approach has clearly been dominant in the debates about morphological processing for at least twenty years, and has led to various versions of the decompositional account (among others, Rastle et al. 2004; Amenta & Crepaldi 2012), positing mandatory and more or less blind decomposition as the basic mechanism of morphological processing, independently of constructed words’ linguistic characteristics, i.e., lexical frequency, lexical or non-lexical

¹ For a review, see Baayen (2014), Voga and Giraudo (2017).

status of the constructed (or pseudo-constructed) words, and others (for a detailed review, see Voga & Giraudo 2017). As Giraudo and Dal Maso (2016b: 6) underline “the issue of the relative prominence of the whole word and its morphological components has been overshadowed by the fact that psycholinguistic research has progressively focused on purely formal and superficial features of words, drawing researchers’ attention away from what morphology really is: systematic mappings between form and meaning”.

This paradigmatic dimension of constructed words has nevertheless led to variables which have been proved to influence morphological processing: the Morphological Family Size (for L1, De Jong et al. 2000; for L2, Voga 2015; Voga & Giraudo forthcoming), typological variation related to verb usage (Voga et al. 2012, monolingual Greek experiments) or word status of morphologically complex stimuli constructed with French bound-stems (Giraudo & Voga 2016).

In what follows, we propose to study a novel variable of conceptual-semantic nature, namely the conceptual salience of the prefix, by examining processing of constructed words not taken in isolation, i.e., presented individually (without context) as the vast majority of morphological processing studies does, but within context. This methodology, based on the self-paced reading technique, is not frequent for the study of constructed words. Nevertheless, there are some recent studies, essentially in production, presenting pictures to L2 participants within-context (among others, Starreveld et al. 2014).

The focus of this study is on parallel language activation. The experimental setting using sentence context is chosen in order to boost the activation of all elements in the target language system, as compared with the in-isolation condition (without context). This boost stems from the appropriate “language cue” activated when pictures are presented in context (Starrenveld et al. 2014: 271). Under these conditions, a part or the whole of the upcoming picture’s semantic representation is preactivated, particularly for what the authors call the “low-constraint sentence” context. By doing this, Starrenveld et al. (2014) place their experiments in a configuration which is the exact opposite of the low-level orthographic processing of words in isolation (among others, Casaponsa & Duñabeitia 2016). Starrenveld et al. (2014) study a situation where the “language cue” (provided by the context) allows to directly grasp the central levels of processing, given that it allows the lexical processor to consider words exclusively from the language indicated by the script, operating a kind of “selection” (for a similar explanation, see Gollan et al. 1997; La Heij 2005).

Our study also examines words within-context, for two particular reasons; the first one is that the constructed words tested here with L2 participants are not very frequent, and their morphologically complex (prefixed) status may render them difficult for our L2 subjects to process, recognise, and correctly distinguish them from the inconsistent item (as we shall see further), in order to make a consistency judgment. The second reason is that, if one seeks to explore the role of a variable of conceptual nature, it is difficult to imagine how the semantic central-level representation of the word can be contacted (or activated), if the meaning of the word in its natural conditions of occurrence, i.e., in sentences, is elusive. In other words, examining our constructed words within context allows us to adopt the most favourable configuration to study conceptual and semantic factors.

2. The variables under study

2.1 The variable conceptual salience (of the prefix)

As shown above, the literature on L2 processing has somehow neglected the variables of paradigmatic nature that could influence morphological segmentation and processing. This is probably related to the reasons already mentioned in the introduction, but also to the fact that

English is not the most appropriate ground for morphological analysis (Anastassiadis-Symeonidis & Mitsiaki 2010).

The idea of morphological salience refers to the prominence of a morpheme (stem or affix) in a morphologically complex word and has been dealt with, implicitly or explicitly, in several ways and definitions, from (token/type/relative) frequency (among others, Voga & Giraud 2009), productivity, contribution of the constituents to the meaning of the complex word (among others, Plag 2003), to surface characteristics (among others, pseudo-derivation effect, Longtin & Meunier 2005) and their perception (Giraud & Dal Maso 2016a,b). However, in many of these cases, morphological salience is related to form.

