

SYNTACTIC PROCESSING OF SUBJECTS IN DIFFERENT WORD ORDERS IN ARABIC: DO ARABIC HERITAGE SPEAKERS DIFFER FROM NATIVE SPEAKERS WHEN PROCESSING SVO/VSO?

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1. Introduction

The aim of this study is to investigate the preference and processing of Arabic word order, namely, Verb-Subject-Object (VSO) or Subject-Verb-Object (SVO) by heritage speakers of Arabic (HSs) living in Ottawa, Canada. In Standard Arabic (SA) and in a variety of regional dialects in the Arab world, two different word orders can be used: VSO or SVO with a noticeable preference for VSO; see (1) for VSO and (2) for SVO.

- (1) kataba ?al-walad-u ?al-wadʒib-a
wrote the-boy-*NOM* the-homework-*ACC*
'The boy wrote the homework.'
- (2) ?al-walad-u kataba ?al-wadʒib-a
the-boy-*NOM* wrote the-homework-*ACC*
'The boy did the homework.'

It can be noticed that the subjects in both examples (1) and (2) are definite. It is worth mentioning that indefinite subjects are licensed in postverbal positions as shown in (3), but not in preverbal positions as shown in (4). Indefiniteness in Arabic is manifested by adding nunation (NUN) to the stem. It always follows the Case marker. Indefinite subjects cannot occupy sentence initial positions unless they are licensed. We are not going to further discuss the licensing issue in detail since it is out of the scope of the current study.

- (3) kataba walad-u-n ?al-wadʒib-a
wrote boy-*NOM-NUN* the-homework-*ACC*
'A boy did the homework.'
- (4) *walad-u-n kataba ?al-wadʒib-a
boy-*NOM-NUN* wrote the-homework-*ACC*
(Lit: A boy did the homework.)

Heritage speakers who participated in the current study are speakers of Arabic; their dominant language is usually English (L2) whereas Arabic (L1), their native language, is a less dominant one since its use is generally limited to home. They use their native language when they communicate with their parents. However, in most situations in their daily life, they use L2. Similar cases have been reported by Cook et al. (2003) and Montrul

(2010a) where the use of L2 becomes more dominant than the use of L1. This unbalanced use might affect their native language. Their competency in L2 might be gained at the expense of L1 attrition. HSs are considered to be bilinguals with balanced or unbalanced bilingualism. Benmamoun et al. (2010) define HSs as early bilingual speakers who are considered as speakers of minority languages; those speakers show different proficiency in their native language. Their proficiency ranges from passive knowledge of the native language to balanced competence in both languages (ibid). Fillmore (1991) points out that when immigrant children learn English, the use of their L1 changes at home. This change in the native language correlates negatively with their onset age of learning English. The earlier they learn English, the more change they show in their L1. The effects of L2 on L1 in general and, more specifically, on speakers of heritage languages have recently become a focus of attention by linguists and psycholinguists. Endeavours by several studies (Benmamoun et al., 2010; Brien and Sabourin, 2012; Cook et al., 2003; Jarvis, 2003; Polinsky, 2009) have embarked investigations of such a phenomenon. The current study hopes to contribute to the field. It has two main goals: (a) *to determine a preferred word order in SA* **and** (b) *tries to find out if the L2 affects L1 syntactic processing*. As a matter of fact, English and Arabic have different syntactic word orders. The former has a rigid word order, SVO, whereas the latter can be SVO or VSO. It is well attested in the literature that VSO is the dominant word order and SVO is the alternative order. Contemporary linguists argue that VSO is more dominant than SVO (Abdul-Raof, 1998; Fassi-Fehri, 1993; Friedmann and Costa, 2011; Ingham, 1991, and studies cited therein). In order to check for the preferred word order, a writing task (a sentence reordering) was administered. In this task, participants are required to write scrambled words in the correct order to make grammatical sentences. In order to determine whether there is an L2 effect on L1 syntactic processing, a centre non-cumulative self-paced reading task is administered and the reaction time (henceforth, RT) for the target words (subjects in: definite SVO, definite VSO and indefinite VSO) is calculated. The participants of this study are heritage speakers of Arabic living in Ottawa, Canada and native speakers of Arabic (Saudi students) studying at the University of Ottawa (NSs).

