Word order in heritage Russian under different dominant languages

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ABSTRACT

This paper reports on an experimental study that examines the relationship between word order and information structure in the Russian of adult English-dominant and Hebrew-dominant heritage speakers of Russian. The objectives of the study were: (a) To examine whether the relationship between word order and information structure is acquirable by heritage speakers; and (b) To examine whether there is transfer from the dominant language in this domain. The results of an acceptability judgment task show that heritage speakers performed quite similarly to monolinguals; there was improvement with proficiency, but no evidence of transfer from the dominant language. The mapping between word order and information structure is found to be quite robust in heritage language acquisition.

KEYWORDS heritage language · word order · information structure

1 INTRODUCTION

Heritage speakers (HSs) are individuals whose family language (their heritage language) is different from the dominant language of the society; depending on the country, heritage speakers include child immigrants and children of immigrants, as well as speakers of indigenous languages. For more information, see, among others, Montrul (2008, 2016), Benmamoun et al. (2013), Polinsky (2018). There is much variability in HSs' ultimate attainment of the heritage language, but HSs as a group are nearly always found to differ from baseline monolingual speakers, across linguistic domains (see Polinsky 2018 for an overview). While the existence of HS–baseline differences is uncontroversial, there are many possibilities for the nature of these differences (see Montrul 2008, 2016, Polinsky & Scontras 2020 for a discussion of these possibilities and evidence that bears on them). It is possible that HSs exhibit *incomplete acquisition* of the heritage language, failing to acquire some aspects of the target grammar. It is also possible that HSs acquire some aspects of the target grammar, but subsequently lose them due to lack of input and use, a process known as *attrition*. It is also possible that HSs may exhibit *divergent attainment* of the heritage language, arriving at a mental grammar which is different in specific ways from the target baseline grammar.

In addition to the nature of the HS grammar, the question arises of *why* HS grammars differ from the baseline target. As discussed by Montrul (2008, 2016), Polinsky & Scontras (2020), among others, these differences could stem from the fact that HSs receive input in the target language that is quantitatively and/or qualitatively different from the input that baseline monolingual speakers receive. Alternatively, at least some HS–baseline differences could be traceable to transfer from the dominant language. The two possibilities are not mutually exclusive: both input and transfer could affect HSs' ultimate attainment. However, it is not always easy to tease apart the role of transfer from other factors (such as input and general proficiency), as discussed below.

The role of transfer from the native language (L1) is well-established in work on adult second language (L2) acquisition (see Slabakova 2016 for an overview). Studies with L2

learners isolate the effects of L1 transfer by doing cross-group comparisons. Specifically, in order to tease L1 transfer apart from other factors that influence acquisition, studies compare (at least) two groups of L2 learners, whose L1s differ from each other (and may also differ from the L2) with regard to the grammatical construction in question. The groups need to otherwise be maximally similar with respect to L2 proficiency and L2 exposure. For example, Marsden (2009) compared L1 English and L1 Korean learners of L2 Japanese on judgments of quantifier scope. For the phenomenon tested, Korean patterns with Japanese, while English is different. Consistent with L1 transfer, L1 Korean L2 Japanese learners outperformed L1 English L2 Japanese learners, despite the groups being balanced for proficiency.

In the case of heritage languages, isolating the effects of transfer from the dominant language requires comparing HSs who develop their heritage language under the influence of two different dominant languages, which furthermore differ in the relevant respect. However, most heritage language studies to date consider only one dominant language; furthermore, English is by far the most common dominant language tested. As discussed by Scontras et al. (2015), this presents a problem for teasing apart English-based transfer from overall, non-transfer-based simplification of the target grammar. For example, many studies with English-dominant HSs of Spanish and Russian find that HSs fail to fully acquire inflectional morphology (e.g., for gender or case) as well as that HSs overrely on canonical SVO word order and have difficulty with non-canonical orders (see Polinsky 2018 for examples). Given that English lacks gender and case morphology and has rigid SVO order, the HSs' performance could reflect transfer from English, but could also reflect non-transfer-based simplification of the grammar due to insufficient input. The only way to tease apart these explanations would be to look at how heritage Russian or Spanish (or any other heritage language) develops under the influence of other dominant languages.

