The Acquisition of Uninterpretable Features: The Case of vP Ellipsis

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1. Introduction

One of the major goals of generative L2 research has been to determine the extent to which assumed properties of Universal Grammar (UG) are available to L2 learners in the development of interlanguage grammars. Age at which an L2 learner is first exposed to the target language has also been considered an important interacting factor. According to the 'Interpretability Hypothesis' (Hawkins & Hattori, 2006; Tsimpli & Dimitrakopoulou, 2007), the full resources of UG are not available to post-childhood L2 learners. The locus of the deficit is in the narrow syntax where uninterpretable and interpretable features are distinguished. In this hypothesis, properties associated with uninterpretable features not already activated in the L1 grammar will pose a learning problem for older L2 learners because they are inaccessible beyond a critical period. On the other hand, properties associated with interpretable features are acquirable even if they are not part of their L1 grammar because they remain accessible throughout life.

In a new area of testing, this study examines the acquisition of auxiliary stranding in English as a phenomenon of vP ellipsis. The focus of inquiry in this paper is on the acquisition of the subtle contrast between the auxiliaries *be* and *have* when stranded as a result of verb elision under partial identity conditions, as in (1) and (2), respectively:

(1) *John **slept** and Mary **was ~~sleeping~~** too.

(2) Peter **saw** your parents last week, but he **hasn't ~~seen them~~** since.

According to Rouveret (2006), the contrast in acceptability between (1) and (2) is rooted in the differences of feature interpretability encoded on the morphemes of the elided constituents. In his account, *be* stranding as in (1) is ungrammatical because the progressive suffix (-ing) carries an aspectual interpretable feature which cannot be deleted unless the progressive interpretation is recoverable. On the other hand, *have* stranding as in (2) is allowed because the participle suffix (-en) carries an uninterpretable feature which is semantically irrelevant, and thus, must be deleted at LF.

Such a contrast is highly underdetermined by input. Although learners may encounter sentences like (2), as well as sentences like *John was sleeping and Mary was too*, there is nothing to tell them that sentences like (1) are not possible in English. Unless features of the narrow syntax are fully active, the contrast in (1)-(2) is a predictable candidate for fossilization even at advanced stages of acquisition. Given that vP ellipsis is not possible in Arabic grammar, it is informative to test Arabic L2 learners of

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English on this property. In order to test potential age effects on the acquisition of feature interpretability, the study compares the performance of two groups of (Saudi) Arabic EFL learners: child starters, who first started learning English in kindergarten or elementary school between 3-11 years of age, and teen starters, who first started language learning in middle school at 12-13 years of age. The purpose of focusing on EFL learners is to find out whether the minimal input setting of a foreign language classroom will be sufficient to allow child learners to access such features, hence giving them an advantage over adolescent learners in the long term.

The paper is organized as follows: First, the syntactic theoretical background of the tested property is reviewed briefly in light of English and (Saudi) Arabic (section 2). Then in section 3, the learning task faced by Arabic speakers learning vP ellipsis in English is described. In section 4, the research questions are stated, followed by a description of the empirical study undertaken along with the results (section 5). Finally, the questions addressed in this paper are discussed in light of the results obtained and the syntactic framework adopted (section 6).

2. Theoretical background

2.1. The Identity problem in English vP ellipsis

English displays vP ellipsis via structures of auxiliary stranding. These structures are derived by deletion of the verb that follows an auxiliary in the second clause, as indicated by a strikethrough in the following examples:

(3) John was **sleeping**, and Mary **was ~~sleeping~~** too.

(4) John has **slept**, and Mary **has ~~slept~~** too.

The standard assumption is that vP ellipsis is a PF deletion process that needs to satisfy the 'Parallelism Requirement' at LF between the antecedent verb and the elided verb. The constraint on parallelism is required to recover the identity of the elided part, which should receive the same interpretation of its antecedent (Chomsky, 1995; Lasnik, 1995).