2. Background

This section presents an account of the proposals that discuss the syntactic derivation of the sentence word order found in Arabic within a Minimalist framework.

2.1 Subject distribution in Arabic word order

The syntactic subject position determines the type of word order in Arabic. If the subject appears preverbally, it gives an SVO order. By contrast, if the subject is placed postverbally, it gives a VSO order. The subjects being in different syntactic positions is a result of syntactic movements by which the subjects or the verbs are moved depending on the type of the spelled-out word order. Presumably, natural languages may have a common underlying word order as pointed by Chomsky (1995). Any word order that differs from the canonical word

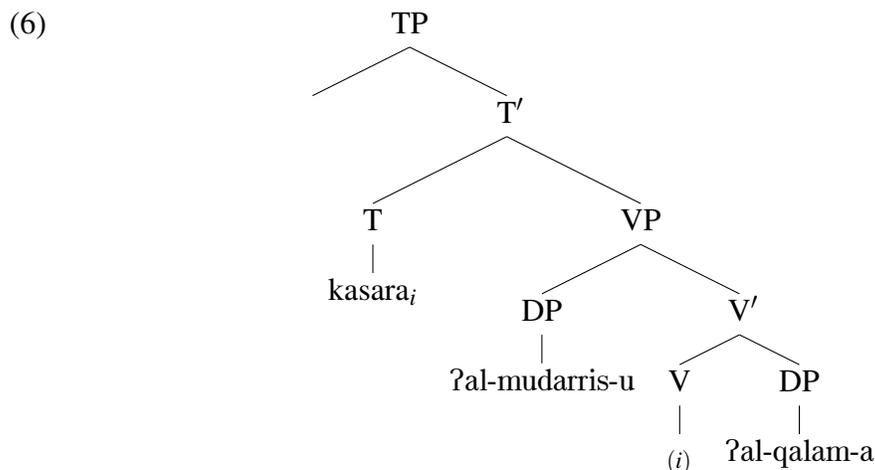
order is assumed to have undergone syntactic movements. Taking this into considerations, we believe that if a derivation of an order requires less movements, it indicates that it is easy to process. By contrast, if more movements are required, more processing is required as well.

2.1.1 Subjects in VSO order

Several proposals have been suggested to account for the distribution of subjects in VSO orders in Arabic. Syntactic movements, agreement and canonicity of subjects and verbs form the fundamental argument of these proposals.

Having discussed the positions of subjects in Arabic, among other languages, Koopman and Sportiche (1991) conclude that the Arabic clause structure can offer two syntactic positions to host the subject. These positions are the *thematic subject position* [Spec: VP] and the *grammatical subject position* [Spec: TP]. They argue that when the subject occupies [Spec: VP], it results in VSO order; V-to-T movement is required however. Aoun et al. (2010) investigated the subject position in Arabic. As far as VSO is concerned, they argue that the subject originates in [Spec: VP]. [Spec: TP] may be left empty as shown by (6) which is the syntactic representation of (5).

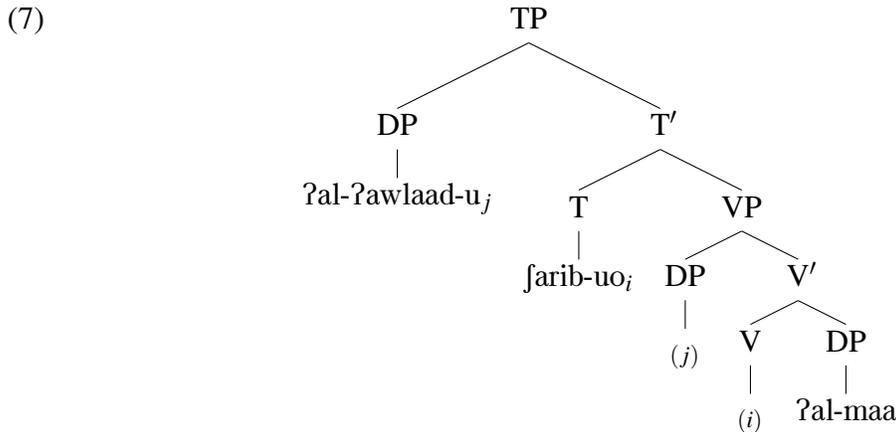
- (5) kasara ?al-mudarris-u ?al-qalam-a
 broke the-teacher-*NOM* the-pen-*ACC*
 ‘The teacher broke the pen’.