Studies that compare the influence of two different dominant languages on a single heritage language are very rare. While heritage Spanish has been studied under a variety of dominant languages, not only English (e.g., Dutch: Irizarri van Suchtelen 2016; Swedish: Donoso 2017; German: Diaubalick et al. 2020), we are not aware of studies that have directly compared heritage Spanish under the influence of two dominant languages. Polinsky 2018 (2018: Ch. 2) discusses studies that have examined heritage English under the influence of different dominant languages; for at least some linguistic phenomena (resumptive pronouns and quantifier scope), the findings point more towards processing difficulty than towards transfer from the dominant language, but the evidence is limited.

In this paper, we report on a study that examines heritage Russian under the influence of two dominant languages, English and Hebrew. Most prior studies with adult Russian HSs have looked at Russian under the influence of English, and have found difficulties in such domains as gender and case morphology, relative clauses, and grammatical aspect (see, among others: Pereltsvaig 2005, Polinsky 2008a,b, 2011, Laleko 2011, 2019, Mikhaylova 2012, 2018). In our study, we examine the relationship between word order and information structure. Our study objectives are to examine (i) whether Russian HSs can acquire the relationship between word order and information structure; and (ii) whether Hebrew-dominant HSs of Russian have an advantage over English-dominant HSs in this domain due to the more flexible word order of Hebrew relative to English.

2 BACKGROUND: WORD ORDER AND INFORMATION STRUCTURE

Russian, English and Hebrew are all SVO languages; however, Russian and Hebrew differ from English in also allowing other, non-canonical word orders, including OVS.

2.1 WORD ORDER AND INFORMATION STRUCTURE IN RUSSIAN, ENGLISH, AND HEBREW

Russian has rich case marking and in principle allows all word order permutations for three-member sentences that contain a subject, a verb and an object. However, the canonical SVO order is by far the most frequent (accounting for 79% of all three-member sentences, according to Bivon 1971, reported in Bailyn 1995), while OVS is second most frequent (accounting for 11% of all such sentences). Importantly for our purposes, word order in Russian interacts with information structure as well as with prosody (see Yokoyama 1987, King 1995, Junghanns & Zybatow 1997, Yanko 1989, Jasinskaya 2016). Under neutral prosody (sentence stress on the rightmost constituent), SVO order is most appropriate when the object is in narrow focus, as in (1), while OVS order is most appropriate when the subject is in narrow focus, as in (2). These preferences were confirmed experimentally for both production and perception by Kallestinova (2007).

(1)   a.   Kogo   uvidela devočka?
           who.ACC see.PST.F girl.NOM
           'Who(m) did the girl see?'
   b.   Devočka uvidela   maľčika.
           girl.NOM see.PST.F boy.ACC
           'The girl saw a boy.'

(2)   a.   Kto   uvidel   maľčika?
           who.NOM see.PST.M boy.ACC
           'Who saw the boy?'
   b.   Maľčika uvidela   devočka.
           boy.ACC see.PST.F girl.NOM
           'A girl saw the boy.'

English does not permit OVS order, and SVO is used to answer both object questions and subject questions, with articles rather than word order marking information status, as indicated by the English translations in (1) and (2).[1] Finally, Hebrew is also an SVO language; it has the definite article *ha* 'the' but no indefinite article. While Hebrew word order is fairly rigid, and SVO is the strongly preferred word order across contexts, OVS order is possible when the object is marked by the accusative case-marker *et*. The literature has traditionally analyzed *et* as being obligatory with definite objects and unacceptable with indefinite ones (e.g., Givón 1978, Wintner 2000, Danon 2002), but Hacohen et al. (2021) provide experimental evidence that *et* is also used with partitive indefinites. When the object is *et*-marked, OVS as well as SVO order is possible (Shlonsky 1997), as illustrated in (3) (modeled on an example in Hacohen et al. 2021). While there is some speaker variation, the OVS order in (3-b) is an acceptable answer to the question 'Who sees the boy?', though the SVO order in (3-a) is preferred. No corpus data are available on the frequency of OVS order in Hebrew.

(3)   a.   ha'yalda ro'a   et   ha'yeled.
           the-girl sees.F ACC the-boy
           'The girl sees the boy.'