In a recent study, Giraud & Dal Maso (2016a) examine the salience of the suffix *-etto* along with the distributional properties of the suffixes (morphological series): the suffix *-etto* (e.g., *albergo* ‘hostel’ – *albergetto* ‘small hostel’) is a suffix in only 40% containing this sequence, and presents non-prototypical semantic and functional properties. Consequently, the presence of this suffix renders the identification of the base more difficult for the L1 speakers, since the participant cannot easily decide if the form preceding *-etto* is a base or not. This situation is exactly the opposite to what happens with a suffix such as *-tore*, e.g. *pescatore* ‘fisher’, which leads to a completely different priming pattern. The pattern of masked priming effects of this study demonstrates the influence of the variable “salience”: reduced salience corresponding to the suffix *-etto* leads to slower reaction times and to no effect for the base condition, whereas the effect of the base condition is significant for the constructed words containing *-tore* and *-ico*.

In what follows, we decided to focus on the semantic aspects of salience, studying the salience of the prefix. This salience is related to morphosyntactic iconicity, as it has been defined in the framework of Natural Morphology (Kilani-Schoch & Dressler 2005), and more generally, in Natural Morphology (Dressler et al. 1987), where iconicity is the factor which structures the French inflectional morphology and can be motivated by linguistic cues independent of frequency. As Nobile (2014) observes, in morpho-syntax, most of researchers adopt the binary distinction between *diagrammatic iconicity*, which is perceived as being morpho-syntactic and in which relationships between *signifiants* (signifiers) represent relationships between *signifiés* (signified), and *imagic iconicity* which is essentially considered as being phonological.

However, this definition, starting from form and relating multiplicity to reduced iconicity, does not reflect in a satisfactory way the role of the variable we examine here, which concerns the semantic and conceptual level and not the form. Therefore, our definition of salience has to be completed by the notion of the embodiment according to the grounded cognition approach, as has been defined by Barsalou (1999, 2016) and, at the level of neurolinguistic study, by Binder (2016). Such a definition leaves the possibility of having multimodal representations, i.e., representations that do not occur through one and unique modality, but through several modalities, covering a wide spectrum of meanings. Our definition of salience implies the role of these distributed representations, as opposed to localist representations.

Our definition of the conceptual salience of a prefix is related to the multiplicity of the prefix’s semantic instruction meanings.

- (1) a. *προνήπιο* [proˈnipio] ‘prekindergarten’
- b. *προβλέπω* [proˈvlepo] ‘foresee’
- c. *υπεραγαπώ* [iperagaˈpo] ‘to treasure’

In (a)-(c), the prefixes *προ-* and *υπερ-* are salient, because they encode only one semantic instruction meaning.

- (2) a. *επίδειξη* [e'pidiksi] 'demonstration'
 b. *επικίνδυνος* [epi'cindinos] 'dangerous'

In 2 (a)-(b), the multiplicity of the prefix's *επι-* semantic instruction meanings reduces salience. The number of meanings of the semantic instruction is estimated with the help of the *Liddell, Scott, Jones (1996) AG dictionary* and above all the *Dictionary of Standard Modern Greek (1998)*; this multiplicity can be viewed as an epiphenomenon, since what counts is the degree of homogeneity of the prefix's semantic instruction, which can be obscured by various factors, e.g., the application of metaphoric or metonymic semantic rules on the base-word before that of Word Construction Rules (Corbin 1987/1991).

2.2 Semantic Transparency

Given that the prefix forms only a part of the constructed word, it would not have been correct to define salience independently of the whole, i.e., the constructed word, which means that conceptual salience cannot be examined without reference to the transparency of the constructed word. If we consider the constructed words with *προ-* [pro] *προηγούμενος* [proiγy'menos] 'previously', *προπονητής* [proponi'tis] 'trainer', *προνόμια* [pro'nomia] 'privileges' and *προοπτική* [proopti'ci] 'perspective' on one hand, and *προκατασκευασμένο* [prokatasceva'zmeno] 'prefabricated', *προβλέπουμε* [pro'vlepume] 'we predict', *προνήπιο* [pro'nipio] 'prekindergarden' and *πρόπερσι* [propersi] 'two years before', on the other hand, we observe that the meaning of the words of the 2nd group is easier than that of the 1st group. This difference does not arise from the prefix, but from the opacity of the constructed lexeme (prefixed word). The variable transparency was therefore included in the experiment. The two variables, conceptual salience (of the prefix) and semantic transparency (of the lexeme), have been crossed. We obtain thus the following conditions:

- (i) Non transparent words with a salient prefix, (S+T-), e.g. *προνόμια* [pro'nomia] or *προαγωγή* [proaγo'ji]
- (ii) Transparent words with a salient prefix (S+T+), e.g. *υπεραγαπώ* [iperaga'po] or *προνήπιο* [pro'nipio]
- (iii) Transparent words with a non-salient prefix (S-T+), e.g. *διαδίκτυο* [dia'diktio] or *επικάλυψη* [epi'kalipsi]
- (iv) Non transparent words with a non-salient prefix (S-T-), e.g. *επίδειξη* [e'pidiksi] or *διαπρέπω* [dia'prepo] (see table 1 for examples).

2.3 Working Hypotheses

The homogeneity of the semantic instruction of the prefix (conceptual salience) will ease the perception of the meaning of the morphologically complex word. Prefixes such as *υπο-* [i'po] and *υπερ-* [i'per] or *προ-* [pro] are more salient than *απο-* [a'po] and *δια-* [di'a], and will give rise to consistency effects of larger amplitude.

The effect of conceptual salience should be of larger amplitude for transparent conditions than for the opaque ones (S+T+ > S+T- > S-T+ > S-T-).

3. The experiment: Self-paced reading experiment in L2 Greek with context

3.1 The participants

The participants are 23 foreign advanced learners of Greek who have been living in Greece for at least 6 months. Their countries of origin are: Serbia, Bulgaria, Czech Republic, Ukraine, Belarus, Russia, Hungary and U.S.A. All of the participants are adults aged 22-39 years.

3.2 The stimuli

64 contexts-stories were used as stimuli. Each one of them contained a critical item, which appeared as the last word of the context-story. For every context-story, two critical items were created, the first one was consistent and the second one was inconsistent (see Table 1 for examples). The context-story was as simple as possible.

Table 1: Context-stories and items

	Context-story containing a consistent critical item	Non-consistent item
S+T-	<i>Η Μαρία είναι φίλη μου και την αγαπώ πολύ. Όσο και να λες κακά πράγματα για αυτήν, εγώ θα την υπερασπίζομαι [ipera 'spizome]</i> 'Maria is a friend of mine. I will keep on defending her no matter what you say about her'	<i>υπεραμύνομαι [ipera 'minome]</i> 'ward of attacks from'
S+T+	<i>Η Ελλάδα έχει πολύ μεγάλο δημόσιο χρέος, δηλ. πρέπει να πληρώνει κάθε μήνα τα δάνεια που έχει πάρει. Το χρέος της Ελλάδας είναι υπέρμετρο [i 'permetro]</i> 'Greece has got an enormous public dept, meaning that the country has to repay its loans on a monthly basis. The Greek dept is excessive '	<i>αναλογικό [analoji 'ko]</i> 'proportional'
S-T+	<i>Παλιά για να φτάσει ένα γράμμα από τη μία χώρα στην άλλη ήθελε τουλάχιστον πέντε μέρες. Τώρα γίνεται αυτόματα, γιατί έχουμε το διαδίκτυο [dia 'diktio]</i> 'In the past it took at least five days for the mail to reach its destination. Today everything happens automatically thanks to the Internet '	<i>διάστημα [di 'astima]</i> 'space'
S-T-	<i>Οι εφημερίδες γράφουν για τον υπουργό ότι έχει κάνει σκάνδαλα και παρανομίες. Αυτός όμως λέει ότι έχει γίνει στόχος επίθεσης [e 'pithesis]</i> 'Newspapers have made allegations of scandal and illegality against the minister. However he claims that he has been the target of attack '	<i>κατάθεση [ka 'tathesis]</i> 'deposit'

3.3 The procedure

The 64 phrases containing the critical items were presented to subjects in a self-paced reading protocol, i.e., fragment by fragment on the computer screen with a non-mobile window. Every time the subject pressed the spacebar, the next fragment appeared and the previous one disappeared, so that they could read only one fragment at a time, and going back was not possible. The stimuli were presented and reaction times were recorded through the DMDX program (Forster & Forster 2003). The critical item (consistent or inconsistent – C/NC)

appeared at the end of the phrase-context. Participants were asked to make a consistency judgment (Yes/No), and their reaction times, i.e., the time the subject needed to answer if the item was C or NC), were recorded. Two lists were created for this experiment, in such a way that each subject saw all phrases with either the C (half of the phrases) or the NC item, without ever seeing both in the same phrase-context. Subjects had a brief training session before the experiment.