This proposal assumes no overt movement of the subject; it remains in situ where it receives its nominative Case. In (5), the linear word order, VSO, is achieved through the head-movement of the verb from V-to-T resulting in the correct order as argued by Benmamoun (2000). Similarly, Fassi-Fehri (1993) proposes that the subject in Arabic originates in [Spec: VP]. The VSO order is a result of raising V-to-T and the subject stays in situ.

2.1.2 Subjects in SVO order

The distribution of preverbal subjects is an intriguing topic among contemporary linguists. Two different views are proposed for SVO derivation in the literature. The first view, *structural subject view*, assumes that subjects occupying [Spec: TP] are initially generated in the subject thematic position [Spec: VP] then they move higher up into [Spec: TP]. This view assumes that the preverbal DPs occupying [Spec: TP] are grammatical (structural) subjects. They are base-generated in [Spec: VP]; as result of an XP movement, they move from [Spec: VP] to [Spec: TP] as can be seen in the following example:



In the previous example, the subject *?al-?awlaad-u*: ‘the boys’ moves from [Spec: VP], the argumental position, to [Spec: TP], the structural position. This idea is acceptable by the vast majority of studies that have investigated word order in Arabic.

The second view, *topic view*, argues that DPs that occupy [Spec: TP] are not real subjects; instead they are topics. This proposal, advanced by Al-Balushi (2011, 2012) and Soltan (2006), claims that the DP occupying [Spec: TP] in SVO order is not a subject but a topic as exemplified by (8).

- (8) ?al-mudarris-uon kasara-u ?al-baab
 the-teacher-*PL-NOM* broke-*PL* the-door-*ACC*
 ‘The teachers broke the door.’

They argue that there is only one subject position, namely, [Spec: VP]. They contend that there are no preverbal subjects in Arabic. These DPs which appear preverbally are topics and not real subjects; the real subjects, according to their proposal, are the subjects which appear postverbally putting Arabic among VSO languages that do not have an SVO order as an alternative one. There are challenges to this proposal and it is not well-supported in the literature. It is out of the scope of the current discussion to present the argument against their proposal.

2.2 Word order processing cross-linguistically

Languages vary in subject and head parameters (Chomsky, 1995). For example, subject parameters, in Arabic, can be set preverbally in SVO or postverbally in VSO; there can also

be prodrop subjects. By contrast, subject parameters, in English, are set preverbally. Setting subjects with different parameters might result in processing conflict when two different languages with different word order come into contact. Below, we introduce some of the studies which have investigated processing of word order cross-linguistically.

Thompson and Werfelli (2012) investigated processing of VSO and SVO structures in spoken Saudi Arabic. They examined the processing times associated with these constructions. They use evidence from processing time to determine whether one structure of the two (SVO or VSO) is the basic word order and the other is the alternative one. It was found that VSO takes less time than SVO. Kiyama et al. (2013) investigated the effect of animacy of object nouns on word order processing of Kaqchikel (a Mayan language spoken in Guatemala). Unexpectedly, they reported that there was no significant difference between processing of the two word orders when animacy is controlled for. However, when they controlled for the different word order, they reported that VOS order was processed faster than SVO order. They attributed the fast processing shown by VOS to the idea that Kaqchikel's word order parameter is set to VOS; however, SVO and VSO are attested in the language. Having assumed that VOS is the canonical word order, they concluded that slow processing of SVO structures might be due to the canonicity. Koizumi et al. (2014) investigated processing of different word orders in Kaqchikel speakers using a sentence plausibility judgment listening task. Based on their findings, Koizumi et al. argue against the idea that there is a universal preference for SO order, though this SO order is more prevalent across languages. Their study indicated that OS word order requires less processing than SO in Kaqchikel. They argue that less processing of VOS shown by the participants indicates that this order is the basic syntactic structure in Kaqchikel.