However, there are instances of vP ellipsis in English where the inflectional morphology of the antecedent verb and the elided verb are not identical. In a hybrid approach to English morphology, Lasnik (1995) solves the identity problem in most of the cases by proposing that verb elision occurs before affix hopping, and in this way the requirement of (lexical) parallelism is satisfied before verbal roots are merged with inflectional affixes. One of the puzzling instances though is the divergent behavior of progressive *be* stranding and perfect *have* stranding in partial identity conditions, as in (5) and (6) respectively:

(5) *John **slept** and Mary **was ~~sleeping~~** too.

[-ed][sleep] [-ing][~~sleep~~]

(6) Peter **saw** your parents last week, but he **hasn't ~~seen them~~** since.

[-ed][see] [-en][~~see~~]

As indicated by the asterisk, progressive *be* stranding is disallowed when a finite verb antecedes the elided progressive verb, whereas perfect *have* stranding is allowed in the same circumstances. The divergent behavior of *have* in such conditions was first observed by Quirk et al. (1972) as reported in Lasnik (1995). Lasnik's proposal fails to capture the underlying constraints responsible for the distinct behavior of the stranded auxiliaries, *be* and *have*. In his proposal, both structures involve a stranded affix (-ing) and (-en), as shown in (5) and (6), and they likewise should be disallowed in the grammar because of violating the *stranded affix filter*. That is, however, not true because perfect *have* stranding is possible even with a stranded (-en) affix. Lasnik, thus, admits that the acceptability of *have* stranding in structures like (6) are challenging for his proposal.

Adopting the notion of feature interpretability, Rouveret (2006) solves the puzzling behavior of *be* and *have* when stranded in partial identity conditions. Building on Hagstrom's (December,1994) idea of 'interpretable identity', Rouveret develops a proposal where vP ellipsis is constrained by the 'recoverability condition', as stated in (7):

(7) A deleted/elided constituent cannot contain any non-recoverable interpretable feature. (p.37)

In his proposal, vP ellipsis is a PF deletion process that has access to information about feature interpretability available in the overt syntax. Interpretable features are essential in the computation of identity, whereas uninterpretable features are irrelevant to the computation. Therefore, any constituent carrying interpretable features cannot be deleted unless these features are recoverable from either the local environment or the antecedent conjunct.

In Rouveret's analysis, the structures in (5) and (6) are derived under the following assumptions: The progressive interpretation in (5) is neither recoverable from the auxiliary (*be*) nor the antecedent conjunct (*slept*) because none of them carries interpretable progressive features. It is the (-ing) affix that carries an interpretable progressive feature, and according to the 'recoverability condition,' the stranded (-ing) affix cannot be deleted unless it is recoverable which is not the case in structure (5). Therefore, in such circumstances, *be* stranding is disallowed. On the other hand, the (-en) affix carries an uninterpretable perfective feature, which is irrelevant for semantic interpretation, and thus, it must be deleted at LF. The fact that uninterpretable features are not visible for semantic interpretation means that the deletion of the (-en) affix does not violate the 'recoverability condition.' Another difference is that the perfect meaning is mainly encoded on the auxiliary, *have*, and not on the (-en) affix, which is the reverse of the progressive case where the progressive meaning is mainly carried by the affix (-ing) and not the auxiliary, *be*. Given that the perfect meaning is recovered from the auxiliary, *have*, and the stranded participle (-en) affix is deletable, *have* stranding is allowed as in structure (6).

2.2. TP ellipsis in Arabic

Unlike English, (Saudi) Arabic data do not show auxiliary stranding because of lack of vP ellipsis. Arabic is a verb raising language where the verb raises to TP to receive tense and agreement features (Benmamoun, 2000; Fassi-Fehri, 1993; Ouhalla, 1994). For ellipsis to take place, the whole TP is elided including the raised v, leaving no case assigner stranded, such as auxiliaries (Abdulkarim, 1996; Abdulkarim & Roeper, 1997). Assuming Cyrino and Matos' (2005) account, vP ellipsis is precluded in Arabic grammar because Aspect is highly grammaticalized, and thus, it projects as an independent functional category intervening between TP and vP. In this account, vP ellipsis occurs only in languages where the licenser locally c-commands the elliptical constituent as in English and Portuguese. Arabic grammar, on the other hand, is similar to German, French, Italian, and Spanish in that an Aspectual projection stands between the licenser and the elliptical constituent, blocking vP ellipsis.