[1]We are not by any means claiming equivalency between word order and articles. Under neutral prosody in Russian, preverbal elements tend to be definite while postverbal elements tend to be indefinite, as in (1) and (2), but there are other possibilities. For example, given the right context, in which both a girl and a boy are previously mentioned, both NPs in the answers in (1) and (2) could be interpreted as definite. Word order in Russian arguably reflects information structure rather than definiteness per se: a definite denoting new information would preferentially be placed postverbally rather than preverbally. Finally, we acknowledge that English does use word order to reflect information structure to a limited extent, placing old information before new (Birner & Ward 1998); crucially for our purposes, however, OVS order is ungrammatical in English.

b. et ha'yeled ro'a ha'yalda.
ACC the-boy sees.F the-girl
'The girl sees the boy.'

To sum up, OVS order is available in both Russian and Hebrew, and can be felicitously used to answer a subject question in both of these languages; in contrast, OVS is not available in English. Thus, if there is cross-linguistic influence from the dominant language, Hebrew-dominant HSs of Russian may have have an advantage over English-dominant HSs of Russian when it comes to the acquisition of OVS order in Russian.

2.2 PRIOR STUDIES ON WORD ORDER AND INFORMATION STRUCTURE IN BILINGUAL POPULATIONS

There have been several prior studies on the acquisition of Russian word order among children bilingual in Russian and another language. Janssen & Meir (2019) compared Russian-Hebrew and Russian-Dutch child bilinguals on both production and comprehension of different word orders in Russian. Dutch lacks case marking (except on pronouns); as discussed above, Hebrew has limited case marking (including the accusative case marking *et*, used with definites and partitive indefinites). Both Dutch and Hebrew have more rigid word order than Russian, while also allowing the placement of the object before the subject in certain contexts (see the above discussion on Hebrew). Prior work with Russian-Dutch child bilinguals (Janssen & Peeters-Podgaevskaja 2012) found that they showed little sensitivity to Russian case marking. Janssen & Meir (2019) similarly found that five-to-six-year-old Russian-Hebrew and Russian-Dutch bilinguals overrelied on word order instead of case marking for interpretation (in addition to misusing nominative case for accusative in production). Both bilingual groups performed at-chance in their interpretation of OVS sentences, frequently misinterpreting them as SVO (unlike monolingual Russian controls, who were above chance, correctly relying on case marking rather than word order). At the same time, an eye-tracking study by Meir et al. (2020) found that Russian-Hebrew child bilinguals did exhibit sensitivity to case marking in online processing of Russian OVS sentences; however, they were slower in integrating case cues than Russian monolinguals. As for adult HSs of Russian, they have been found to overrely on word order and make errors with case marking (see, e.g., Polinsky 2006 on English-dominant Russian HSs).

The above studies all focused either on the production of case marking, or on whether bilinguals can correctly interpret OVS order as OVS rather than SVO based on case cues. They did not consider the role of information structure and its relationship to OVS vs. SVO order in Russian (but see Laleko & Dubinina 2018 for an overview of different word orders in heritage Russian, and their contextual (in)appropriateness). Studies with adult HSs of other languages have found similarities between HSs and baseline monolingual speakers with regard to the mapping between word order and information structure (see Hoot 2017 and Leal et al. 2018 on heritage Spanish; Hoot 2019 on heritage Hungarian).

2.3 RESEARCH QUESTIONS

As discussed above, very little is known about the extent to which heritage languages are influenced by transfer from the dominant language of the bilinguals. In the case of Russian, while a number of prior studies have looked at word order and case marking in Russian HSs, not much is known about the relationship between word order and information structure this population. Our study was designed to address both of these points, by investigating the following research questions:

Research question #1: Do HSs of Russian recognize that word order (SVO vs. OVS) is related to information status (old vs. new), in comprehension?

Research question #2: Do Hebrew-dominant HSs of Russian have an advantage over English-dominant ones in this domain, given the availability of OVS order in Hebrew?

3 METHODOLOGY

We conducted a study with both English-dominant and Hebrew-dominant HSs of Russian. The results of the English-dominant HSs as well as the monolingual baseline Russian controls are reported in Ionin et al. (2023), where the Russian HSs are compared to adult L1 English L2 Russian learners. Here, we focus on how the English-dominant HSs compare to the Hebrew-dominant ones.

