BRILL

What is Difficult about Grammatical Gender? Evidence from Heritage Russian

Oksana Laleko
State University of New York at New Paltz
lalekoo@newpaltz.edu

Abstract

The paper examines the role of lexical, morphological, and discourse-referential factors in gender assignment with animate nouns in heritage Russian in order to explore the extent to which these different interfaces are challenging in heritage language acquisition. The analysis of concordant and discordant agreement patterns with nouns representing each type of gender categorization mechanism points to unequal difficulty associated with different types of gender allocation strategies. In particular, heritage speakers converge with baseline speakers in rating possible and impossible agreement combinations in the presence of fixed and transparent lexical and morphological gender categorization cues; however, they display non-target-like judgments of unmarked and underspecified forms characterized by variable agreement behavior (i.e., hybrid nouns and common gender nouns). Problems with forms whose gender reference is disambiguated at the level of discourse point to the syntax-discourse interface as a locus of systematic difficulty for heritage language speakers.

Keywords

1 Introduction

Recent studies on structural properties of heritage grammars have shown that heritage language speakers experience unequal difficulty with different aspects of linguistic architecture. A survey of cross-linguistic investigations published

over the last two decades reveals that some of the most challenging areas for heritage speakers, manifested in production and comprehension problems alike, are domains that involve interfaces between morphology and syntax, syntax and semantics, and syntax and discourse (Benmamoun, Montrul, and Polinsky, 2013; Scontras, Fuchs and Polinsky, 2015). While it is now clear that production and comprehension difficulties in heritage speakers are not limited to a single interface domain but span across multiple sub-systems of language, the question remains as to the extent to which these different interfaces are uniquely challenging in the heritage language. The answer to this question is still far from being clear. Some researchers have attributed the hallmark of a heritage language to changes in morphosyntax and the lexicon (Bar-Shalom and Zaretsky, 2008); others have pointed to the syntax-semantics (Montrul and Ionin, 2010) and syntax-discourse (Laleko, 2010; Laleko and Polinsky, 2013, 2016) interfaces as the loci of divergence between the heritage language and the corresponding baseline system.

In disentangling potential sources of difficulty in the context of heritage language acquisition and identifying the "weak spots" in heritage language architecture, previous studies have typically drawn comparisons between different types of linguistic phenomena mediated at different interfaces, often in heritage speakers representing different sectors on the heritage language proficiency spectrum. Relatively fewer studies have looked at how multiple interfaces are engaged in mediating one and the same linguistic phenomenon, in the same population of speakers.

The aim of this paper is to examine how different levels of linguistic organization interact within a single grammatical system – in particular, the system of grammatical gender in heritage Russian. Gender categorization in Russian involves a complex network of rules that span across multiple domains of language and engage several interfaces. This composite nature of gender assignment rules in Russian is particularly evident within the sub-class of human animate nouns, where the use of appropriate gender agreement morphology is based on the interplay of semantic, morpho-phonological, and pragmatic factors. To explore how the heritage and baseline grammatical systems compare to each other with respect to each of these factors, I examine the patterns of agreement reflecting the masculine-feminine (M/F) distinctions that hold for different types of animate nouns in Russian. In doing so, I focus on three specific mechanisms of gender categorization: (i) *lexical*, according to which gender classification of nouns into masculine or feminine is determined on the basis of their inherent gender specification (*brat*.M 'brother' – *sestra*.F 'sister'); (ii) *morphological*, encoded outside the nominal root through suffixal morphology overtly marking the feminine form

(*učitel'*.M – *učitel'nitsa*.F 'teacher'), and (iii) *referential*, observed with nouns whose gender value is unspecified at the level of the noun but determined contextually via identification with a human referent in discourse (*sudja*.M/F 'judge,' *kollega*.M/F 'colleague').

The paper is structured as follows. In the following section, I present some theoretical generalizations about grammatical gender in Russian as a hybrid category in which several independent factors interact. Following an overview of previous work on heritage Russian gender in Section 2, Section 3 describes the empirical study addressing the role of three distinct factors in the organization of the grammatical gender system in heritage Russian. Specifically, I examine how heritage speakers take advantage of lexical, morphological, and discourse-pragmatic cues in their scaled acceptability judgments of congruous and incongruous patterns of gender agreement. Section 4 presents and discusses the results of the study; some concluding remarks are offered in Section 5.

