

Interpretation of Anaphoric Subject Pronouns in Heritage Russian

Tanya Ivanova-Sullivan
University of New Mexico

1. Introduction

The nature and causes of divergent behavior in the first or second language of bilingual populations have long been the focus of research in second language acquisition. Linguistic interfaces have been identified as one of the most notable areas of divergence in bilingual grammars (Sorace, 2004, 2005, 2006; Sorace & Filiaci, 2006; Sorace & Serratrice, 2009; Belletti, Bennati & Sorace, 2007; Rothman, 2009; Hulk & Müller, 2000). Particularly, the syntax-pragmatics interface has been argued to pose acquisition challenges to bilinguals stemming from the taxing task of integrating structures from two different modules, linguistic and cognitive (Sorace & Filiaci, 2006). Such task is believed to impose certain processing limitations on the bilingual parser resulting in variability and optionality in near-native grammars. One of the most studied phenomena that reveal such problems at the syntax-pragmatics interface is discourse anaphora with null and overt subject pronouns (see Sorace, 2011, for comprehensive review). Establishing referential dependencies between a pronominal and its antecedent, thus, involves elements from both narrow syntax (the phi-features of person, number and gender) and Information Structure (Topic and Focus).

Despite the processing account that has been recently adopted by Sorace and her colleagues to explain the optionality at the syntax-discourse interface, there exist only a few studies that focus on on-line or timed tasks in anaphora resolution. The goal of the present study is to offer an account of the more specific processing mechanisms involved in the interpretation of null and overt anaphoric subject pronouns by heritage speakers of Russian, a language with non-canonical null-subject properties.

Only a handful of studies have focused on anaphora resolution in heritage speakers (Montrul, 2004, 2008; Montrul & Polinsky, 2011; Keating et al, 2011; Dubinina & Polinsky, 2012; Laleko and Polinsky, forthcoming). Heritage Spanish, Russian, Korean, and Japanese have been of interest to scholars who focus on *pro* drop or topic drop properties in order to explore the structural characteristics of heritage grammars at the syntax-discourse interface. However, a study of processing of anaphoric or referential dependencies in Russian heritage speakers has not been yet undertaken. Such study is relevant not only to the field of heritage linguistics but also to the field of L2 processing that has been an arena for hot debates between the proponents and critics of the Shallow Structure Hypothesis (Clahsen and Felser, 2006).

The questions I raise in my study pertain to the type of processing that could be identified in timed comprehension tasks. Does heritage processing rely on structural, extra-structural (semantic and pragmatic) cues or both? Does the integration of syntax and discourse structures at the interface posit a taxing task for the processor? And if yes, how is this problem resolved?

In addition, the present study is the first attempt to compare the groups of two types of bilinguals in regard to processing – early bilinguals (heritage speakers of Russian) and late bilinguals (native speakers of Russian who reside in the USA and who have fully acquired their L1).

* I would like to thank Maria Polinsky, Anna Mikhaylova, Mila Tasseva-Kurktchieva and the two anonymous reviewers for their valuable comments and suggestions for improvement. I am also grateful to the SLRF 2012 audience for their insightful questions and interest in my study. All errors are solely mine.

2. Representational and processing accounts for the optionality at the interface

Originally, Sorace and her collaborators proposed to view such optionality in terms of representational or structural deficit in the grammars of near-native speakers of Italian and other canonical null subject languages. Such representational deficit was argued to reflect underspecification at the level of interpretable features in L2 grammars due to the availability and residual influence of English (Serratrice, Sorace, & Paoli, 2004; Sorace & Filiaci, 2006). Tsimpli et al (2004) analyze the main locus of divergence in these grammars, the overt subject pronouns, and interpret it with the emerging influence of the L2 (English) on interpretable features in the L1 representations. They argue that the feature [+topic shift] in Italian is mapped onto overt pronouns but in English there is no choice of pronominal forms regulated by interface conditions. The result is ambiguity in production and interpretation of overt subject pronouns. The syntactic features responsible for the licensing of null subjects are found to be unaffected by attrition.

Recently, the representational approach has been modified to include a strong focus on processing, in particular, viewing the inability to integrate multiple sources of information as processing deficit. Argyri and Sorace (2007) argue that such explanation finds support in recent research on L2 processing, particularly in Clahsen and Felser's 'shallow parsing strategy.' However, while Clahsen and Felser's strategy applies to parsing based on pragmatic information, Sorace and colleagues find syntactic knowledge to be intact and processing of syntactic structures easier than that of discourse structures.¹