3.1 PARTICIPANTS

The study participants were 23 English-dominant HSs of Russian (henceforth EHSs), 18 Hebrew-dominant HSs of Russian (henceforth HHSs), and 43 monolingual baseline speakers of Russian. The baseline participants (mean age 28, range 19–65) had all grown up in Russia or another former Soviet republic where Russian was widely spoken, and reported Russian as their one and only native language. The demographics of the two HS groups are given in Table 1 (the proficiency scores mentioned in the table are described in the next section).

Table 1: Demographics and proficiency test scores of the two bilingual groups

	EHSs (N=23)	HHSs (N=18)
age at testing	mean 23 (range 18–31)	mean = 29 (range 18–38)
age of acquisition (AoA) of Russian	at birth	at birth
AoA of English (EHSs) or Hebrew (HHSs)	between birth and age 8	between birth and age 11
age of U.S. arrival (EHSs) or Israel arrival (HHSs)	14 born in the U.S. 4 at age 1 2 at ages 4 and 5 2 at age 8 1 at age 11	3 born in Israel 4 between infancy and age 2 7 at ages 4 through 6 4 at ages 9 through 11
Cloze test scores (out of 58)	mean 41.2 (range 20–54)	mean = 47.7 (range 20–57)
Case-check scores (out of 20)	mean 17.7 (range 10–20)	mean = 18.9 (range 15–20)
Composite proficiency score (in %)	mean = 81% (sd = 15%)	mean = 89% (sd = 10%)

3.2 PROCEDURE AND TASKS

After giving informed consent, the bilingual participants completed, in order, a language background questionnaire, a case check test, a bimodal Acceptability Judgment Task (AJT), and a proficiency cloze test. The monolingual baseline controls completed only the language background questionnaire and the AJT. All tasks were implemented online using the Qualtrics survey tool. With the exception of a few of the EHSs (who completed the study in a lab on a college campus), all participants received the link to the study by email and completed the study in their homes or other convenient locations.

The case check test was designed to test whether the HSs were able to rely on case marking instead of word order to determine who did what to whom. The case check test

contained 20 items; each item consisted of a simple Russian sentence (SVO in ten items, OVS in the other ten), followed by a multiple-choice comprehension question in English, as in (4).[2] A participant could thus receive a score between 0 and 20 on the case-check test; participants who applied the word order strategy and ignored case-marking would receive a score of ten.

(4) a.   Ľva   napugal volk.
          lion.ACC scare.PST wolf.NOM
          'The wolf scared the lion.'
     b.   Who did the scaring?
          lion   wolf   I don't know

The cloze test was developed by Luchkina et al. (2021). It corresponded to a newspaper article with 58 words removed and replaced by blanks; there were three different answer options provided for each blank, only one of which was correct. Successful completion of the cloze test required learners to provide the correct morphosyntactic forms as well as to pay attention to the discourse; see Luchkina et al. (2021) for more information.

The scores from the case-check test and the cloze test were converted into percentages correct and averaged to yield a single composite proficiency score. Table 1 reports the proficiency scores for both groups. Analyses via the *lm* function in R (R_Core_Team 2022) showed that the HHSs scored significantly higher than the EHSs on both the case-check and cloze test scores, as well as on the composite proficiency score (all p's <.0001).

3.3 ACCEPTABILITY JUDGMENT TASK

The bimodal AJT consisted of 120 items (48 targets and 72 fillers), presented in both written and auditory form. Each item consisted of a brief dialogue; the auditory version was recorded by two female native Russian speakers. The 48 target items had a 2X2 design, crossing question type (object question vs. subject question) with the word order of the answer (SVO vs. OVS); the answers were recorded with neutral prosody, stress on the rightmost constituent. A sample token set is given in (5): each question in (5-a)-(5-b) was paired with each answer in (5-c)–(5-d), resulting in four distinct dialogues corresponding to the four experimental conditions. Forty-eight token sets were created, and the items were distributed across four experimental lists using a Latin-square design; each list had 12 items per condition. Under neutral prosody, the dialogues formed by (5-a),(5-c) and (5-b),(5-d) are felicitous, while the ones formed by (5-a),(5-d) and (5-b),(5-d) are not.[3] Participants were asked to rate each dialogue on a 1 to 5 scale based on how appropriate the answer was given the question.