There is still a paucity of studies that investigate heritage speakers' linguistic knowledge; in particular there is a lack of studies in this area that focus on language processing. The inadequacy of studies that investigate heritage speakers is due, we believe, to the limitation in the number of environments where heritage speakers exist. Equally important, in our opinion, heritage speakers' proficiency is a grey area ranging from native-level linguistic competence to weak or no competence in their L1. This is also noted by Benmamoun et al. (2010). The current study aims to investigate those speakers' linguistic knowledge and probe their cognitive ability in processing their native language.

2.3 Questions and hypotheses

This study attempts to answer the following research questions:

- Do heritage speakers of Arabic, whose dominant language is English, prefer VSO or SVO order when using their native language?
- If a certain preference is found, is it affected by input received at home (parents' native language) or by the structure of the dominant L2?
- When performing an online self-paced reading task, is there a significant difference in RT when processing SVO/VSO between/within the two groups (native and heritage)?

The writing task is administered to answer the first two questions; the self-paced reading task is administered to answer the third question.

3. Methodology

3.1 Stimuli

The study used two tasks, a sentence reordering task and an online self-paced reading task.

3.1.1 Writing task

Participants were given 24 sentences. Each sentence was scrambled into randomly ordered words. The participants were required to rewrite them in the correct order. Three different types of sentences, eight of each type, were generated (16 indefinite/indefinite declarative sentences, eight interrogative sentences). The interrogative sentences were designed as distractors. Whether the participants compiled them in the correct order or not, they were not included in the analysis since their role was simply to distract participants from the experimental stimuli. The 24 sentences were carefully mixed. For example, the first eight sentences have included an equal number of definite and indefinite sentences infused by two or three distracting interrogative sentences; the same procedures were applied to the second and third 8 sentences.

3.1.2 Online self-paced reading task

The self-paced reading task is used to record reading time spent to read a word, a phrase or a sentence. The reading tasks are computer-based. It is self-paced because the time spent to read a segment is totally under the control of the participant being tested (Jegerski, 2014). A self-paced reading task, non-cumulative model, consisting of 100 sentences was administered in the current study. The task was designed to include: 20 interrogative sentences, 20 definite SVO declarative sentences, 20 definite VSO declarative sentences, 20 indefinite VSO declarative sentences and 20 indefinite SVO declarative sentences. The targeted sentences are definite SVO, definite VSO and indefinite VSO. To be precise, the time taken to process the word that occupies the subject position is recorded and considered as the RT. The interrogative sentences and indefinite SVO, ungrammatical structures, were used as distractors thus they are not considered for any measurement.

3.2 Procedure

The software called Presentation (Neurobehavioural Systems) was used to for stimuli presentation. To begin the experiment, a participant is oriented on how to advance during reading by using a pre-set command keys. The RT taken from the onset appearance of the word until the participant has pressed the SPACE-BAR (a key assigned to advance through reading) is calculated and considered to be the RT.

3.3 Participants

Three groups participated in the current study. These groups are (1) *native speakers of Arabic*, (2) *heritage speakers' parents* and (3) *heritage speakers of Arabic*.

3.3.1 Native speakers

Twenty Saudi participants (18 male and two female) comprised the native speaker group. Those students are graduate and undergraduate enrolled in different academic programs at the University of Ottawa or at Carleton University. Their ages range from 21-40 with an average of 27.53. The duration of their stay in Canada ranges from 2-5 years.

3.3.2 Parents of the HSs

Ten parents (five of each gender) partially participated in the study. Their participation were limited to performing the sentence reordering task. This task was designed to investigate the parents' tendency towards the preferred Arabic word order. In other words, we would like to find whether they prefer SVO or VSO. Based on their preference, input effect on the children (HSs) can be factored out. Precisely, if the parents prefer VSO, when performing the task and their children prefer SVO, it can be argued that the children's preference is due to L2 dominant language, English, word order affecting HSs' choice of their native language flexible word order VSO or SVO. If, on the other hand, the parents prefer SVO over VSO, then their children's preference (in the case that they preferred SVO) might be due to input from the parents and not due to dominance of L2.