3.4 The results

Mean reading times per condition were calculated (see Table 2) after excluding errors and outliers (<800ms and >7000ms). We ran an analysis of variance (ANOVA), with the factors A (consistency, C/NC), L (salience, L+/L-) and T (transparency, T+/T-) as independent variables, according to the experimental plan S23*A2*L2*T2. The main effect of consistency was significant [$F(1, 22) = 14.01, p < .001$], but the main effects of salience and transparency were not (both $F_s > 1$). The interaction between the three variables was not statistically significant, $F(1, 22) = 2.69$. The interaction between consistency and transparency showed a trend to significance [$F(1, 22) = 3.46$].

Table 2: Reaction times (RT) in milliseconds (ms) for the 8 experimental conditions and net consistency effects (NC-C) of exp. 1 (B1-B2 level)

	Consistent (ms)	Non-consistent (ms)	Consistency effect (NC – C)
S+T+	3643	3789	145
S+T-	3243	4056	813*
S-T+	3367	3928	560*
S-T-	3515	3879	364

The significant consistency main effect means that globally the processing of the consistent items was significantly faster than that of the inconsistent ones. Planned comparisons show us which ones of the consistency effects are significant and which are not. This will allow us to estimate the facilitation induced by the consistent condition (relatively to the inconsistent condition) and compare these facilitation effects obtained for each category of critical items (S+T+, S+T-, S-T+, S-T-) between them.

Planned comparisons revealed that only the S+T- and the S-T+ consistency effects (813ms and 560ms respectively) were significant [$F(1, 22) = 8.07, p < .01$, and $F(1, 22) = 9.46, p < .01$, respectively]. The other two conditions, S+T+ and S-T-, did not yield any significant consistency effects [$F < 1$, and $F(1, 22) = 2.92$, respectively], as shown in Table 2 (significant effects are denoted by an asterisk). This pattern of results can be interpreted as following: for the participants of Exp. 1, the “easiest” conditions to process are the S+T- and the S-T+ conditions, i.e., salience without transparency and transparency without salience. What is somewhat surprising is that the S+T+ conditions, which were supposed to be the easiest ones to process, did not manage to yield any effect. The S-T- conditions induced no effect, which is exactly what we expected. Before presenting a general discussion, we consider it necessary to compare these results to previous results, where participants were learners of Greek at a more advanced level.

4. Comparison to previous results (Voga, Nikolaou & Anastassiadis-Symeonidis 2017)

We compare the above results to those of Voga, Nikolaou & Anastassiadis-Symeonidis (2017), where exactly the same stimuli and exactly the same protocol were used, with a reduced number of subjects (16 subjects, from the same pool, i.e., students in the School of Modern Greek Language in Thessaloniki). The only difference was the linguistic competence of the subjects: C1-C2 level for exp. 2 vs B1-B2 level for exp. 1.

Table 3: Reaction times (RT) in milliseconds (ms) for the 8 experimental conditions and net consistency effects (NC-C) of exp. 2 (C1-C2 level)

	Consistent (ms)	Non-consistent (ms)	Consistency effect (NC – C)
S+T+	3511	4030	519*
S+T-	2824	3594	770*
S-T+	3264	3627	363
S-T-	3357	3342	-15

The results were processed exactly in the same way as for exp. 1. Mean reading times per condition were calculated (see Table 3) after excluding errors and outliers (<800ms and >7000ms). We ran an analysis of variance (ANOVA), with the factors A (consistency, C/NC), L (salience, L+/L-) and T (transparency, T+/T-) as independent variables, according to the experimental plan S16*A2*L2*T2. The main effect of consistency was significant [$F(1, 15) = 11.78, p < .001$], while the main effect of salience was not ($F < 1$). The main effect of transparency showed a trend towards significance [$F(1, 15) = 3.02$]. The interaction between S and T shows a (small) trend towards significance, despite the small number of participants, [$F(1, 15) = 2.69$]. Planned comparisons show that the 519ms effect for S+T+ conditions was significant [$F(1, 15) = 4.61, p < .05$], as well as the 770ms effect for the S+T- conditions [$F(1, 15) = 10.32, p < .001$]. The difference between C and NC conditions was not significant for the two other conditions S-T+, $F(1, 15) = 1.37$ and $F < 1$ for the S-T- condition.