Here are some examples from (Saudi Hejazi) Arabic illustrating the possibility of having an NP stranding structure as (8) resulting from TP ellipsis, but certainly not stranded auxiliaries as with the progressive auxiliary (*ga'id*) in (9), or the copula like auxiliary (*kan*) in (10):

(8) Nizar ga'id u-drus w hatta **Hashem** ~~ga'id u-drus~~. (NP stranding)
Nizar Prog **3MSG**-study and too Hashem ~~Prog **3MSG** study~~.
'Nizar is studying and Hashem too.'

(9) *****Nizar ga'id u-drus w hatta Hashem **ga'id** ~~u-drus~~. (*Aux stranding)
Nizar Prog **3MSG**-study and too Hashem Prog ~~**3MSG** study~~.
'Nizar is studying, and Hashem is too.'

(10) *****Nizar kan u-drus w hatta Hashem **kan** ~~u-drus~~. (*Aux stranding)
Nizar was **3MSG**-study and too Hashem was ~~**3MSG** study~~.
'Nizar was studying (used to study), and Hashem was too.'

3. The learning task for Arabic speakers

Based on the analysis in section 2, the task of Arabic speakers learning English vP ellipsis is twofold: First, they need to realize that Aspect in English is not highly grammaticalized as it is in Arabic. Therefore, Aspect is not an independent projection intervening between TP and vP. This information is required to learn that the verbal licenser in English, which is TP, locally c-commands vP, and therefore, vP ellipsis is possible. Second, they need to realize feature interpretability associated with the auxiliaries *be* and *have*, and the corresponding inflectional suffixes (-ing, -en), so that they can apply the 'recoverability condition'. The target feature composition is described in (a) and (b):

(a) *be* conveys a stative meaning, and the affix (-ing) carries an interpretable progressive feature.

(b) *have* conveys the perfect meaning, and the affix (-en) carries an uninterpretable perfective feature.

4. Research questions

1. Will Arabic EFL learners of advanced proficiency learn that English allows auxiliary stranding, and further realize the subtle contrast between *be* and *have* when stranded in partial identity conditions?
2. Will exposure to English in a minimal input situation (the classroom) be sufficient to allow child learners to access uninterpretable features, hence giving them an advantage in vP ellipsis over adolescent learners in the long term?

5. Empirical study

5.1. Participants

The study was conducted with 132 Saudi college students in the English Department at a national university in Saudi Arabia, along with a control group of 11 English native-speakers. Based on their age at first classroom instruction in Saudi Arabia, the participants were divided into two groups: (a) child starters, those who started learning English from elementary school or kindergarten between the ages of 3 and 11 years old, and (b) teen starters, who first started in middle school at the ages of 12-13 years old. Some background information about the tested groups is summarized in Table 1.

Table 1 Participants' Background Information

	Controls (*n*=11)		Child Starters (*n*=50)		Teen Starters (*n*=82)	
	Range	Mean	Range	Mean	Range	Mean
Age at testing	19-48	25.64	18-31	21.86	18-33	23.17
Age at first classroom instruction	-	-	3-11	6.50	12-13	12.44
Years of studying English	-	-	9-20	15.20	7-20	10.23
Accumulated hours of exposure	-	-	768-1360	1021	610-3252	819

5.2. Proficiency Cloze test

A cloze passage with 40 blanks based on Slabakova (2001) was used to assess the participants' proficiency. The passage was adapted from *American Kernel Lessons: Advanced Student's Book* by O'Neill et al. (1981) as reported in Slabakova (2001). Apart from the first sentence, every seventh word was omitted. The participants had to fill in each blank with only one word that conveys the meaning in that context. Plausible answers were given a point, and implausible ones a zero. The scoring was validated by an independent native-speaker judge.

To divide the participants into proficiency groups, regression analysis was used as a measure for the best fit between groups and participants (Slabakova, 2001). The best fit emerged at the value of R^2

=0.89 with four group divisions categorized as follows: elementary (4-12), low intermediate (13-21), high intermediate (22-30), and advanced (31-40).