(5) a.   Kogo   toľko čto ukolol   ežik?   Object question
          who.ACC just now prick.PST.M hedgehog.NOM
          'Whom did the hedgehog prick just now?'
     b.   Kto   toľko čto ukolol   tigra?   Subject question
          who.NOM just now prick.PST.M tiger.ACC
          'Who pricked the tiger just now?'
     c.   Ežik   ukolol   tigra.   SVO
          hedgehog.NOM prick.PST.M tiger.ACC
          'The hedgehog pricked a tiger.'

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[2] All of the Hebrew-dominant HSs knew English, having studied it for years at school in Israel; the case-check test was considered to be quite easy given their level of English, and was therefore not translated into Hebrew.

[3] Our study did not test all possible prosody/word order combinations; keeping prosody constant (stress was always on the rightmost constituent), we were not able to address how participants would interpret sentences with sentence-initial stress.

    d.   Tigra   ukolol   ežik.   OVS
        tiger.ACC prick.PST.M hedgehog.NOM
        'A hedgehog pricked the tiger.'

4 RESULTS

The mean ratings by group and by condition are given in Figure 1. All three groups show similar patterns, giving higher ratings to felicitous dialogues (object question-SVO and subject question-OVS) and lower ratings to infelicitous ones, with object question-OVS getting especially low scores. The differences between felicitous and infelicitous conditions are more pronounced for monolinguals than for bilinguals, but the patterns of the three groups are very similar.[4]

Figure 1: Mean ratings on a 1-to-5 scale, by condition and by group; error bars indicate standard deviations.
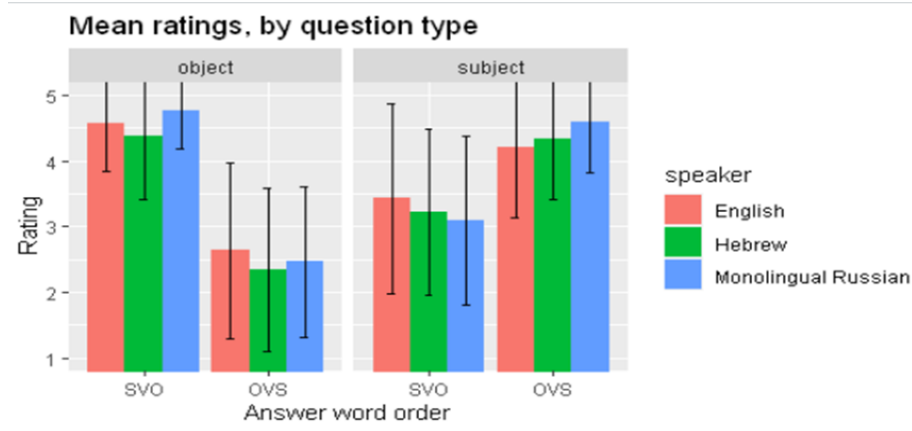
We analyzed the data using cumulative link mixed models for ordinal data, the *clmm()* function in the 'ordinal' package in R (Christensen 1998). Two different analyses were conducted, one comparing all three groups, and the other comparing the two bilingual groups while taking proficiency into account.

4.1 COMPARISON BETWEEN MONOLINGUALS AND BILINGUALS

For the first analysis, Model 1, we included the fixed effects of Question type (Object question as the reference level), Answer word order (SVO as the reference level), and Group (monolinguals as the reference level). Groups were coded so that the monolingual group was compared to each of the bilingual groups in turn. The random effects were a by-items slope, and a by-participant intercept for the Question X Answer word order interaction.

The Model 1 output is given in Table 2. All main effects were significant, as were many of the interactions. The significant interaction between Question and Answer is due to the groups giving significantly higher ratings to the felicitous Object question–SVO and Subject question–OVS dialogues than to the infelicitous Object question–OVS and

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[4]Note that the contrasts between felicitous and non-felicitous word orders are stronger in response to object questions than to subject questions, for all groups: participants are more willing to accept infelicitous SVO order with subject questions compared to infelicitous OVS order with object questions. This is not surprising, given that SVO is the default, canonical and most frequent word order in Russian. If participants don't closely attend to the prosody and/or the context, they would presumably rate SVO higher than OVS based on considerations of canonicity/frequency. Nevertheless, all groups do make a clear contrast between felicitous and infelicitous word orders, for both question types.