The first conclusion from exp. 2 is that the participants of C1-C2 level exhibit significant consistency effects for the salient conditions (S+T+ and S+T-), but not for the non-salient ones. In other words, the “easiest” conditions to process are the salient ones (S+T+ and S+T-), whether they are transparent or not. However, we cannot say that the variable salience affects the reaction times of our subjects in a completely independent way with respect to transparency, given the trend towards significance of the interaction between these two variables. What is clear is that we cannot, on the basis of the results of a reduced number of subjects, exclude the role of transparency in interaction with salience. These results (exp. 1 and 2) will be discussed in the following section.

5. Discussion

We examine the implications of our findings for the following issues: how do L2 learners process complex words and what kind of variables influence morphological segmentation in L2 (Anastassiadis-Symeonidis & Mitsiaki 2010)? The two experiments reported above examined the role of the salience of the prefix, related to the multiplicity of the prefix’s semantic instruction. This variable is of paradigmatic nature, extending beyond the limits of the constructed word(s) under examination. In our experiments, this variable is crossed to

semantic transparency, a classic variable in morphological processing, referring to the constructed word itself, independently of the relationship it bears with other lexical units. The statistical analysis of the reaction times showed that, in exp. 2 (with C1-C2 learners) the salient conditions induce facilitatory consistency effects, whereas the non-salient ones do not. In exp. 1, with intermediate learners of Greek as an L2, two conditions out of four manage to induce facilitatory consistency effects (the S+T- and the S-T+ condition).

Before going any further, we need to point out that the experiment presented above was not an easy one: the task (consistency judgment) that our participants had to fulfil required full comprehension of the meaning of the word, and could not be (correctly) answered on the basis of familiarity or other variables of this type. Not only did the subjects have to identify the word, but they also had to identify its exact meaning and distinguish this meaning from that of another word having approximately the same frequency, the same prefix – in most of the cases – and the same length. Most of the research on processing constructed words, in L1 and L2 alike, is conducted by using protocols where the participant sees words in isolation (one by one) and has to make a quick decision on the lexicality of the stimuli presented in the middle of the screen (lexical decision), name the stimulus (naming task), type it, etc. In all these situations, we cannot be sure that the language system has really processed the meaning of the word, although all protocols of lexical decision are not equivalent with respect to the degree in which they assess the meaning of the word (cf. Voga & Giraud 2017, for more details).

If we consider for instance the lexical decision task, according to the Multiple Read-out Model (MROM, Grainger & Jacobs 1996; see also Hoffmann & Jacobs 2014), a classic computational model of orthographic processing in visual word recognition based on the interactive activation model (IAM; McClelland & Rumelhart 1981), a "WORD" response is given when the activation exceeds a certain criterion value. However, correct lexical decisions (Yes/No) can also be made without such lexical access to a certain word representation. This so-called first-pass judgment or fast-guess mechanism is generally said to be based on stimulus familiarity (Jacobs et al. 2003), which is, parenthetically, exactly what several pieces of data interpreted in decompositional terms are doing: nonwords such as *sportation*, *quickify*, related to a familiar base, e.g., *sport*, *quick*, lead to correct lexical decisions (or delay rejection times), on the basis of orthographic bottom-up activation, without necessarily involving what linguists call morphology, which is supposed to be related to semantics, one way or another (Voga & Giraud 2017: 243). Therefore, the most important contribution of our study is to evaluate the role of the variable tested in an ecologically valid manner, i.e., in a protocol where the meaning of the word has to be assessed in order to respond to the consistency judgment.