3.3.3 Heritage speakers

Nine heritage speakers of Arabic participated in the study. Their ages range from 20-25 with an average of 21.33. They live in Ottawa. Prior to administering the tests, they completed a linguistic and biographical background questionnaire. Based on the given information, we ensure that all HSs participating in this study have similar backgrounds and linguistic environments. The items included in the questionnaire are age, age of arrival if any was/were born outside Canada (they should be born in Canada if not, they should have entered Canada before the age of four years); language mainly used at home (Arabic); the native language of both parents (must be Arabic) and finally the HSs' formal education (they should have enrolled in Canadian Public Schools). Any participant who did not meet the requirements was exempted from the study.

4. Results

Two different measures of analyses were conducted. In measure 1, to probe the preferred word order, the analysis was conducted on the three groups namely, NSs, HSs and the HSs' parents. In measure 2, to check for the effect of the dominant L2 on L1 syntactic processing

by measuring the RT for each word order, the analysis was conducted on two groups, NSs and HSs.

4.1 Analysis of the sentence reordering task

A General Linear Model (GLM), repeated measures, was administered to investigate the preferred word order (Conditions: definite SVO, VSO and incorrect SVO) and the participating group (Native speakers, Heritage speakers and parents of the heritage speakers). A repeated measures analysis of variance on the data produced a significant interaction between the word order and the groups ($F(4,70) = 6.445, p < .01$). There is significant variability in the preference for each word order according to the group type; see Figure 1 for an overview.

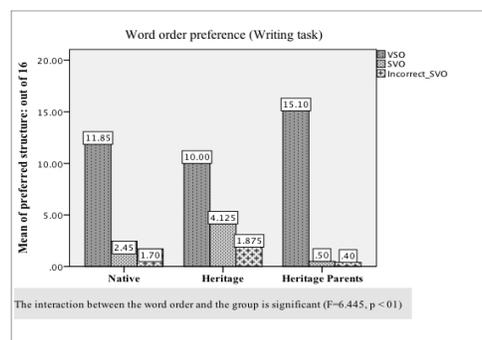


Figure 1: Reordering task by NSs, HSs and HSs' parents

A subsequent pairwise comparison of the different word orders by each group was administered to investigate the preferred word order. First, for NSs, the pairwise comparison revealed a statistically significant difference between VSO and SVO (Mean difference = 9.40; $p < .01$) in favour of VSO. Similarly, the comparison also revealed a significant preference for VSO to SVO by HSs (Mean difference = 5.87; $p = .035$). HSs' parents showed a strong preference for VSO over SVO (Mean difference = 14.60; $p < .01$). In general, all groups preferred VSO to SVO. As far as incorrect SVO is concerned, HSs and NSs produced more incorrect structures than HSs' parents; however, statistically, the GLM/univariate analysis revealed no significant difference between the groups ($F = 2.442, p = .102$). From these results, it can be, tentatively, argued that VSO order is the dominant word order among Arabic speakers. Recall that the reordering task consists of 24 items (16 items were prepared to be grammatically combined as declarative sentences either VSO or SVO and eight items were designed to be interrogative structures as gap fillers).

A GLM/univariate analysis was administered to find out if there is a statistical difference in the preference for the two orders VSO or SVO between the HSs and their parents. This point warrants high attention, why? The purpose of including the parents in this task, the sentence reordering task, is to check if the preference for SVO order by HSs, if there is any, is a result of a native language input or by another factor, say, the dominant language effect. The GLM/univariate analysis revealed a significant difference between the two groups. To

be precise, HSs significantly preferred SVO order more than their parents (Mean Square of 58.40; $F = 25.002$, $p < .01$) whereas the parents significantly preferred VSO (Mean Square of 115.60; $F = 13.316$, $p = .002$). This result might rule out the effect of the native language input. Should there be an input effect, we may expect that the HSs and the parents to show similar preferences for the same word order; the results showed that HSs' preference differed from their parents' however.