1.1 *Grammatical Gender as a Hybrid System*

Russian nouns are distributed somewhat disproportionally among three gender classes: masculine and feminine nouns together represent the largest segment of the nominal lexicon (about 46% masculine and 41% feminine), while neuters form the smallest class, accounting for the remaining 13% of the nominal lexicon (Comrie *et al.*, 1996). The neuter gender in Russian is used almost exclusively to classify inanimate nouns; thus, in the domain of human animate nouns, the three-way gender distinction is reduced almost completely to a binary system with two values, masculine and feminine.

Despite a promise of greater simplicity, this seemingly transparent subsystem comes equipped with its own challenges. The lack of uniformity in associations between grammatical gender and natural sex is reflected in different configurations attested for the masculine-feminine contrasts in the domain of animate nouns. Some of these relationships take the form of logically complementary binary oppositions of an *equipollent* type (Section 1.2), while others surface as oppositions of a *privative* type, where only one of the two members carries a pre-determined gender specification (Section 1.3). Additionally, for some animate nouns an opposition based on gender is lacking altogether, as evidenced by the existence of single non-sex-differentiable forms with an undetermined or *underspecified* gender value, used for both male and female referents (Section 1.4). Such rich and multifaceted system makes an investigation of gender marking with animate nouns in Russian a compelling opportunity for studying the interaction of multiple linguistic and extra-linguistic factors in near-native grammars.

As in other languages with grammatical gender systems, gender in Russian is reflected in syntactic agreement relations that hold between nouns and modifying adjectives, possessive pronouns, some numerals, and past tense verbs. Here, I focus specifically on agreement with modifying adjectives (i.e., within the noun phrase) and agreement with past tense verbs (i.e., at the clausal level). While all noun controllers in Russian participate in agreement relationships with these two types of agreement targets, the specific details of how these relations are carried out differ considerably for nouns representing different mechanisms of gender assignment. In what follows, I discuss these mechanisms in more detail.

1.2   *Lexical Factors in Gender Assignment*

As frequently pointed out in the typological literature, all attested gender systems appear to have a semantic core, typically intrinsically tied to biological sex (Corbett, 2013). While in some languages this semantic information may be further supplemented by some type of formal criteria (phonological or morphological), there are presumably no languages in which gender assignment is achieved strictly on the basis of formal factors (Corbett, 1991; Fraser and Corbett, 1995). Russian is no exception to this general rule: sex-differentiable nouns denoting humans and some animals represent the semantic core of the gender system. Cross-linguistically, these nouns tend to display a direct correlation between grammatical gender and biological sex: nouns denoting male beings are masculine and those denoting female beings are feminine. Henceforth, I will refer to this type of gender assignment mechanism in Russian as *lexical* assignment. The animate nouns in this class are inherently marked for their gender value in the lexicon, a generalization that appears to hold cross-linguistically based on available descriptions (cf. Dahl, 2000; Hellinger and Bussmann, 2001: 7–8; Alexiadou, 2004). No additional language-external factors, such as situational context containing information about the noun's referent, need to be considered by the speaker-listener in order to assign these nouns to a particular gender category.

In languages like English, where gender is not formally grammaticalized but reflected in the use of gender-variable pronouns, nouns that are intrinsically specified for gender are associated with a pre-determined pronominal choice.[1] In languages like Russian, where gender exists as a grammatical category, this inherent lexical property has a direct grammatical manifestation: nouns that are lexically marked for gender display fixed agreement patterns. In this sense,

---

1 This property distinguishes them from the so-called "gender-neutral" nouns (see Section 1.4 below), which are relatively less restricted in pronominal reference (cf. *Every student should bring his or her lunch to the event* vs. **Every boy should bring his or her lunch to the event*).

they are similar to inanimate nouns, which as a general rule also display predictable and invariable agreement behavior in Russian. Thus, lexically masculine nouns are only compatible with masculine agreement, and nouns that are lexically feminine, correspondingly, only take feminine agreement. These facts are illustrated in (1) below.