Subject question–SVO dialogues. For the comparison between the monolingual baseline group and the English-dominant HS group, the three-way interaction between Question, Answer and Group was significant: the EHSs made smaller distinctions between the felicitous and the infelicitous question-answer pairings than the monolinguals. As for the comparison between the monolingual baseline group and the Hebrew-dominant HS group, the only significant interaction was between Question and Group, but there was no three-way interaction between Question, Answer and Group.

Table 2: Output of Model 1: comparison of monolinguals and bilinguals

	Estimate	z-value	p-value
Question: Subject	-4.96	-10.3	<.0001*
Answer: OVS	-6.39	-13.0	<.0001*
Group: English	-1.01	-2.03	.04*
Group: Hebrew	-1.65	-3.09	.002*
Question: Subject X Answer: OVS	10.77	11.2	<.0001*
Question: Subject X Group: English	2.04	2.61	.009*
Question: Subject X Group: Hebrew	2.04	2.42	.015*
Answer: OVS X Group: English	1.48	1.88	.06
Answer: OVS X Group: Hebrew	1.31	1.53	.13
Question: Subject X Answer: OVS X Group: English	-3.92	-2.48	0.13*
Question: Subject X Answer: OVS X Group: Hebrew	-2.83	-1.65	.10

Follow-up pairwise comparisons using the *emmeans()* function in R (Lenth 2020) found that each group rated SVO significantly above OVS with object questions. In the case of subject questions, the monolingual and HHS groups rated OVS significantly above SVO, while this difference did not reach significance in the EHS group (even though the numerical difference went in the same direction).

Overall, the results indicate that the bilinguals made smaller distinctions between conditions than monolinguals, even though they exhibited very similar patterns. The HHSs pattern a little closer to the monolinguals than the EHSs do. This could indicate a facilitative influence from Hebrew, but alternatively, it could instead be due to the higher proficiency of the HHS group. To address this, we conducted a second analysis, on the bilingual groups only, taking proficiency into account.

4.2 COMPARISON OF BILINGUAL GROUPS, WITH PROFICIENCY INCLUDED

For the proficiency analysis, Model 2, we included the same fixed effects and random effects as for Model 1, but Group had only two levels (HHS and EHS), with EHS set as the reference level. We also included the composite proficiency score as a fixed effect. The output is reported in Table 3.

Once both Group and Proficiency are included into the model, Group has no significant effect and does not interact with any other variable. In contrast, Proficiency does interact with both Question and Answer. In order to explore the interactions, we plotted the interaction terms using the *emmip()* function from the *emmeans* package in R (Lenth 2020). We plotted them separately for the two heritage-speaker groups: even though Group did not interact with any other factor, we included it in the plot in order to visually examine improvement with proficiency for both groups, given that our research

questions specifically ask about the role of the dominant language. The plot is given in Figure 2.

Table 3: Output of Model 2: comparison of bilingual groups with proficiency as a factor

	Estimate	**z-value**	**p-value**
Question: Subject	6.28	2.21	.027*
Answer: OVS	7.41	3.26	.001*
Group: Hebrew	1.97	.53	.60
Proficiency	6.08	2.73	.006*
Question: Subject X Answer: OVS	-14.86	-2.87	.004*
Question: Subject X Group: Hebrew	3.70	.62	.54
Answer: OVS X Group: Hebrew	2.04	.43	.67
Question: Subject X Proficiency	-11.2	-3.19	.001*
Answer: OVS X Proficiency	-15.0	-5.31	<.0001*
Group: Hebrew X Proficiency	-3.50	-.81	.42
Question: Subject X Answer: OVS X Group: Hebrew	-5.42	-.50	.62
Question: Subject X Answer: OVS X Proficiency	26.5	4.16	<.0001*
Question: Subject X Group: Hebrew X Proficiency	-3.18	-.46	.64
Answer: OVS X Group: Hebrew X Proficiency	-1.11	-.20	.84
Question: Subject X Answer: OVS X Group: Hebrew X Proficiency	4.85	.39	.70