The proficiency group divisions were further confirmed in a one-way ANOVA that shows a significant group effect, F (4,138) =376.404, p<.001. In Scheffe's test, the mean score of the advanced group (31-40) was confirmed indistinguishable from that of the natives, p>.05. Apart from that, the Scheffe's test showed significant differences between all the groups, p<.001. In Table 2, mean scores for proficiency groups are summarized as for child and teen starters separately.

Table 2 Groups' Scores on the Cloze Test

	Proficiency levels (score range)							
	Elementary (4-12)		Low intermediate (13-21)		High intermediate (22-30)		Advanced (31-40)	
	n	Mean (SD)	*n*	Mean (SD)	*n*	Mean (SD)	*n*	Mean (SD)
Controls	-	-	-	-	-	-	11	36.55 (1.57)
Child starters	6	7.50 (2.35)	19	16.84 (2.75)	20	26.35 (2.11)	5	32.60 (1.95)
Teen starters	12	8.00 (3.19)	27	16.70 (2.63)	34	26.26 (2.84)	9	34.89 (2.98)

5.3. Acceptability Judgment Task (AJT)

To test Arabic speakers' awareness of vP ellipsis in English, a bimodal timed AJT was used. The task consisted of 164 sentence stimuli, of which 52 items focused on vP ellipsis. As far as auxiliary stranding is concerned, there were 16 test items, with eight items each for *be* and *have* stranding. There were four items per condition balanced in terms of tense (past, present), coordinator type (*and, but*), and presence of a contracted negation to the stranded auxiliary. The overall battery of test items was balanced in terms of grammaticality. The tested conditions are summarized with an exemplary test item as in the following:

A. Progressive *be* stranding (8 items)
   a. Strict Identity (4 items)
      e.g., John is watching TV, but Mary isn't yet.
   b. Partial Identity (4 items)
      e.g., *Heather visits her mother, but Mary isn't yet.

B. Perfect *have* stranding (8 items)
   a. Strict Identity (4 items)
      e.g., Claire has bought a new house, but Mary hasn't yet.
   b. Partial Identity (4 items)
      e.g., John plays football, but Tom hasn't recently.

The task was administered via a power-point slide show. The sentences were presented one at a time and read twice by a female English-native speaker. The items were then displayed each for nine seconds during which the participants had to mark their judgments on a five-point scale that ranges from 1(definitely impossible) to 5 (definitely possible), with midpoint 3 indicating (don't know). The test items were arranged in four blocks with each having 41 items to allow for short interval breaks. Two versions of the test were used with pseudo-randomized items to control for order effects.

Results were analyzed in terms of accuracy. On a five-point accuracy scale, (1) indicates the lowest degree of inaccuracy and (5) the highest degree of accuracy, with midpoint (3) indicating don't know. The scalar polarity had to be reversed for ungrammatical test items, but not for the grammatical items.

5.4. Results

Table 3 presents the accuracy means obtained by Arabic EFL child and teen starters, and English controls. As shown from the group results in Table 3, child and teen starters overlap in their performance on auxiliary stranding in strict and partial identity conditions. Both groups perform in a

target-like way, showing high levels of accuracy when the elided verb and the antecedent conjunct are identical as with examples (11) and (12):

(11) Martin **was washing** the dishes, and Mary **was** too. (*be* stranding)

(12) Susan **has retired** from teaching, and Wendy **has** too. (*have* stranding)

Table 3 Mean Accuracy on Auxiliary Stranding: Between-groups Comparison

Conditions	Groups			*df*	*F*
	Controls (*n*=11)	Child Starters (*n*=50)	Teen Starters (*n*=82)		
be stranding					
Strict identity	4.39 (0.91)	4.03 (0.79)	4.09 (0.67)	2,140	1.093
Partial identity	4.52_{a} (0.49)	3.38_{b} (1.32)	3.37_{b} (1.26)	2,140	4.355*
have stranding					
Strict identity	4.57 (0.87)	4.40 (0.58)	4.46 (0.54)	2,140	0.433
Partial identity	3.84_{a} (0.77)	2.89_{b} (0.94)	2.80_{b} (0.92)	2,140	6.289**

Note. Standard deviations are given between parentheses.
Different subscripts indicate significant differences at $p<.05$ in the Scheffe and the Dunnett T3 post hoc comparisons.
*$p<.05$. **$p<.01$.