Furthermore, the explanation based on processing issues in near-native grammars stipulates minimal cost in the choice of subject antecedent and consequently, preference for this subject unless they are other cues that point towards other potential competitors (Serratrice, 2005). This proposal is based on a processing-driven hypothesis of pronominal resolution, the Position of Antecedent Strategy (PAS) developed by Carminati (2002). Sorace and Filiaci (2006) argue specifically that near-native speakers have a native-like strict PAS for null subject pronouns but a less-strict pass for overt pronouns, which allows co-reference with both the subject and the object of the matrix clause. The co-reference of the anaphoric pronoun and the subject of the matrix clause is taken to be the 'default' option when speakers are faced with processing difficulties. The difference between native speakers and near-native speakers is viewed in terms of different economy considerations that underlie the choice of grammatical options. According to the authors, native speakers choose only one option although others exist and near-native speakers choose more options because they have access to more than one grammatical system.²

A view of the processing load as the cause for optionality at the interface, however, is sometimes extended beyond heritage languages to explain variability in native grammars as well (see Prévost 2011 and Keating et al, 2011). My findings also show that there was significant variation within the group of native speakers in regard to antecedent preferences, something that could potentially blur the differences between the two groups of bilinguals in my study not only in regard to pragmatic biases for antecedent assignments but also in the realm of ease of interpretation.

3. Null subjects in Russian

Despite the common assumption that Russian is a canonical null-subject or *pro* drop language on par with such languages like Spanish and Italian, recent proposals on subject gaps argue against this,

¹ In a couple of publications Sorace tries to resolve this problem by referring to the "shallow processing of the interface features governing the use of overt subjects, for example, topic shift." (Sorace, 2006; 2007). It is not clear, however whether near-native speakers rely on this feature at the complete expense of structural cues. If they indeed do (like in the cases taken to exemplify the Shallow Structure Hypothesis), then the results should be a strong presence of pragmatic bias that will be resolved to the object antecedent.

² While this is empirically tested, the case of native speakers who have fully acquired their L1 but have also a very good proficiency in another language remains to be examined. Such speakers undoubtedly have more options than monolingual speakers and could choose either to suppress or to keep the other options active throughout the parsing process, something that will show up in on-line studies.

instead analyzing Russian as a “mixed” null-subject language, which has null expletives but requires overt subjects in non-emphatic contexts (Franks 1995; Lindseth 1998). Similarly, after examining several syntactic conditions for the occurrences of subject gaps, Fehrmann and Junghanns (2008) conclude that these gaps are not obligatory in Russian but are one option alongside non-emphatic overt subjects.

Based on these accounts of the null-subject parameter in Russian, it is apparent that it differs from both discourse *pro* drop languages, such as Chinese and Japanese and canonical *pro* drop languages, such as Spanish, Italian, and Greek. The characteristics of various *pro* drop languages are not unified across the board and the notions of *pro* drop are understood differently under different accounts (see Fehrmann and Junghanns, 2008, for comprehensive review). Examples 1 and 2 below (from Fehrmann and Junghanns, 2008) demonstrate legitimate subject gaps in subordinate clauses:

(1) Ivan_i skazal, chto Ø_j pridet.

Ivan said that will-come. 3sg.

‘Ivan said that he would come.’

(2) Peredaju_k, chto Ø_{k/j} skazal.

Report. 1Sg, pres. what said. 1Sg/3Sg.

‘I’m only telling what I/he said.’

The null subject in the embedded clause in Example (1) can be replaced with an overt third person singular pronoun that could be interpreted as being either co-referential with the subject of the matrix clause (Ivan) or having a disjoint reference. According to Fehrmann and Junghanns, there is no bias in Russian towards one or the other reading (but cf. Czech, in which the disjoint reading is preferred in this context) and both the null and the overt pronoun can be used interchangeably in non-emphatic, non-contrastive contexts. In addition, the distribution of the overt subject pronoun in discourse does not always signal switch-reference, as it does in Spanish and Italian, for example. Example (2) shows that the null subject does not have to be co-referential with the subject in the matrix clause in order to occur in embedded position. Due to the person syncretism in non-present tense the null subject can have an obviative interpretation and so can a 3rd person overt pronoun in this context. What makes Russian different from the canonical *pro*-drop languages is the fact that the overt pronoun is the unmarked option in that language, whereas in languages, such as Italian and Spanish, this function is realized by the null pronoun.

All these properties of the null and overt pronominal subjects in Russian could possibly play a role in the over-extension of overt subjects to contexts that would have been excluded in canonical *pro* drop languages.

4. The present study

4.1. Participants

This is a pilot study that compares processing of anaphoric pronouns at the syntax-discourse interface by heritage speakers (N=7; mean age 22.5) and native speakers of Russian (N=7; mean age 35.5). Although the pool of participants is relatively small, my goal is to determine whether there are particular tendencies in resolving referential dependencies in heritage language, which could be then verified or rejected in a larger-scale study. This is not an unusual practice and very often such studies can offer interesting (albeit tentative to some degree) insights about the subject of investigation (cf. Yamada, 2009).