4.2 Analysis of the online self-paced reading task

The analysis of this task is two-fold: **(a)** an analysis of the interaction between the word order and the group and **(b)** a subsequent analysis of the three word orders (definite SVO, definite VSO and indefinite VSO) by each group separately.

4.2.1 First analysis

A two-way, repeated measures ANOVA, was conducted to investigate processing RT data of three different word orders (definite SVO, definite VSO and indefinite VSO) performed by NSs and HSs. The factors under investigation are *word order* and the participating groups, *NSs vs. HSs*. A main effect of word order processing was found ($F(1,26) = 14.486$, $p < .01$). The repeated measures analysis of variance on these data produced a significant result ($F(2,52) = 7.414$, $p < .01$). Data analysis showed a significant interaction between word order processing and the participating groups. NSs significantly processed all word orders faster than HSs; results are graphically represented in Figure 2. NSs' processing RT ranges from 675.23 to 772.13 millisecond, whereas HSs' RT ranges from 1075.93 to 1360.99 millisecond.

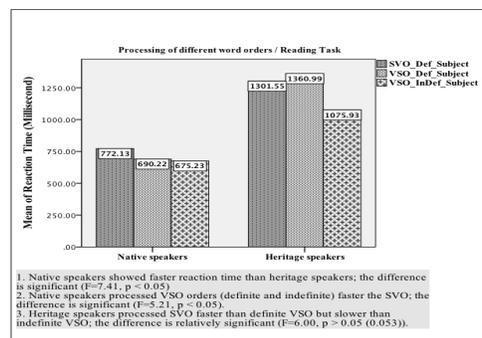


Figure 2: Self-paced reading task by NSs and HSs

Looking closely at Figure 2, it can be noticed that NSs processed subjects in VSO order faster than subjects in SVO order. HSs, by contrast, are inconsistent. In other words, they processed subjects in SVO faster than definite subjects in VSO but slower than indefinite subjects in VSO order. Overall slow processing shown by HSs might be expected. There are reasons which make them slower readers such as proficiency, writing system, literacy

in Arabic. However, the crucial point here is the trend they showed in processing, more discussion is coming. In brief, word order processing significantly ($F(2,52) = 13.175, p < .01$) interacted with the participant groups.

4.2.2 Second analysis

To further investigate the significant interaction, each group is examined separately in the following subsections.

Native speakers: A one-way repeated measures ANOVA conducted on the NSs data revealed a statistically significant main effect of word orders ($F(2,38) = 5.213, p < .05$); overall results are illustrated in Figure 3. Subsequent pairwise comparisons of the three orders indicated that when comparing SVO with definite VSO, NSs processed subjects in VSO order faster than subjects in SVO (Mean difference of 81.909 ms. $p < .05$). When comparing SVO with indefinite VSO, NSs processed indefinite subjects in VSO order faster than subjects in SVO (Mean difference of 96.906 ms. $p < .05$). No significant difference in processing RT of postverbal subjects (definite and indefinite) in VSO order was found (Mean difference of 14.997 ms. $p = .501$).

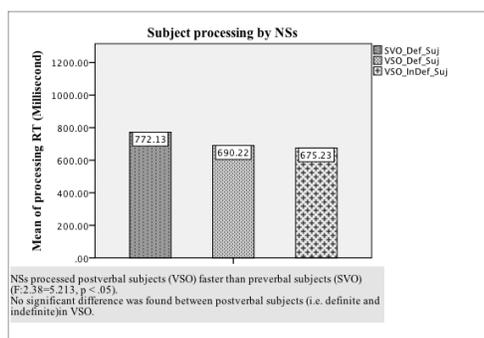


Figure 3: Self-paced reading task by NSs

These results have an important implication. It can be argued that subjects in VSO orders are easier to process than subjects in SVO order. Recall that one main argument of this paper is that VSO is used more than SVO because the former might be easier to process than the latter.

Heritage speakers: A one-way repeated measures ANOVA was conducted on the HSs data; the analysis showed a significant main effect of word order ($F(2,14) = 7.568, p < .01$). However, when subsequent pairwise comparisons measure was administered, results showed that HSs were inconsistent; see Figure 4 for an overview.