On the other hand, child and teen starters perform in a non-target-like way on partial identity conditions, achieving low levels of accuracy when a finite verb antecedes an elided progressive or participle verb form as in (13) and (14):

(13) *John **slept** and Mary **was** too. (**be* stranding)

(14) Peter **saw** your parents last week, but he **hasn't** since. (*have* stranding)

When one-way ANOVA was conducted on the four tested structures with group (child starters, teen starters, and controls) as the main factor, there was a significant group effect on accuracy for conditions of partial identity, but not strict identity (see Table 3). In the Dunnett and Scheffe post-hoc comparisons, child and teen starters are confirmed as less accurate than the natives on auxiliary stranding in cases of partial identity, $p<.05$.

The overlapping performance of child and teen starters is further confirmed in a one-way ANCOVA when amount of input is covaried at the value of (896.08) hours of exposure, and proficiency score additionally covaried at an average score of (21.28). Regardless of starting age, both groups obtain comparable high levels of accuracy in strict identity conditions with progressive *be* stranding, F (1,128) = .578, $p> .05$, and perfect *have* stranding, F (1,128) = .002, $p> .05$. They are also confirmed to have achieved comparable low levels of accuracy in partial identity conditions when **be* is stranded, F (1,128) = .215, $p> .05$, and when *have* is stranded, too, F (1,128) = .314, $p> .05$. As far as the covariates effect is concerned, input is not significantly related to accuracy in any of the tested structures, $p>.05$, whereas proficiency is shown to have a significant effect. Proficiency is significantly related to accuracy in partial identity conditions with both auxiliaries, **be* stranding, F (1,128) = 53.344, $p< .001$, and *have* stranding, F (1,128) = 16.721, $p< .001$. The attested effect of proficiency indicates that accuracy improves as proficiency increases. In strict identity conditions, however, proficiency is significantly related to accuracy with structures of *have* stranding, F (1,128) = 10.941, $p< .01$, but not with *be* stranding structures, F (1,128) = .201, $p> .05$. Given the high levels of accuracy obtained in strict identity conditions with both auxiliaries, then the absence of proficiency effect with only progressive *be* stranding possibly indicates that it is acquirable from very early stages, even before perfect *have* stranding.

Summarizing the main findings so far, group results from ANOVA and ANCOVA has shown that child and teen starters with equal amounts of input achieve well on structures where the elided verb and

the antecedent conjunct are strictly identical, but perform poorly on structures of partial identity with distinct verbs forms. However, in a thorough reading of their accuracy rates on partial identity cases, a subtle difference in degree of accuracy by auxiliary type requires attention. As in the shaded cells in Table 3, while child and teen starters equally show a moderate rate of accuracy on ungrammatical **be* stranding, they achieve a much lower accuracy rate on grammatical *have* stranding. Both groups tend to be conservative in rejecting structures such as,**John **slept** and Mary **was** too*. In fact, individuals within each group show some inter-variation in their judgments about such structures as indicated by the standard deviation. On the other hand, they are more definite about the ungrammaticality of structures like, *Peter **saw** your parents last week, but he **hasn't** since***,** and therefore, they (incorrectly) reject them as a group (see Table 3).

It is, therefore, crucial to examine how Arabic EFL learners' grammars realize the distinction between possible and impossible structures of auxiliary stranding. The following step in analysis is to look into the performance of child and teen starters by proficiency on paired conditions. For the narrow focus of this paper, the performance of high intermediate (HINT) and advanced (ADV) proficiency learners only is reported. To test the effect of structure type (4 structures of *be*/*have* stranding in strict and partial identity) on accuracy judgments, a series of one-way repeated measures ANOVA were run for groups of child and teen starters across proficiency levels, along with the English controls. As in Table 4, structure type is shown to have a significant effect on the accuracy rates given by Arabic speakers from all groups, but no effect on the natives' accuracy. This indicates that the accuracy of Arabic speakers varies across structure types, whereas the accuracy judgments of English native speakers are statistically indistinguishable on structures of auxiliary stranding. Three pairs of auxiliary stranding are examined: (a) *be* stranding in strict and partial identity conditions, (b) *have* stranding in strict and partial identity conditions, and (c) *be* and *have* stranding in partial identity conditions. Bonferroni comparisons are conducted to ascertain which pairs of the tested structures are responsible for the significant effect of structure type.