Both experimental groups in the present study reside in the USA but the language proficiency, age of arrival, and duration of residence in the country vary between the groups. The heritage speakers were either born in the USA or arrived before the age of 9 and ½. The duration of their residence here ranges from 12 to 29 years (mean of 16 years). They are second-generation Russian speakers, whose English has become near-native and most often, dominant, since their L1 acquisition was interrupted by immigration or was mostly limited to the home environment. Some of them attended elementary school in Russia but did not finish it and those born here did not receive any formal instruction in

Russian. Although some of them started learning English only upon their arrival in the USA, they all attended and graduated from American schools and are now undergraduate students in various colleges. A standard cloze test with blanks was used to measure their language proficiency. They scored a mean of 84 % compared to the native speakers of Russian who performed at ceiling. Since this is a pilot study and the pool of participants is relatively small, no proficiency sub-division was created within the group of heritage speakers. Along with the grammatical proficiency, I tested lexical proficiency through a test that yielded results similar to the grammatical proficiency test, with a mean of 80 % accuracy. The native speakers scored 95 % on the lexical proficiency test. The lexical proficiency test was based on the Swadesh list, a lexical proficiency measurement tool used in previous studies, which elicits 100 most basic vocabulary items in Russian (Polinsky, 2006). None of the participants in both groups was proficient in another language but Russian and English.

The native speakers of Russian who took part in the present study live and work in the USA but have all received a formal high school education (some college) in Russia. They moved to the USA after the age of 18 and use both Russian and English in their daily lives. In my study I refer to them as ‘native speakers’ despite the fact that they were not tested in Russia. A lot of psycholinguistic studies in the last couple of decades have acknowledged the problem of finding “pure” monolingual speakers, an issue that is becoming more acute in our global and technologically-connected world. Bilingual speakers seem to be the norm rather than the exception, as Grosjean has demonstrated continuously in his work since the 1980s. Along with logistical difficulties of finding monolingual speakers, there were a few other factors that prompted me to choose to compare heritage speakers to native speakers residing in the USA.

First, the effect of bilingualism on processing has been brought up in various studies. While warning of methodological fallacies of comparison between L2 learners (bilinguals) and a control group of monolinguals, Carroll (2006) insists on researching the role of bilingualism on parsing before we bring up monolinguals as a baseline in processing studies or use proficiency tests to compare monolinguals and bilinguals (Grosjean, 1989). Argyri and Sorace (2007) caution that bilingualism could be a source of processing burden that forces speakers to employ ‘shallow’ processing strategies.

Another strong argument in favor of using native speakers who have come to the USA after they have fully acquired Russian and have a good working knowledge of English, is brought up by several studies of heritage speakers that emphasize the role of the input in heritage language acquisition (Montrul, 2008; Dubinina & Polinsky, 2012). Heritage speakers acquire their L1 from their parents most of whom do exhibit some signs of language attrition or variability in comparison to the language spoken in Russia. If this particular language variety is what the heritage speakers receive as an input, it is more relevant to compare them to the group of native speakers who have lived in the USA for some time (Benmamoun et al, 2010).

4.2. Task and procedure

The study included a timed sentence comprehension task and a production task. Here I discuss the results only from the comprehension task, which elicited antecedent preferences (subject or non-subject) in two conditions: null and overt subject pronouns. The reaction times were recorded after the whole sentence was heard by the participants and analyzed as possible indicators of difficulties with the interpretation of null and overt subject pronouns (cf. similar methodology in Lezama and Almor, 2011).

This task, similarly to speeded grammaticality judgment tasks, for example, analyzes post-sentence timed responses and thus, does not tap into real time processing (Hopp 2010). However, such tasks could still provide some insights into the interpretative difficulties experienced by the participants. If they are slower with choosing the antecedent of the overt pronouns, for example, this could be an indication of problems with the interpretation of these particular pronouns (all other things being equal). Since this is a pilot study, if such problems are detected, they will be regarded as certain trends that could be further investigated in a larger study using tasks with more precise temporal resolution, such as self-paced listening or visual world paradigm.

The task consists of eighteen stimulus sentences and twelve fillers. All of them together with the comprehension question were previously recorded by a native speaker. The target sentences were

equally divided between two conditions: null and overt subject pronoun. The pronouns were placed in the second clause, the potential antecedents in the matrix clause were matched for gender, and the sentences were globally ambiguous, with non-lexically biased predicates. An example of a test sentence is given below:

- (3) Boris vstretil Olega na ulice, no on/Ø bystro povernulsja i ushel.
 Boris met Oleg on the street but **he** quickly turned around and left.

Such globally ambiguous sentences were shown to be the ideal testing ground of speakers' preferences in anaphora resolution (Keating et al, 2011). It is important to keep in mind that if we manipulate the lexical semantics of the predicate or the phi-features of the anaphoric pronouns and their antecedents, we will most probably see different results both in accuracy and response times (see Carminati, 2005, for results of one such study).