(1)   a. *Mladšaja   sestra   prijexala/*prijexal.*
                younger-F   sister-F   arrived-F/M
                'The younger sister has arrived'

       b. *Staršyi   brat   ujexal/*ujexala.*
                older-M   brother-M   left-M/F
                'The older brother has left'

The majority of nouns in this class are kinship terms and terms denoting humans of a particular sex and higher-order animals; thus, some additional examples are *mat' – otec* 'mother–father' (also *mama – papa* 'mom–dad'), *doč – syn* 'daughter–son,' *tetja – djadja* 'aunt–uncle,' *nevestka – zjat'* 'daughter-in-law–son-in-law,' *devočka – mal'čik* 'boy–girl,' *devuška – junoša* 'young lady–young lad,' *ženščina – mužčina* 'woman–man,' *nevesta – ženix* 'bride–groom,' *korova – byk* 'cow–bull.' In all of these examples, the feminine form is not morphologically derived from the masculine or vice versa; the two forms are also not interchangeable in any context. Instead, lexically assigned paired masculine and feminine forms stand in a symmetrical binary opposition of the equipollent type; i.e., they form a logically equivalent dichotomy in which each member carries a pre-determined gender value that is independent of the specific context in which it occurs.

1.3   *Morphological Factors in Gender Assignment: Derived Feminine Forms*

Apart from instances of lexical assignment at the level of the nominal stem, gender categorization of animate and sex-differentiable nouns can also be derived on the basis of presence or absence of particular morphological material. Typically, morphological factors in gender assignment in Slavic languages are discussed in relation to inflectional morphology, which determines the allocation of nouns to declensional classes based on their inflectional paradigms.[2]

---

2   Traditional analyses distinguish four declensional classes for Russian (Corbett, 1991): nouns in declension I are masculine, nouns in declensions II and III are feminine, and nouns in declension IV are neuter. Indeclinable nouns are sometimes grouped into a fifth declensional class (Corbett and Fraser, 2000).

The robust correlation that holds between a noun's gender and its declensional class in Russian provides a strong basis for analyzing the Russian gender assignment system in morphological terms (Corbett, 1991: 34–43, 2013: 116–119; Comrie *et al.*, 1996: 104–135).

At the same time, it is also clear that the role of morphology in gender marking is not limited to the domain of inflection. Derivation serves as a rich source of gender encoding in Russian, which makes use of dedicated suffixes to designate gender-specific forms. Derivational suffixing represents a particularly productive word-formation strategy within the sub-class of animate sex-differentiable nouns denoting professions and occupations. Within this lexical domain, grammatically feminine nouns are often morphologically derived from the corresponding unmarked masculine nouns, a strategy sometimes referred to as "female marking" (Doleschal, 2015 and references therein). Russian hosts an elaborate inventory of derivational suffixes marking gender-specific feminine forms (Comrie *et al.*, 1996; Krongauz, 1998; Doleschal and Schmid, 2001; Manova, 2005); some of these gender-changing affixes are illustrated in (2) below:

(2)	Suffix	MASC	Translation	FEM	Translation
	-k-a	student	'student'	studentka	'female student'
	-ix-a	slon	'elephant'	slonixa	'female elephant'
	-ic-a	lev	'lion'	l'vica	'lioness'
	-in-ja	graf	'count'	grafinja	'countess'
	-š-a	kassir	'cashier'	kassirša	'female cashier'
	-ess-a	poet	'poet'	poetessa	'poetess'
	-is-a	akter	'actor'	aktrisa	'actress'

The gender-changing suffixes in Russian are morpho-phonologically conditioned and thus restricted to specific base types. In addition to this formal constraint, these suffixes also impose certain restrictions on the interpretation of the resulting forms. The feminine forms derived via suffixation are not semantically or stylistically uniform and may carry additional, sometimes negative, connotations. As a result, the use of derived feminine forms is usually restricted in formal official styles in favor of the more stylistically neutral generic masculine forms (Rappaport, 2014: 375).

Within the markedness theory in linguistics, the asymmetrical relationship between the masculine and derived feminine forms in pairs like those presented in (2) above is traditionally analyzed in terms of a privative opposition (Schane, 1970; Jakobson, 1971). A privative binary opposition consists of two members, which differ from each other with respect to several formal, semantic, and distributional criteria: the member that carries relatively more

morphological material, offers a narrower interpretive potential, and appears in fewer contexts is considered marked, while the remaining unmarked (or underspecified) member is typically less complex morphologically, has a more general and inclusive meaning, and displays a wider contextual distribution. Specifically with respect to the masculine-feminine distinction of the type shown in (2), the masculine form represents the underspecified member on the basis of all three factors referenced above.