Table 4 Mean Accuracy on Auxiliary Stranding by Proficiency: Within-groups Comparison

Groups	Structure Type				*df*	*F*
	be stranding		*have* stranding			
	Strict	Partial	Strict	Partial		
Natives (*n*=11)	4.39 (0.91)	4.52 (0.49)	4.57(0.87)	3.84 (0.77)	1.39,13.86	3.703
Child Starters						
HINT (*n*=20)	4.08 (0.90)	3.93 (1.06)	4.49 (0.52)	2.73 (0.78)	2.21,42.03	14.745***
ADV (*n*=5)	3.80 (0.41)	4.20 (0.82)	4.60 (0.52)	2.30 (0.57)	3,12	14.503***
Teen Starters						
HINT (*n*=34)	4.04 (0.75)	3.94 (1.03)	4.51 (0.51)	2.49 (0.90)	2.27,74.73	37.544***
ADV (*n*=9)	4.14 (0.53)	4.75 (0.43)	4.89 (0.13)	2.47 (0.70)	3,24	39.609***

Note. Standard deviations are given between parentheses.
For the natives, high intermediate child and teen starters, the degrees of freedom are corrected at Greenhouse-Geisser estimates of sphericity given in order (ε = .755, .462, .737).
***p<.001.

As observed from the accuracy means in Table 4, child and teen starters of matched proficiency levels obtain comparable accuracy judgments on progressive *be* stranding in strict and partial identity conditions. They correctly reject structures like, ***John **slept** and Mary **was** too*, and correctly accept, *Martin **was washing** the dishes, and Mary **was** too*. In the Bonferroni comparisons, non-significant differences between mean accuracy on both structure types are confirmed, p>.05, within each group. Accordingly, both groups of high intermediate and advanced proficiency levels show that they have learned that *be* stranding is ungrammatical in partial identity cases, but it is grammatical in strict identity. On the other hand, on paired structures of perfect *have* stranding, child and teen starters of matched proficiency levels obtain lower accuracy judgments on partial identity than on strict identity conditions. That means they judge *have* stranding in structures as, *Peter **saw** your parents last week, but he **hasn't** since*, less accurately than when *have* is stranded in strict identity cases as, *Susan **has retired** from teaching, and Wendy **has** too*. Their low accuracy judgments here indicate that they mis-analyse

cases of *have* stranding as ungrammatical in partial identity conditions, and therefore, they incorrectly reject them. In the Bonferroni comparisons, this is significantly attested with child and teen starters of high intermediate proficiency, $p<.001$. It is also confirmed at advanced proficiency levels in the performance of child starters, $p<.05$, and teen starters, too, $p<.001$. In view of that, Arabic speakers are shown to have failed to realize that *have* stranding is allowed in partial identity conditions as it is allowed in strict identity.

Having examined their performance on *be* and *have* stranding each in strict and partial identity conditions, we now compare their accuracy judgments on *be* and *have* stranding in partial identity conditions. As expected from their performance on the previous paired conditions, child and teen starters of matched proficiency obtain lower accuracy judgments on *have* stranding than on *be* stranding. In the Bonferroni comparisons, low accuracy judgments are significantly confirmed with high intermediate proficiency groups in the performance of child starters, $p<.05$, and teen starters, $p<.001$. This is also attested at advanced proficiency levels in the performance of teen starters, $p<.001$. Child starters also achieve lower accuracy ratings, but they are not significantly distinguished from their ratings on *be* stranding, $p>.05$. This is, however, a statistical artifact due to the small number of the group size ($n=5$). Therefore, to ascertain the actual performance of all five-advanced learners in the child starters group, we looked at their individual ratings. It was found that all with no exception incorrectly reject *have* stranding, and their representation is thus regarded as non-target like.