Figure 2: Interaction plot for the Question X Answer X Proficiency interaction, by bilingual group
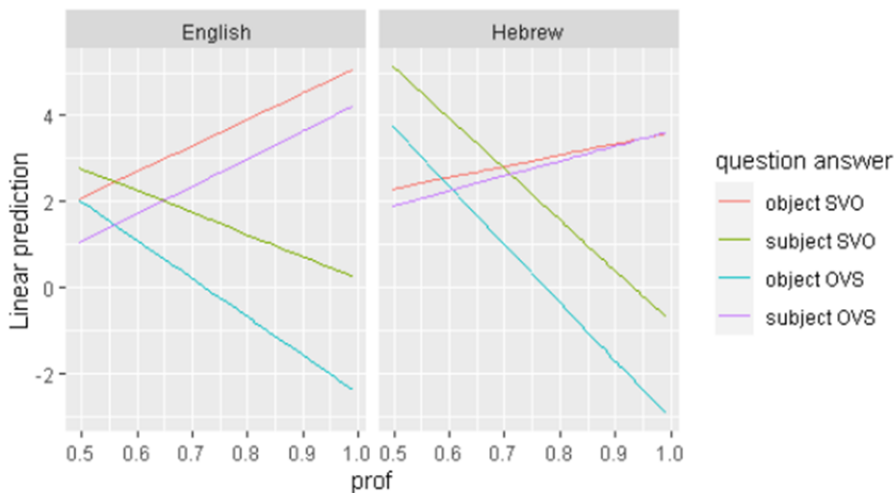
We see that the two bilingual groups exhibited very similar patterns. With increase in proficiency, both groups gave higher ratings to the two felicitous conditions (object questions with SVO answers and subject questions with OVS answers) and lower ratings to the two infelicitous conditions (subject questions with SVO answers and object

questions with OVS answers). That is, the more proficient heritage speakers made bigger distinctions among the conditions, in the target direction. We conclude that any differences between Hebrew-dominant and English-dominant HSs found in the overall analysis are fully accounted for by the former group having higher proficiency than the latter. Once proficiency is taken into account, the two groups show the same patterns of performance.

5 DISCUSSION

We now revisit our two research questions, repeated below:

> Research question #1: Do HSs of Russian recognize that word order (SVO vs. OVS) is related to information status (old vs. new), in comprehension?

With regard to Research question #1, the answer is unequivocally Yes. Both groups of heritage speakers tested in our study exhibited performance patterns similar to monolingual baseline speakers, preferring SVO order in answer to object questions, and OVS order in answer to subject questions. This stands in stark contrast to what we found with adult L1 English L2 Russian learners in Ionin et al. 2023: unlike English-dominant HSs, L1 English L2 learners of Russian preferred SVO order regardless of question type, consistent both with transfer from English and with SVO being the default and most frequent word order in Russian.

> Research question #2: Do Hebrew-dominant HSs of Russian have an advantage over English-dominant ones in this domain, given the availability of OVS order in Hebrew?

The answer to the second question seems to be 'No'. While at the group level, the Hebrew-dominant HSs did outperform the English-dominant HSs, this difference was fully accounted for by the Hebrew-dominant group having higher proficiency in Russian. Once proficiency was taken into account, the two groups showed the same patterns of performance, and exhibited the same improvement with proficiency across all four conditions. This is again in contrast to our findings with L2 learners of Russian (Ionin et al. 2023), who did not improve with proficiency in the Subject question–OVS condition, apparently not recognizing (even at higher proficiency) that OVS is an appropriate answer to a subject question.

The question is, then, *why* there seems to be no apparent advantage for Hebrew-dominant HSs over English-dominant ones, despite the fact that Hebrew, unlike English, allows OVS order. One possibility is that our participants were too advanced in Russian to be influenced by their dominant language, i.e., any transfer effects had already been overcome. We do not believe this to be the correct explanation, however. As shown in Table 1, our participant groups included quite a wide range of proficiency levels, and indeed our second statistical model found that the HSs improved with proficiency. However, this improvement affected both groups equally. If there were transfer from the dominant language, we should have seen an interaction between group and proficiency, with Hebrew-dominant HSs having an advantage over English-dominant HSs at lower proficiency levels (even if both groups were fully target-like at higher proficiency). However, no such interaction was found; proficiency alone, not the dominant language, affected performance.