The main effect of consistency was significant for both levels of participants, which means that not only the more advanced learners but also the B1-B2 learners are able to correctly distinguish morphologically complex words and exhibit facilitatory effects for the consistent conditions. Our results show that the distinction between consistent and inconsistent words is facilitated for the salient items in exp. 2 (advanced level students), showing 519ms and 770ms of facilitation for the salient conditions, both transparent and opaque. In exp. 1 however, with participants with a lower level of language proficiency who have not been particularly exposed to morphological analysis, we cannot say if it is transparency, salience, or both variables that facilitate processing, given that the conditions that induce significant facilitation are the S+T- and S-T+ conditions, i.e., salience without transparency and transparency without salience. There is, in both experiments, an indication of the interaction between these two variables (although this interaction is not significant, there is a trend instead), which could point towards another aspect of what is usually called “transparency” and admittedly encompasses several aspects of semantic and conceptual characteristics. From this point of

view, the conceptual salience of the prefix we examined here could be another one of these characteristics.

If we go back to our results, the students of the C1-C2 level of competence (exp. 2) seem to have acquired a (more or less conscious) strategy based on salience of the prefix and semantic transparency of the constructed word, which does not seem to be the case for the B1-B2 group. This result can be taken as evidence that the competence of the C1-C2 students is qualitatively different from that of B1-B2 students, since C1-C2 students seem to be sensitive to a variable arising from the conceptual level. This result, i.e., sensibility to morphology based on variables of paradigmatic nature, is compatible with approaches in which the central levels of the system play a role through morphological variables, e.g. the multiplicity of the prefix's semantic instruction meanings (Morphologie Constructionelle, Corbin forthcoming; Bybee's Network Model 1985, 1988, 1995; Booij 2010, 2016).

This result is also compatible with any approach attributing more importance to lexical and semantic factors than to orthographic-perceptual ones, such as the Revised Hierarchical Model (RHM, Kroll & Stewart 1994; Kroll et al. 2010). One of the basic assumptions of the RHM, which is a model of L2 competence based on production data, is that the strength of the connections between the lexical and the conceptual level becomes greater as L2 acquisition progresses.

The above findings undermine any account based on sublexical decomposition into morphemes in which the segmentation into morphemes occurs independently of the characteristics of the words (among others, Rastle et al. 2004 for monolingual processing; Duñabeitia et al. 2013 for bilingual processing). If this were the case, the different categories of base+prefix words tested in our experiments should give rise to equivalent effects (or at least similar effects for transparent and non-transparent words).

Our results suggest in fact the opposite, i.e., that the facilitatory effect induced by the stimuli categories tested here depends on, or is influenced by, variables that extend far beyond prelexical characteristics, besides the fact that the words tested here, at least the transparent ones, are all equally decomposable. This provides evidence that the locus of the consistency effect for L2 constructed words is not situated at a sublexical (prelexical) level. Our results, at least for the C1-C2 group (and partly for the B1-B2 group), show that the locus of our effects is situated at the lexical level and above, given that the conceptual salience of the prefix influences participants' responses. The supralexicale model and its extensions (for monolinguals see Giraudo & Grainger 2001, 2003; for bilingual processing see Voga 2014, 2015; Voga & Giraudo forthcoming) could fit these data. In a supralexicale approach, the morphological level is situated above the lexical level, in such a way that what happens at the lexical level is constrained by the feedback of the morphological level, which is the level where information related to morphology is coded.

In the case of the variable tested here, the feedback from the semantic level leads to a higher activation within the morphological level: the conceptually salient stimuli will thus receive a higher amount of activation than those with a non-salient prefix (exp. 2). Note however that this type of account, in terms of cognitive processes taking place in the mental lexicon, is to be completed by variables/elements related to a 'mind-external' dimension. In the experiments reported above, the multiplicity of features, i.e. the multiplicity of the prefix's semantic instruction meanings, e.g., of the prefix *επί-*, as in *επίδειξη* 'demonstration' (versus *προ-*, as in *προβλέπω* 'foresee'), are not just ways to describe the grammatical or syntacticosemantic properties organized in a word's paradigm, but constitute these properties themselves by their semantic content and the manner of their combination (Acquaviva, 2016: 137). Consequently, the experimental data presented here can be seen as a demonstration of the role and influence of lexical atoms (Acquaviva, 2014; 2016) during L2 acquisition of a morphologically rich language. From another point of view, our data suggest that "processes"

do not tell the whole story and that language specific information about word boundaries may influence the ease of L2 acquisition, including in terms of “informativity” (Geertzen et al. 2016).

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