The experiment was done aurally because of the various degree of literacy of heritage speakers. The participants were asked to listen to various sentences. Immediately after each sentence they heard a comprehension question that asked them to choose between the two NPs in the matrix clause, the subject or the object of the bivalent verb. After they heard the question, they saw a screen with the same question written down. That functioned as their cue to press one of the buttons on a response pad and make their antecedent choice as quickly as possible. The reaction times were recorded from the onset of that last event, namely, the appearance of the question on the screen. In order to avoid consistency biases and other order effects, in half of the sentences the order of the NPs was switched and the order of trials was fully randomized for each subject.

Based on the distinctive patterns of the ubiquitous Subject rule that could work in tandem with PAS (cf. Keating et al, 2011) and on the specific way of pragmatic identification of pronouns in Russian I hypothesize that the heritage speakers in my study will exhibit divergent behavior in their antecedent assignment with both null and overt pronouns. On the other hand, previous theoretical proposals (discussed above) about native speakers' success in integrating information from narrow syntax and discourse will manifest itself in slower performance by these speakers who would try to incorporate both structural and pragmatic cues in their anaphoric interpretation. I predict that due to the more complex representation of the interface that requires matching syntactic with discourse information and is more resource-draining, the heritage speakers will resort to some 'default' strategies both in the antecedent assignment and processing. Similar strategies that rely on the least effort but pertaining to morphological material have been discussed previously in Polinsky's studies and will be discussed again in the following sections in regard to "default" processing.

4.3. Results

4.3.1. Antecedent Choice

	Null pronouns- Subject antecedent	Null pronouns- Object antecedent	Overt pronouns- Subject antecedent	Overt pronouns- Object antecedent
Heritage speakers	.87 (.11)	.13 (.11)	.91 (.11)	.9 (.11)
Native speakers	.90 (.14)	.10 (.14)	.62 (.09)	.38 (.09)

Table 1: Mean responses and SD of antecedent choice with null and overt subject pronouns

When examining the simple effects with antecedent choices we see that the heritage group produced a greater proportion of subject responses in the overt (.91) than in the null (.87) subject condition while the control group showed the opposite trend, namely, a higher proportion of subject antecedents with null pronouns (.90) than with overt pronouns (.62.) For the overt subject condition, heritage speakers chose subject antecedents more often than was the case for the native speakers

(effect size = .29). The reverse outcome was observed for the null pronoun condition with those in the target group providing fewer subject responses than the participants in the control group, although this effect was only approximately one-seventh of the size of the overt pronoun effect (= .05).

The results from the analysis of object antecedents are the reversed version of the subject analyses. Overall, the participants in the control group provided more object antecedents than the participants in the experimental group (effect size = .13) and this effect proved reliable.

The findings of the control group show that overall, the predictions of PAS are correct despite the fact that the antecedent preferences with overt pronouns was not as strong as the subject antecedent preferences with null pronouns (in fact, this was also a disclaimer in the original PAS). The difference between the two conditions was also evident in the individual responses, which were more diverse in the overt pronoun condition. None of the native speakers showed consistent preferences for one or other antecedent type, something that is reflected in the group results. Such behavior is consistent with the unmarked status of the overt pronoun in Russian and its distribution in a wider range of contexts than the null pronoun. This, however, was not the case within the experimental group. There were two participants in that group that chose only subject antecedents with overt pronouns, whereas the rest of the group had sporadic preferences for the object antecedent.

The interpretation of null pronouns was much more consistent across the board. Only two native speakers showed at chance performance (there were the ones who were also the slowest in their responses) and the rest were pretty unified in their subject antecedent preferences. There were slightly more participants in the heritage group (four) who demonstrated object antecedent preferences with null pronouns but responses with subject antecedents still dominated in their data.

These patterns became more clear after the raw data was submitted to a Pronoun (null vs. overt) X Group (heritage speakers vs. native speakers) ANOVA with Subjects (F_1 and t_1) and Items (F_2 and t_2) as random effects. A two-factor ANOVA with group and pronoun type (null vs. overt), and proportion subject and object as dependent measures indicated that the subject was more frequently chosen with both the null and the overt pronouns, the only exception being the overt pronoun condition in the group of the native speakers. This is supported by the main effects of group, ($F_1(1,12) = 7.09, p < .05$; $F_2(1,16) = 5.0, p < .05$), pronoun type ($F_1(1,12) = 10.49, p < .01$) as well as the interaction between group and pronoun type ($F_1(1,12) = 19.88, p = .001$; $F_2(1,16) = 7.4, p < .05$). The analysis by items for pronoun type did not produce any effect, $F_2 < 2.4$.