This leaves us with two possible explanations of the lack of cross-linguistic influence in this domain. The first is that the mapping between word order and information structure is simply not subject to cross-linguistic influence from the dominant language. This would be partially consistent with the Interface Hypothesis (IH Sorace & Serratrice 2009, Sorace 2011), under which phenomena at the syntax/discourse interface are particularly vulnerable in bilingual populations, independently of the dominant language. The IH

has been tested primarily with regard to the expression of overt subjects in null-subject languages; support for the lack of cross-linguistic influence comes from the findings of Sorace et al. (2009) that even bilingual children who speak two null-subject languages (Spanish and Italian) nevertheless overuse overt subjects, which would not be expected if cross-linguistic influence were at work. However, the IH has been challenged (e.g., White 2011, Montrul 2011), and not all studies on the distribution of overt vs. null subjects yield the same results (see, e.g., Giannakou 2018, Etxebarria Zuluaga 2022 for recent findings that are not consistent with the IH). Furthermore, while the IH predicts lack of transfer effects, it also predicts vulnerability at the syntax/discourse interface. Thus, coming back to our findings, the fact that the HSs succeed with mapping a syntactic property (basic word order) to a discourse-based property (information structure) is not consistent with the IH, on which such phenomena should be vulnerable even in advanced bilinguals. A caveat is in order, however: in its most recent formulation (Sorace 2011), the IH argues that the vulnerability is due to processing rather than representational difficulties; since our study did not place participants under time pressure, it may not have placed much of a burden on their processing resources. Thus, our findings do not necessarily speak for or against the IH, but are consistent with the lack of transfer from the bilinguals' dominant language.

An alternative possibility is that transfer from the dominant language *does* affect the mapping between word order and information structure, but that our study did not test the right dominant language. As discussed earlier, while Hebrew does have OVS word order, it is quite constrained, and SVO rather than OVS order seems to be preferred in answer to subject questions. It is possible that OVS order in Hebrew is derived by a different mechanism than in Russian, and that Hebrew/Russian bilinguals do not map Hebrew OVS to Russian OVS. In that case, the lack of cross-linguistic influence is not surprising: both Hebrew-dominant and English-dominant HSs would need to acquire the properties of Russian OVS order from the input, with no help from their dominant language. This explanation can be tested in two ways. First, both baseline monolingual Hebrew speakers and Russian/Hebrew bilinguals could be tested on their judgments of OVS vs. SVO order in Hebrew, with a translation of our test instrument into Hebrew. This would establish whether the mapping between word order and information structure in Hebrew works similarly to that in Russian. Second, another group of Russian HSs could be tested on our current test instrument, one whose dominant language allows OVS order freely. A candidate dominant language would be Finnish: like Russian, Finnish has free word order and a rich case-marking system, with OVS used quite freely (e.g., Vilkuna 1989). If there is transfer from the dominant-language in this domain, we would expect an advantage for Finnish-dominant HSs of Russian (relative to English-dominant and Hebrew-dominant ones), an advantage that would not be accounted for by proficiency alone.

6 CONCLUSION AND FURTHER DIRECTIONS

We found that adult HSs of Russian demonstrate mastery of the relationship between word order and information structure, and exhibit very similar patterns to monolingual baseline speakers in this domain, despite having received reduced input in Russian relative to monolinguals. This is even more remarkable given that non-canonical word order is relatively infrequent in Russian. Both Hebrew-dominant and English-dominant HSs improve with proficiency and succeed in mapping SVO and OVS orders to the corresponding information-structure configurations. The success of our HS groups is consistent with the findings of prior studies on HSs of Spanish (Hoot 2017, Leal et al. 2018) and Hungarian (Hoot 2019), which also found much similarity in the performance of HSs and baseline speakers on the expression of information-structure properties.

We have identified a number of directions for further study. First, the potential role of cross-linguistic influence could be examined further, through the addition of a

population of Finnish-dominant HSs of Russian. It would also be interesting to test the IH more directly, by placing HSs under time pressure and/or by comparing performance on the external syntax/discourse interface with that on the internal syntax/semantics interface (such as grammatical aspect or quantifier scope), given that the IH predicts external interfaces to be particularly vulnerable.

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ABBREVIATIONS

ACC	accusative	HS	heritage speakers
AJT	Acceptability judgment task	EHS	English-dominant heritage speakers of Russian
AoA	age of acquisition		
F	feminine	HHS	Hebrew-dominant heritage speakers of Russian
M	masculine		
NOM	nominative	OVS	Object-Verb-Subject
PST	past	SVO	Subject-Verb-Object
IH	Interface Hypothesis		

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