With respect to the role of overt morphological marking in language processing, studies have shown that native speakers productively use morphology (and nominal suffixes in particular) to predict gender of novel nouns when other lexical cues are not available to them (Varlokosta, 2011 and studies cited therein). Additionally, psycholinguistic studies have demonstrated that gender decisions performed on the basis of available morphological cues and those that require access to gender information stored in the lexicon are accomplished via different mechanisms (Heim, 2008). Specifically, it has been shown that when gender information needs to be retrieved from the lexicon, a higher activation is observed, compared to gender processing in the presence of overt morphological cues (Hernandez *et al.*, 2004; Padovani *et al.*, 2005). Overall, these studies suggest that speakers take advantage of morphological structure and use morphological cues to assign nouns to genders.

Additional distinctions have been observed for morphological processing of gender on the basis of how transparent these morphological cues are. Specifically, it has been shown that the availability of overt and transparent gender marking can facilitate the retrieval and processing of gender information (Schiller *et al.*, 2003), but such facilitative effects are absent in the presence of a more ambiguous morphological marking. Thus, only morphemes that are unambiguous with respect to their gender value serve as reliable gender cues for native speakers (Ralli, 2002). In Russian, as discussed above, the overt morphological markers present on derived feminine forms serve as highly reliable indicators of gender (Corbett, 1991), an observation also reflected in their predictable and invariable agreement behavior:

(3) *Novaja/*novyj   učiteľnica vošla/*vošel   v   klass.*
     new-F/M   teacher-F entered-F/M in   class
     'The new (female) teacher entered the classroom'

In contrast to the morphologically marked feminine nouns, the corresponding unmarked masculine forms are less transparent. Instead of being construed on the basis of an unambiguously specified and invariable gender feature, their gender interpretation may vary in context. These additional considerations are

introduced in the following section, which examines the role of discourse factors in gender assignment in Russian.

1.4   *Discourse Factors in Gender Assignment*

So far our discussion of gender assignment in Russian has focused on nouns with fixed and invariable gender specification, reflected in predictable and stable agreement behavior of associated words. Thus, we have seen that gender in Russian can be specified lexically on the nominal stem (Section 1.2) or expressed through an overt morphological exponent, namely a feminizing suffix used for deriving feminine forms for sex-differentiable nouns denoting occupations (Section 1.3). Both mechanisms create no ambiguity with respect to the noun's gender interpretation, associated directly with the nominal form; furthermore, no optionality is possible with respect to agreement, which follows directly from the unambiguous gender specification of the noun, as illustrated in examples (1) and (3) above.

However, not all animate nouns in Russian display this invariable behavior. In what follows, I discuss two classes of animate nouns that lack a fixed inherent gender specification and may take on various agreement patterns, dependent on the sex of their referent in discourse (cf. Crockett, 1976; Dahl, 2000; Alexiadou, 2004; Rappaport, 2014). These classes include *hybrid nouns* (Section 1.4.1 below) and *common gender nouns* (Section 1.4.2 below). These two nominal classes display several contrasting properties with respect to their distribution, interpretation, and agreement behavior, an observation that warrants a separate examination of each nominal class, to which I turn below.

1.4.1   Hybrid Nouns

Hybrid nouns, or generic masculines, are formally masculine nouns denoting professions and occupations that were traditionally held by men but throughout the last century have been increasingly opening up to women (Rothstein, 1973; Švedova, 1980; Corbett, 1991; Comrie *et al.*, 1996; Hellinger and Bussmann, 2001). In response to these social changes, many of these nouns have gained corresponding feminine forms via morphological suffixation (Section 1.3 above). At the same time, as noted previously, due to numerous semantic and stylistic restrictions on the use of the derived feminine forms, these masculine forms continue to be used in reference to both males and females. As a result of their greater interpretive potential, these forms have acquired unique patterns of *mixed agreement*, a particular type of variable agreement behavior that reflects a mismatch between formal (syntactic) and referential (semantic)

factors (Crockett, 1976; Corbett, 1979, 1982, 1991, 2013; Dahl, 2000). Thus, formal agreement rules require that hybrid nouns take on masculine agreements, regardless of the sex of their referent, whereas semantic principles necessitate the use of feminine agreements when the referent is known to be a female. This mixed character of agreement with hybrid nouns referring to females is illustrated in example (4) below:

(4)   a.   *Opytnyj*   *vrač*   *vypisal/vypisala*   *recept*
          experienced-M doctor-NOM issued-M/F   prescription-M
          'An experienced (female) doctor has issued a prescription'

      b.   *Opytnaja*   *vrač*   **vypisal/vypisala*   *recept*
          experienced-F   doctor-NOM issued-M/F   prescription-M
          'An experienced (female) doctor has issued a prescription'

      c.   *K*   *opytnomu/*opytnoj*   *vraču*   *složno* *popast'*
          to   experienced-DAT.M/F   doctor-DAT hard   get-INF
          'An appointment with an experienced (female) doctor is hard to get'

As shown in (4a), both semantic and formal agreement mechanisms can be triggered concurrently by the same controller noun in the nominative case. However, as evident from the contrast between (4a) and (4b), formal agreement applies more consistently than semantic agreement and displays fewer restrictions. In particular, the occurrence of masculine (formal) marking on a modifying adjective in (4a) is not constrained by the form of the past tense verb, which can be masculine or feminine. However, the occurrence of semantic (feminine) adjectival morphology is only possible when the predicate is also marked for semantic (feminine) agreement. This asymmetry between the likelihood of occurrence of semantic agreement in different parts of the clause has been captured by the Agreement Hierarchy (Corbett, 1979, 1983, 1991), which predicts that semantic agreement in the domain of attributive modifiers will be less likely than semantic agreement with predicates. Finally, as illustrated in (4c), semantic agreement is blocked completely in oblique cases, where the masculine agreement pattern is required regardless of the sex of the referent.

The dual status of hybrid nouns is also reflected in their unique interpretive properties. Due to their semantic underspecification for gender, hybrid nouns can be used in two senses, depending on the context: as specifically masculine (e.g., when referring exclusively to males) or, in a truly unmarked sense, as gender-indefinite nouns that can refer either to males or females. Recall

from the discussion in Section 1.3 above that such interpretive flexibility is altogether absent for the morphologically derived feminine forms, restricted exclusively to feminine contexts.

1.4.2   Common Gender Nouns

Common gender nouns ending in *-a/-ja*, also known as double gender nouns, represent another class of nouns that exhibit variable agreement behavior in Russian. Unlike hybrid nouns, which denote professions and occupations, common gender nouns typically denote personal qualities, often those representing negative or undesirable traits, e.g. *rastjapa* 'goofball,' *sonja* 'sleepy-head,' *slastena* 'sweet-tooth,' *nerjaxa* 'sloven,' *pjanica* 'drunkard,' but not necessarily, e.g. *umnica* 'smart one,' *zavodila* 'organizer,' *kollega* 'colleague,' *sudja* 'judge,' *sirota* 'orphan.' In terms of their overall frequency in modern Russian, various estimates have been offered by different researchers, ranging between 100 and 400 words, although in colloquial and non-standard varieties of Russian this number is estimated to be much greater (Comrie *et al.*, 1996; Nikunlassi, 2000).

Due to their remarkable flexibility to take masculine or feminine agreement, it is has been suggested that these nouns have no grammatical gender (Dahl, 2000) or have two grammatical genders simultaneously (Doleschal and Schmid, 2001). Regardless of the specific analysis assumed, it is significant that the variable behavior displayed by common gender nouns is unlike that of hybrid nouns. While hybrid nouns are formally masculine, as evidenced by their declensional behavior, common gender nouns belong to the declension type that hosts the majority of feminine nouns in Russian. Additionally, the extent to which the two types of nouns are tied to the sex of their human referent also differs. As discussed previously, hybrid nouns display a wide range of grammatical, semantic, stylistic, and sociolinguistic restrictions on the occurrence of feminine agreements. In contrast, common gender nouns take both agreement patterns in a much less constrained way, as illustrated in (5) below:

(5)   a.   *Molodoj/molodaja   sudja   oglasil/oglasila   prigovor.*
              young-M/F   judge   voiced-M/F   verdict
              'A young judge has announced the verdict'

       b.   *Vot   pis'mo dlja   mojego/mojej novogo/novoj   kollegi.*
              here   letter   for   my-GEN.M/F   new-GEN.M/F   colleague-GEN
              'Here is a letter for my new colleague'

In a certain sense, hybrid nouns represent an earlier stage in the historical development towards variable gender than common gender nouns, which have

attained a truly genderless status. The availability of both interpretations with common gender nouns is relatively less constrained, as both agreement patterns may be observed across the declensional paradigm, as illustrated in (5b) above.

2   Previous Work on Grammatical Gender in Heritage Russian

Previous work on grammatical changes in heritage Russian has documented significant problems with respect to gender marking in heritage speakers, particularly prevalent in speakers at the intermediate and low levels of proficiency. Numerous production errors with gender agreement morphology have been reported in the literature; the following examples serve to illustrate some of these errors with gender morphology in spontaneous production:

(6) a. *mašina   byl   bol'šoe*
         car-F   was-M   big-N
         'The car was big' (Polinsky, 2008: 46)

    b. *papa   včera   pokupala   tri   mašiny*
        dad-M   yesterday bought-F.IMP   three   cars-F.GEN
        'Dad was buying three cars yesterday' (Laleko, 2010: 47)

    c. *rebenok xotel   čto   mama   pela   odin   pesnju*
        child-M wanted-M   that   mom-F   sang-F   one-M.NOM   song-F.ACC
        'The child wanted mom to sing one song' (Laleko, 2010: 48)

A detailed investigation of gender assignment in heritage Russian was carried out in Polinsky (2008), who examined noun categorization in relation to declensional class in two groups of heritage speakers representing two different proficiency levels. Since in Russian it is the declensional system that provides the relevant gender assignment cues (particularly within the class of inanimate nouns, where additional semantic or contextual cues are simply not available), the loss of the case system in heritage Russian was predicted to trigger changes in the gender assignment rules operating in the grammars of heritage speakers. In line with this prediction, Polinsky (2008) found that heritage speakers diverged from the baseline controls in both production and comprehension of gender agreement morphology. Nevertheless, the results also suggested that the category of gender is not entirely lost in heritage Russian. Instead, it undergoes a reanalysis from a system based primarily on morphological principles to one

governed largely by phonological criteria. Thus, heritage speakers at higher levels of proficiency tend to retain the three-way gender system, but the distinctions among the three genders are drawn on the basis of the noun's ending, rather than its declensional class: nouns ending in a consonant are masculine, nouns ending in a stressed -*o* are neuter, and all remaining nouns are feminine. For low-proficiency speakers, this phonological system is simplified even further: nouns ending in a consonant are masculine, and those that end in a vowel become feminine. These results suggest that difficulties exhibited by heritage Russian speakers are not simply a result of fossilization of developmental errors in early L1 acquisition. They also show that, despite differences from the corresponding system in the baseline, the reanalyzed system of grammatical gender in heritage Russian remains highly systematic at different points of the proficiency continuum (Polinsky, 2008).

To summarize, the findings reported in Polinsky (2008) point towards an overall reduction of the three-way Russian gender system to a binary masculine-feminine contrast maintained in heritage Russian. The latter distinction seems to be preserved even in the lowest-proficiency heritage speakers, for whom gender is in effect represented as a binary system. Based on this observation, one may predict that the marking of gender within the subclass of animate nouns, which crucially utilizes the seemingly stable binary masculine-feminine contrast, may be preserved relatively well in the grammars of heritage speakers. At the same time, since gender assignment with animate nouns is not performed strictly on the basis of phonology but depends crucially on additional semantic and referential factors, we may also expect to see some differences between the heritage and baseline systems in how this binary contrast is utilized. In what follows, I present and discuss experimental data that will allow us to address these considerations in a more direct way.