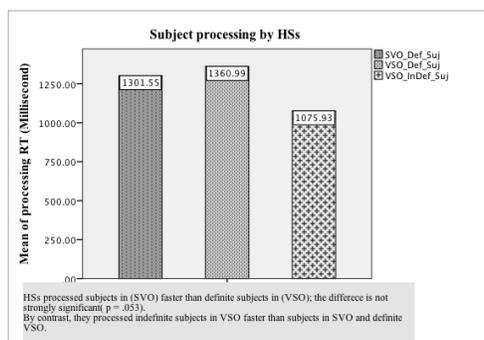


Figure 4: Self-paced reading task by HSs

The pairwise comparisons revealed that, when comparing SVO with definite VSO, HSs processed subjects in SVO faster than definite subjects in VSO. Nevertheless, the difference was not significant (Mean difference of 59.435 ms. $p = .392$). When comparing SVO with indefinite VSO, HSs significantly processed indefinite subjects in VSO order faster than subjects in SVO (Mean difference of 225.625 ms. $p = .013$). Finally, when comparing definite and indefinite subjects in VSO order, HSs significantly processed indefinite subjects faster than definite subjects (Mean difference of 285.059 ms: $p = .020$).

5. Discussions

The study found that there is a notable effect of the dominant language, English as an L2, on the heritage speakers' native language. HSs' performance in the two tasks administered in the study seems to be affected by their L2. Answering the study's first research question, (*Do heritage speakers of Arabic, whose dominant language is English, prefer VSO or SVO order when using their native language?*), results showed that HSs significantly preferred VSO to SVO which might, prima facie, indicate that the L2 may have no effect on the L1 since L2 word order, SVO, is not resembled in L1. However, evidence that L2 word order has affected HSs' L1 word order is available. First, when comparing HSs' preferred word order in the reordering task to NSs and parents' preferred word order, we found that there is a significant difference among the groups. HSs' parents showed the strongest preference for VSO; NSs came in the second place then HSs showed the least preference for VSO. The important question is "why did HSs show the least preference when compared to the other groups?" The plausible explanations to this significant difference is that there is a possible transfer effect from L2 to L1. A crucial argument which can be grounded on the first finding of the current study is that VSO order might be easier to process than SVO in an off-line (not limited or controlled by time) task. When comparing the participants' preference for SVO, results indicated that HSs significantly preferred SVO more than their parents; it is clearly noticed that the parents' preference differed from the children's preference. This finding is important to the current study. That is, the effect of the parents' native language input may be ruled out and HSs' preference to SVO order might be attributed to the L2

effect. Additionally, there is little L1 input since it is limited to home only. It was also found that HSs produced incorrect structures of SVO order more than their parents. In other words, HSs used indefinite nouns in preverbal subject positions an attempt which is not acceptable by Arabic grammar. This violation of subject parameters in Arabic might be due to the effect of the dominant language in which indefinite subjects are acceptable in preverbal subject positions. These findings provide an answer to the second research question, (*If a certain preference is found, is it affected by input received at home (parents' native language) or by the structure of the dominant L2?*). Based on the two findings, it can be argued that HSs' performance might not be affected by their parents' input. Instead, they might be affected by their L2. A similar result has been reported by Kaushanskaya et al. (2011). They concluded that L2 knowledge can affect bilinguals' performance on administered vocabulary and reading tasks performed in their L1.

Turning to the self-paced reading task's results, this task was administered to discover the RT required to process the syntactic subjects in three different word orders, namely, *definite SVO*, *definite VSO* and *indefinite VSO* performed by two different groups *NSs* and *HSs*. Results showed that *NSs* were much faster in processing subjects than *HSs* in the three word orders; the difference was statistically significant.