Although the interaction between group and pronoun type proved significant, planned comparisons identified it only in the overt condition, ($t_1(1,12) = 5.33, p < .001$; $t_2(8) = 2.6, p < .05$). In that condition the heritage speakers chose more antecedent subjects with overt anaphora than the native speakers did. One explanation of such results would be the interpretation of the subject antecedent as the 'default' option when speakers (more L2 learners but native speakers as well) are faced with processing difficulties. Another plausible explanation proposed by Keating et al (2011) assumes a conflict between the Subject rule and PAS. The Subject rule operates universally while the object antecedent is only a preferred option for the overt anaphora, as formulated in PAS in regard to Italian. The Subject rule is implicationally presented in Keenan and Comrie's Accessibility Hierarchy (1977) and has been also proposed to account for other phenomena in heritage grammars, such as relativization (Polinsky, 2011). Given the special status of the subject in structural and cognitive terms, it is not unreasonable to propose such explanation for the subject preference with overt pronouns within the group of the heritage speakers.

In the overt condition the difference between subject and object antecedent didn't prove significant for the control group, something that confirms previous accounts of native speakers exhibiting weaker bias in antecedent assignment with overt pronoun subject (Keating et al, 2011).

Furthermore, the fact that there is almost no difference in the results with the choice of subject antecedent in the null (87 %) and overt condition (91 %) within the heritage speakers' group tells us that this is not something that is representationally stable; rather, what we witness here is some sort of heuristics in order to lessen the processing load and resolve the ambiguity conflict as painless as possible.

Finally, as I already mentioned in Section 3, the overt subject pronouns in Russian are used not only to indicate Topic shift, contrast or emphasis but to serve as the subject in neutral contexts or even to maintain Topic continuity. This would explain why there was such strong preference for the subject antecedent with overt pronouns in both groups of participants.

Overall, the results with the antecedent choice point out to the overt subject anaphora being the locus of divergence between both groups but also within the native speakers' group. If the syntax-discourse is indeed problematic for bilinguals, then null pronouns, which are also on the interface, should be problematic too. In fact, a few studies have obtained such results, one of them being Rothman (2009) who found that L1 English learners of Spanish overused both overt and null subject pronouns. While no such divergence was detected in my study in regard to the antecedent preference, the results from the reaction times zoomed in on the null subject pronouns with object antecedents.

4.3.2. Reaction times

	Null pronouns- Subject antecedent	Null pronouns- Object antecedent	Overt pronouns- Subject antecedent	Overt pronouns- Object antecedent
Heritage speakers	3202 (1117)	3597 (619)	3116 (7595)	3404 (1611)
Native speakers	3893 (2095)	5526 (962)	3330 (705)	4326 (1278)

Table 2. Mean responses and SD of reaction times in msec

The data from the proportions of antecedents in the heritage group showed an uneven pattern of preference-based judgments with subjects being overwhelmingly preferred with null and overt pronouns. Because there were so few object responses in both conditions, the missing values were replaced by means, which is not an uncommon procedure in such cases. The analyses were run by subjects and by items in order to ensure the validity of the results, particularly in cases where the values were too small.

An examination of the simple effects indicates that heritage speakers proved faster when reporting subjects than objects antecedent regardless of whether they were in the overt pronoun condition (subject = 3116.76, object = 3404.67) than in the null pronoun condition (subject = 3202.71, object = 3597.40). They also proved to be faster, as can be seen above, in the overt pronoun condition, regardless of the antecedent choice. Overall, heritage speakers, regardless of condition, are performing the task more quickly than their control counterparts.

There was only one heritage speaker whose individual responses with subject antecedent preferences showed relatively high fluctuation, particularly in the overt subject condition. The rest of the participants in that group were relatively consistent in that condition choosing subject antecedents faster than object antecedents. There were two native speakers who were much slower than the rest of the group with some of their responses with overt and null subject pronouns regardless of antecedent preference.

A three-way ANOVA with group, subject pronoun (overt vs. null), antecedent choice (subject vs. object) and Subjects and Items as random effects further clarified the above-mentioned tendencies. Only the antecedent choice proved significant with both subjects and items analysis ($F_1(1,12) = 9.15, p < .05; F_2(1,16) = 12.8, p < .005$). A group – antecedent choice interaction (group $F_1(1,12) = 3.89, p < .075$; choice $F_1(1,12) = 3.64, p < .085$) and group times – antecedent choice interaction proved insignificant by subjects ($F_1(1,12) = 3.16, p < .22$) possibly because of the small size of the study. On the other hand, the analysis by items showed a main effect of group ($F_2(1,16) = 19.1, p < .001$), pronoun type ($F_2(1,16) = 8.0, p < .05$) and interaction between Group and pronoun type ($F_2(1,16) = 7.3, p < .05$).