3 The Study: Gender with Animate Nouns

This study investigates gender agreement with animate nouns in heritage Russian in the U.S., a variety spoken by the children of first-generation Russian-speaking immigrants to the U.S. A typical trajectory of heritage speakers' linguistic development follows the well-attested pattern of intergenerational language shift: as early subtractive bilinguals, these speakers acquire Russian at home during their childhood years, but subsequently become more proficient in English, which replaces Russian in most domains of their lives by the time they reach adulthood (see Polinsky and Kagan, 2007; Dubinina and Polinsky, 2013; Laleko, 2013 for detailed overviews of Russian as a heritage

language in the U.S.) In the remainder of section, I present the necessary background information about the participants, methodology, and design of the study. The specific research questions of the experiment are outlined in Section 3.2 below.

3.1   *Participants and Methodology*

The participants of the study were 29 adult heritage speakers of Russian residing in the U.S. and 16 adult monolingual speakers of baseline Russian residing in Russia. As is typically observed in the course of heritage language acquisition, all participants in the heritage language group began acquiring Russian as an L1 in a naturalistic setting (i.e., at home), but subsequently switched to English as their primary language of communication in adulthood. Based on the detailed sociolinguistic questionnaire that all speakers completed prior to taking part in the experiment, the following demographic details were obtained for the group of heritage speakers: mean age = 19.4; mean age of arrival to the U.S. = 2.1; mean age of switch to English = 4.6; average daily use of Russian = 26.3%. All heritage language speakers in the study reported English as their main language of communication in adulthood. The speakers were also asked to evaluate their proficiency in Russian in four main categories, using a scale between 1 and 10. The following mean self-ratings were determined: understanding spoken Russian = 8.3, speaking Russian = 7.1, reading in Russian = 6.5, writing in Russian = 6.1. These results represent a rather typical pattern of ratings in the context of early naturalistic acquisition of the societally non-dominant language, in which oral proficiency typically has the upper hand over written competence in heritage speakers' self-ratings. Nevertheless, all speakers in the study reported to be literate in Russian, although some heritage speakers also mentioned minor difficulties with spelling, grammar, or punctuation in the open-ended portion of the survey. Some representative comments provided by heritage speakers in this part of the questionnaire are included in Appendix 1.

In the main experiment, all participants were asked to provide scaled acceptability ratings (using a 1–5 scale) for 72 experimental items involving sentences with gender-matched and gender-mismatched controller-target combinations. Two types of agreement targets, adjectives and verbs, were considered separately for each type of noun controller: thus, sentences containing a modifying adjective included a present-tense verb (recall that verbs in the present tense are not marked for gender agreement in Russian); conversely, sentences targeting subject-verb agreement in the past tense contained no attributive modifiers. This design ensured that participants were rating only one gender agreement context at a time.

The main experimental items were intermixed with 96 filler sentences targeting unrelated linguistic phenomena. The filler sentences were similar in format to the main experimental items and served as an independent measure of proficiency in the heritage language. Participants who performed at chance with respect to the filler items were not included in the main experiment. All stimuli were presented in a written form (this was possible because all participants could read in Russian). The experiment was untimed to ensure that the participants had as much time as they needed to complete the test.

The experimental sentences were presented in a randomized manner in three sets of conditions, corresponding to the three gender assignment mechanisms discussed in Section 1 above. Specifically, the experiment targeted the principles of lexical, morphological, and referential gender assignment in Russian. Nominal forms representing the first two categories are subsumed within the class of fixed-gender nouns, i.e., nouns whose gender specification is determined strictly within the nominal form and cannot be overridden by contextual factors. This group includes nouns lexically specified for gender (e.g., *devočka* 'girl,' *mal'čik* 'boy') and nouns containing an overt morphological marker unambiguously associated with a gender value (e.g., *učitel'nica* – '(female) teacher').[3] For both types of fixed-gender nouns, only one pattern of gender agreement (either masculine or feminine) is possible in Russian; the other pattern results in strict ungrammaticality and therefore represents an incongruent combination that never occurs in baseline Russian.