As far as *NSs* are concerned, the study showed interesting findings. *NSs* significantly processed subjects in postverbal positions, *definite VSO* and *indefinite VSO*, faster than subjects in preverbal positions, *definite SVO*. Precisely, *NSs* processed definite *VSO* subjects faster than definite *SVO* subjects; they also processed indefinite *VSO* subjects faster than definite *SVO* subjects. However, when comparing definite *VSO* subjects with indefinite *VSO* subjects (both are postverbal subjects), they showed no significant difference in processing RT. This finding augments two main issues. First, we have argued among others that *VSO* order is syntactically easier to derive than *SVO* order. This is due to the subject remaining in situ in [Spec: VP] and the verb moves from V-to-T resulting in *VSO* order. Notice that, there is only one syntactic movement (head movement) which is the V-to-T movement. This sole movement might be the reason behind fast processing (short RT) of subjects in *VSO* order. By contrast, slow processing (long RT) of subjects in *SVO* order might be due to two syntactic movements, namely, an XP movement (the subject moving from [Spec: VP] to [Spec: TP]) and a head movement (the verb moving from V-to-T). Thus, it justifies fast processing of subjects in *VSO* order and slow processing of them in *SVO* order. The second issue, which this finding might support, it justifies the participants' (*NSs*, *HSs* and *HSs'* parents) preference for *VSO* order when they performed the sentence reordering task. We assume that their choice of *VSO* order is not spontaneous; instead, it is, we believe, unconscious easiness of processing that dictates on them to choose *VSO* order which means that syntactic features can affect processing. Subject parametric features, in Arabic, are flexible; they allow for alternative orders, *SVO* or *VSO*. The alternation between *SVO* and *VSO* is assumed to be a result of different syntactic movements. The difference in processing between *SVO* subjects and *VSO* subjects is likely to be attributed to the different syntactic features they bear. Our claim is supported by Montrul's (2010b) findings. She argued that sentence processing can be affected by syntactic features.

The study showed that HSs were inconsistent. In other words, they processed definite SVO subjects faster than definite VSO subjects, a pattern which is different from NSs'. By contrast, HSs processed definite SVO subjects slower than indefinite VSO subjects resembling the NSs who processed definite SVO subjects slower than indefinite VSO subjects. They were expected to process postverbal subjects with no significant difference since definite/indefinite postverbal subjects occupy the same syntactic position [Spec: VP]; however, they did not. We noticed that HSs preferred VSO order to SVO order when they performed the sentence reordering task, an off-line task. Their preference on that task is assumed to be reflected on their RT when they processed VSO order, an on-line task. However, they were not transparent; they showed a significant difference when processing definite VSO subjects and indefinite VSO; processing of indefinite subjects was faster than definite ones. Two factors might have contributed to the inconsistency of the processing RT; first, a non linguistic factor, when performing the self-paced reading task, they are under time pressure; second, adopting the universal grammar theory (using the same grammatical system), HSs trying to process a structure which they are not used to resulted in a lengthened RT which in turn slowed processing. Responding to the study's third research question (*When performing an online self-paced reading task, is there a significant difference in RT when processing subjects in SVO/VSO between/within the two groups?*), the answer is positive, there is a significant difference between the two groups; NSs processed both SVO and VSO subjects much faster than HSs. Within the group itself, NSs significantly processed subjects in VSO order faster than subjects in SVO order. HSs, by contrast, were inconsistent as explained above. HSs' slow processing is expected due to the factors mentioned earlier such as low proficiency in Arabic, lack of input and writing system. However, the pattern they showed was not expected. They were assumed to process the subjects that occupy the same syntactic position with no significant difference; they did not however. The fluctuation shown by HSs' when performing the task might be due to the L2 effect.

6. Conclusions

The study has important findings which contribute to the field of experimental syntax in general and to the researches that target minority language speakers, HSs, in specific. First, it showed that VSO structures, in Arabic, are processed faster than SVO structures. They, VSO structures, are also preferred to SVO structures. Second, findings revealed that HSs' native language can be affected by the L2 as a dominant language. The L2 effect on L1 found by this study conforms to the findings reported by previous studies (Brien and Sabourin, 2012; Cook, 2003; Kaushanskaya et al., 2011; Montrul, 2010b; van Hell and Dijkstra, 2002). We concede that there are some limitations to the study. Although the number of HSs who participated in the study might be enough for a seminal work, more HSs participants are required to confirm the findings. In a nutshell, the findings support the idea that VSO order may be syntactically easier to derive than SVO order due to the less syntactic movements. Also, the widespread prevalence of VSO order might be attributed to its easier processing when compared to SVO.

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