The planned comparisons revealed the effects of pronoun type for object responses in the native speakers' group ($t_1(1,12) = 1.98, p < .05; t_2(1,6) = 5.27, p < .001$). These speakers were slower when choosing object antecedents in the null condition than in the overt condition showing that perhaps for them, there is some processing cost incurred in this condition. Their attempts to integrate syntactic and

pragmatic information in the process of anaphora resolution could slow them down, especially if they experience stronger pragmatic biases with overt pronouns towards object antecedent assignment.

In addition, the t-tests showed response type difference for the native speakers group in both conditions, with effects by subjects ($t_1(1,6) = 2.11, p < .05$) and by items ($t_2(16) = 3.4, p < .005$). This group was faster with subjects in the null condition than with objects in the same condition, something that is to be expected given the preference for antecedent subject predicted by PAS. The native speakers indeed demonstrated structural and pragmatic bias for subjects as the antecedents of the null subject anaphora. Such explanation receives additional support in the findings from the planned comparisons with antecedent choices that revealed a type condition difference for that group. Particularly, the native speakers had a higher proportion of subject responses vs. object responses in the null condition.

Finally, the t-tests revealed a group effect for object antecedent with null pronouns ($t_1(1,12) = 4.46, p < .001$ and $t_2(8) = 3.9, p < .005$), i.e., heritage speakers were faster choosing object antecedents with null subject anaphora than native speakers. These findings show that heritage speakers process the structurally less accessible and pragmatically less warranted antecedent objects faster than native speakers do. How can we explain these seemingly odd results?

5. Discussion

As I already mentioned, previous studies on anaphora resolution in bilinguals have shown that near-native speakers and L1 attriters show strong subject preference with both null and overt anaphora. Carminati's PAS (2002) was developed to capture a generalization about such preferences and to account for the distribution of the subject and object antecedents in native speakers. She evokes the phrase-structure model and interprets the subject position as more visible, accessible, and prominent than the object position (lower on the tree). As the results of my study demonstrated, the subject was indeed the more frequently chosen antecedent, even by the native speakers. However, it is not entirely clear what the interaction is between the universal subject preference and PAS (if any). It looks like that both accounts place the subject on a more central place syntactically and cognitively, than the object, which is further embedded and less prominent.

In terms of processing, heritage speakers seem to respect PAS less strictly than the native speakers; instead, they could be relying on the more universal processing principle based on a subject preference. Their frequent choices of the subject as an antecedent in both conditions (with null and with overt anaphoric pronouns) and their shorter reaction times in all conditions compared to the native speakers, point to the lack of any pragmatic bias and lack of detailed processing of the interface structures, something that would have taken up more time. Since the predicates in the matrix clause are globally ambiguous and there are no other cues present, heritage speakers attempt to resolve the referential dependencies by defaulting to the most prominent and accessible element, the Subject, which in this case is also the Topic. In this sense, they engage in light processing by disregarding the specifics of structural and pragmatic biases that lead to different antecedent assignments with null and overt pronouns (as posited in PAS).

Since the Shallow Processing Hypothesis was designed to capture the processing mechanisms behind L2 acquisition (Clahsen & Felser, 2006), it is perhaps more appropriate here to talk about "good enough processing" in the case of heritage speakers (in the spirit of Ferreira et al, 2002). If we are to give justice to the precise mechanism of 'shallow processing' as described by Clahsen and Felser and the subsequent application of this hypothesis in studies of L2 processing, then there is no ground to analyze heritage processing as shallow. Heritage speakers are perfectly capable of handling relations in narrow syntax but show variability with elements in the Information Structure; hence, they do just the opposite to what L2 learners have been argued do in terms of processing complex syntactic dependencies. Heritage processing has been analyzed as 'default' and 'first pass parsing' also by Polinsky (2009) who argues that morphological deficit in heritage grammars is responsible for these specific types of easier parsing. Thus, the 'ease' of interpretation is a core element in both Polinsky's and my analysis but the particular causes and mechanisms of this type of processing are analyzed differently in the two accounts due to the different linguistic domains and phenomena being analyzed in those studies.

It is important to note that although the heritage speakers were faster choosing subjects as antecedents for the null anaphora they were not significantly faster compared to the native speakers. However, these findings should be taken with caution given the small size of this pilot study. If results from a larger sample size were to yield such effect, the overlapping of structural (Subject position) and pragmatic (Topic position) factors could be interpreted as providing a processing advantage for the heritage speakers.

Despite the tentative nature of some of the results, the study clearly shows that heritage speakers do not exhibit problems in narrow syntax, namely, in the syntactic licensing of null and overt subject pronouns; it is their distribution in the discourse that is prone to variability and instability due to problems with the discourse identification of such subjects. The main reason why heritage speakers demonstrated shorter reaction times than the native speakers is because their processing of both null and overt anaphoric pronouns is driven by an initial structurally-based assignment of subject antecedent (in Spec IP), without further re-evaluating this assignment based on discourse-pragmatic cues. The native speakers' group, on the other hand, is much slower because they engage in a second 'round' of interpretation, which sometimes is biased towards the subject, and other times – towards the object antecedent with null pronouns.