To sum up, results from between-group and within-group comparisons have shown that Arabic speakers regardless of starting age have learned that vP ellipsis is possible in English, but they have not learned the conditions that preclude auxiliary stranding. Their interlanguage grammars disallow vP ellipsis in partial identity conditions regardless of auxiliary type, which is not the case in English grammar.

6. Discussion and conclusion

This paper has addressed two main questions: The first one relates to the learning problem faced by Arabic speakers in the acquisition of a subtle contrast that involves uninterpretable features as in *be* and *have* stranding in partial identity conditions. The second question relates to evaluating potential age effects in a classroom setting on the acquisition of uninterpretable features.

Starting with the learning problem, our results from auxiliary stranding are consistent with the 'Interpretability Hypothesis', in that the acquisition of uninterpretable features causes difficulty for L2 learners even at advanced levels of proficiency. As shown from the accuracy judgments of our Arabic EFL learners, although they have learned that auxiliary stranding is possible in English contra their Arabic L1 grammar, they have not learned the conditions under which vP ellipsis is precluded. Therefore, they failed to capture the subtle contrast between progressive *be* stranding and perfect *have* stranding in partial identity conditions (**John **slept** and Mary **was** too, vs. Peter **saw** your parents last week, but he **hasn't** since*). They seem to have a deletion strategy that is not sensitive to feature interpretability, but only to strict surface identity. In their grammars, verb elision is apparently constrained by a requirement of strict lexical identity between the antecedent verb and the elided verb. This was indicated from their high levels of accuracy judgments on strict identity conditions. Therefore, they reject auxiliary stranding across the board in non-identical conditions.

Assuming Rouveret's analysis, with Arabic speakers rejecting structures like, *Peter **saw** your parents last week, but he **hasn't** since,* as ungrammatical, it can be argued that the participle (-en) is not assigned an uninterpretable perfective feature in their grammars. They also do not seem to associate the perfect meaning with auxiliary *have*; otherwise, they would have accepted perfect *have* stranding given that the meaning is recoverable from the stranded auxiliary. It is also not evident whether the affix (-ing) is assigned an interpretable progressive feature even though they have correctly rejected structures such as, **John **slept** and Mary **was** too*. From their performance, it can be argued that both stranded affixes are non-deletable in their grammars, which entails having a similar representation or feature composition. It is not attested though whether the reason for non-deletability has to do with being assigned interpretable features, which are non-recoverable in cases of partial identity.

As far as age effects are concerned, our results are not consistent with a maturational account for L2 learners' divergence. As shown from the group results, both child and teen starters with equal

amounts of input and comparable proficiency levels overlap in their performance. They have shown similar patterns of convergence in cases of strict identity and divergence in cases of partial identity. Regardless of starting age, teen starters, like child starters, have learned that auxiliary stranding is allowed in English, and they have equally failed to learn the conditions under which vP ellipsis is disallowed. These results also suggest that classroom exposure is not sufficient to allow child learners to access uninterpretable features, and therefore, child starters had no advantage over adolescent learners in the long term. However, given that the tested contrast is very subtle and already highly underdetermined by input in an immersion setting, no advantages for early L2 learning could be perceived, unless a substantial amount of input has been provided. In view of this, our child starters did not have sufficient exposure as they have been exposed to an average of only 1021 hours of input compared to the teen starters who had an average gain of 819 hours. In a very recent study conducted in Japan, Larson-Hall (2008) for the first time shows advantages for early L2 learning in a minimal input situation but only after exposure to an intensive amount of input. The early starters in her study scored higher than the late starters on a grammaticality judgment measure after a range of 1600-2200 hours of input, and they scored higher on a phonemic task after 1200-2200 hours of input. The issue then is not only starting age, but also the nature and amount of exposure. Both are of equal importance. Based on this, child starters appear to need to be exposed to massive amounts of input before puberty in order to benefit from the full resources of implicit learning.

In summary, while our acquisitional data on the identity problem in vP ellipsis support the 'Interpretability Hypothesis', in that uninterpretable features are problematic for L2 learners, it does not support a maturational account for why such features are vulnerable in L2 learning, at least in a minimal input setting. More research is indeed required into the locus of the learning problem for L2 speakers, and specifically in relation to maturational accounts more evidence is needed from learners of different ages exposed to the target language in different settings.

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