6. Conclusions

The overall results of my study confirmed that there is divergence at the syntax-discourse interface in heritage grammars as well, just like the near-native L2 grammars. Some of my results in the heritage group also confirmed the findings of previous studies on other types of bilingual populations (near-native speakers, L1 attriters, and bilingual children). All these speakers do not have problems with licensing null pronouns, a process that occurs in narrow syntax through rich agreement specification. What proved difficult for them were the pragmatic identification and the depth of processing of anaphoric dependencies with non-emphatic overt pronouns. Native speakers exhibited similar problems but on a smaller scale. Such findings come to show that heritage languages and native languages of bilinguals do not exhibit categorical differences but the divergence is a matter of degree in this particular linguistic domain.

Heritage language processing is an area of study that is still underdeveloped. It is important, however, to start asking questions about the nature of such processing since these questions will throw more light on the connections between linguistic and cognitive phenomena in bilinguals, such as the interaction between L1 and L2 and the possible mechanisms of incomplete acquisition or attrition.

References

- Argyri, Efrosyni and Antonella Sorace. (2007). Cross-linguistic influence and language dominance in older bilingual children, *Bilingualism: Language and Cognition*, 10 (1), 79-99.
- Benmamoun, Elabbas, Montrul, Silvina, and Maria Polinsky. (2010). Prolegomena to heritage linguistics. University of Illinois at Urbana-Champaign and Harvard University. <http://www.nhllrc.ucla.edu/pdf/HL-whitepaper.pdf>.
- Belletti, Adriana, Bennati, Elisa, and Antonella Sorace. (2007). Theoretical and developmental issues in the syntax of subjects: Evidence from near-native Italian. *Natural Language and Linguistic Theory*, 25, 657-689.
- Carminati, Maria Nella. (2002). *The processing of Italian subject pronouns*. Ph.D. thesis, University of Massachusetts Amherst.
- Carminati, Maria Nella. (2005). Processing reflexes of the Feature Hierarchy (Person>Number>Gender) and implications for linguistic theory. *Lingua*, 115, 259-285.
- Carroll, Susanne. (2006). Shallow processing: A consequence of bilingualism or second language learning. *Applied Psycholinguistics*, 27(1), 53-56.
- Clahsen, Harald and Claudia Felser. (2006). Grammatical processing in language learners. *Applied Psycholinguistics*, 27(1), 3-42.
- Dubinina, Irina and Maria Polinsky. (2012). Russian in the USA. In M. Moser (Ed.), *Slavic languages in migration*. Wien: University of Vienna.
- Fehrmann, Dorothee and Uwe Junghanns. (2008). Subjects and Scales. In Marc Richards and Andrej Malchukov (Eds.), *Scales*. (pp.189-220). *Linguistische Arbeitsberichte* 86, Universität Leipzig.

- Ferreira, Fernanda, Karl Bailey, and Vittoria Ferraro. (2002). Good-enough representations in language comprehension. *Current Directions in Psychological Science*, 11(1), 11-15.
- Franks, Steven. (1995). *Parameters of Slavic morphosyntax*. Oxford University Press.
- Grosjean, Françoise. (1989). Neurolinguists beware! The bilingual is not two monolinguals in one person. *Brain & Language*, 36, 3-15.
- Hopp, Holger. (2010). Ultimate attainment in L2 inflection: Performance similarities between non-native and native speakers. *Lingua*, 120, 901-931.
- Hulk, Aafke and Natascha Müller. (2000). Bilingual first language acquisition at the interface between syntax and pragmatics. *Bilingualism: Language and Cognition*, 3, 227-244.
- Keating, Gregory, VanPatten, Bill, and Jill Jegerski. (2011). Who was walking on the beach: Anaphora resolution in Spanish heritage speakers and adult second language learners. *Studies in Second Language Acquisition*, 33, 193-221.
- Keenan, Edward and Bernard Comrie. (1977). Noun phrase accessibility and universal grammar. *Linguistic Inquiry* 8, 63-99.
- Laleko, Oksana and Maria Polinsky. (forthcoming). Marking topic or marking case: a comparative investigation of heritage Japanese and heritage Korean
- Lezama, Carlos and Amit Almor. (2011). Repeated names, overt pronouns, and null pronouns in Spanish. *Language and Cognitive Processes* 26(3): 437-454.
- Lindseth, Martina. (1998). *Null-subject properties of Slavic languages: With special reference to Russian, Czech, and Sorbian*. Slavistische Beiträge.
- Montrul, Silvina. (2004). Subject and object expression in Spanish heritage speakers: A case of morpho-syntactic convergence. *Bilingualism, Language and Cognition*, 7, 125-142.
- Montrul, Silvina. (2008). *Incomplete Acquisition in Bilingualism: Reexamining the Age Factor*. John Benjamins, Amsterdam.
- Montrul, Silvina and Maria Polinsky. (2011). Why not heritage speakers?. *Linguistic Approaches to Bilingualism*, 1(1), 58-62.
- Polinsky, Maria. (2006). Incomplete acquisition: American Russian. *Journal of Slavic Linguistics*, 14(2), 191-262.
- Polinsky, Maria. (2009). Research challenges posed by heritage languages. *Presentation at the Third Annual Heritage Language Institute*
- Polinsky, Maria. (2011). Reanalysis in adult heritage language: New evidence in support of attrition. *Studies in Second Language Acquisition*, 33, 305-328.
- Prévost, Philippe. (2011). The Interface hypothesis: What about the optionality in native speakers? *Linguistic Approaches to Bilingualism*, 1(1), 79-83.
- Rothman, Jason. (2009). Pragmatic deficits with syntactic consequences?: L2 pronominal subjects and the syntax-pragmatics interface. *Journal of Pragmatics*, 41, 951-973.
- Serratrice, Ludovica. (2005). The role of discourse pragmatics in the acquisition of subjects in Italian. *Applied Psycholinguistics*, 26, 437-462.
- Serratrice, Ludovica, Antonella Sorace, and Sandra Paoli. (2004). Cross-linguistic influence at the syntax-pragmatics interface: Subjects and objects in Italian-English bilingual and monolingual acquisition. *Bilingualism: Language and Cognition*, 7, 183-205.
- Sorace, Antonella. (2005). Selective optionality in language development. In L. Cornips and K. Corrigan (Eds.), *Syntax and variation: Reconciling the biological and the social* (pp. 55-80). Amsterdam: John Benjamins.
- Sorace, Antonella. (2006). Possible manifestations of shallow processing in advanced second language speakers. *Applied Psycholinguistics*, 27(1), 88-91.
- Sorace, Antonella. (2007). Optionality at the syntax-discourse interface in near-native L2 speakers. *Second Language*, 6, 3-15.
- Sorace, Antonella. (2011). Pinning down the concept of 'interface' in bilingualism. *Linguistic Approaches to Bilingualism*, 1(1), 1-33.
- Sorace, Antonella and Francesca Filiaci. (2006). Anaphora resolution in near-native speakers of Italian. *Second Language Research*, 22, 339-368.
- Sorace, Antonella and Ludovica Serratrice. (2009). Internal and external interfaces in bilingual language development: Beyond structural overlap. *International Journal of Bilingualism*, 13(2), 195-210
- Tsimpli, Ianthi, Sorace, Antonella, Heycock, Caroline, and Francesca Filiaci. (2004). First language attrition and syntactic subjects: A study of Greek and Italian near-native speakers of English. *International Journal of Bilingualism*, 8(3), 257-277.
- Yamada, Kazumi. (2009). Acquisition of zero pronouns in discourse by Korean and English learners of L2 Japanese. In Melissa Bowles et al (Eds.). *Proceedings of the 10th GASLA 2009*. (pp. 60-68). Somerville, MA: Cascadilla Press.

Selected Proceedings of the 2012 Second Language Research Forum: Building Bridges between Disciplines

edited by

Ryan T. Miller, Katherine I. Martin,
Chelsea M. Eddington, Ashlie Henery,
Nausica Marcos Miguel, Alison M. Tseng,
Alba Tuninetti, and Daniel Walter

Cascadilla Proceedings Project Somerville, MA 2014

Copyright information

Selected Proceedings of the 2012 Second Language Research Forum:

Building Bridges between Disciplines

© 2014 Cascadilla Proceedings Project, Somerville, MA. All rights reserved

ISBN 978-1-57473-464-5 library binding

A copyright notice for each paper is located at the bottom of the first page of the paper.

Reprints for course packs can be authorized by Cascadilla Proceedings Project.

Ordering information

Orders for the library binding edition are handled by Cascadilla Press.

To place an order, go to www.lingref.com or contact:

Cascadilla Press, P.O. Box 440355, Somerville, MA 02144, USA

phone: 1-617-776-2370, fax: 1-617-776-2271, sales@cascadilla.com

Web access and citation information

This entire proceedings can also be viewed on the web at www.lingref.com. Each paper has a unique document # which can be added to citations to facilitate access. The document # should not replace the full citation.

This paper can be cited as:

Ivanova-Sullivan, Tanya. 2014. Interpretation of Anaphoric Subject Pronouns in Heritage Russian. In *Selected Proceedings of the 2012 Second Language Research Forum*, ed. Ryan T. Miller et al., 145-154. Somerville, MA: Cascadilla Proceedings Project. www.lingref.com, document #3093.