In contrast to the strict grammaticality effects observed with fixed-gender nouns, the agreement behavior of variable-gender nouns in Russian is considerably less categorical. In the present study, the role of referential factors in gender agreement with animate nouns was addressed by including two distinct nominal classes characterized by variable agreement behavior: hybrid nouns and common gender nouns. Within the class of hybrid nouns, two further sub-types were considered separately: those that stand in privative binary relationships with corresponding derived feminine forms (e.g., *učitel'* 'teacher') and those that form no binary opposition with respect to gender in the absence of a dedicated feminine counterpart (e.g., *voditel'* 'driver'). Both types of hybrid nouns are formally classified as grammatically masculine in Russian. At the same time, the feminine agreement pattern may be used optionally with

---

3 Due to the grammatical and stylistic restrictions on the occurrence of morphologically derived feminine nouns discussed in Section 1.3 above, the experimental items in this group included feminine nouns derived via the most common and stylistically neutral feminizing suffixes *-ica*, *-ka*, and *-isa*, i.e., those that produce forms that are correlated with the corresponding masculine forms in the most symmetrical way possible (cf. Mozdzierz, 1999).

these nouns. Such mixed behavior of hybrid nouns gives rise to a contextually resolvable competition between masculine and feminine agreement patterns; one predicted outcome of this variability is greater gradience in the ratings of these agreement patterns in the baseline. Finally, the greatest flexibility in the use of gender agreement is associated with common gender nouns, which are maximally underspecified for gender in Russian and are free to occur with both types of agreement targets. Consequently, the group of common gender nouns in this study included forms that are compatible with both masculine and feminine agreement patterns (e.g., *kollega* 'colleague'); neither condition within this nominal subclass can be designated as incongruent because both of these options are available in Russian.

All target nouns across the experimental sentences occurred in the nominative case to ensure that referential agreement with hybrid nouns was not blocked by independent grammatical constraints. Example sentences for each condition of the experiment are included in Appendix 2.

3.2   *Research Questions*
The experiment was designed to address the following research questions. First, following the standard assumption that gender agreement constitutes a syntactic mechanism, investigating gender agreement patterns with nouns representing distinct principles of gender assignment (i.e., lexical, morphological, and referential) can provide insights into the status of different interfaces in the grammars of heritage language speakers. In particular, we can compare the knowledge of rules mediated at the interface between syntax and the lexicon, with or without additional input of derivational morphology, against conditions targeting the application of principles operating at the syntax-discourse interface.

If these interfaces are associated with unequal difficulty in the grammars of heritage language speakers, we can expect to obtain differential results for conditions targeting fixed and variable agreement patterns, associated, respectively, with the lexical/morphological and referential gender assignment principles. Specifically, if grammar-internal computation is less challenging in bilingual language development than discourse-level computation, as recent studies of grammatical competence in near-native bilinguals suggest (Sorace, 2009, 2011; Sorace and Serratrice, 2009; Laleko and Polinsky, 2016; Laleko and Dubinina, 2018), then agreement patterns reflecting referential assignment – and thus linked to discourse – may be harder for heritage language speakers to rate than those following from intrinsic lexical or morphological properties of nouns. Therefore, we may expect heritage language speakers to diverge to a greater extent from baseline speakers in conditions targeting variable gender

nouns; conversely, relatively more accurate ratings may be obtained in conditions involving nouns with inherently marked gender values.

Second, comparing conditions in which invariable gender specification is attained via lexical versus morphological means may help tease apart the contributions of these different cues in gender categorization by heritage language speakers. On the one hand, the feminizing suffixes in Russian are characterized by a predictable and stable one-to-one mapping between meaning and form, and due to this systematicity and transparency they may be more generalizable than lexical cues, which require access to the lexical entry for each individual item (see Section 1.3 above). On the other hand, taking advantage of information provided by gender-specific suffixes requires the parsing of morphological structure, an additional operation which may in turn be associated with extra computational costs. In fact, difficulties with the interpretation and use of morphological marking in the non-dominant language are well-documented, although most accounts of morphological deficits in bilinguals have been focused first and foremost on inflectional morphology (Prévost and White, 2000; Slabakova, 2014). Relatively less is known about the status of derivational morphology in bilingual language acquisition, but based on available studies (see Gor, 2015 for a recent overview) it seems possible that the morphological decomposition needed for the successful processing of morphologically complex words in a non-dominant language may present a challenge to some speakers.

Third, within the class of variable gender nouns, further contrasts may emerge between conditions involving hybrid nouns and common gender nouns. As discussed previously, while both nominal classes involve referential assignment, hybrid nouns differ from common gender nouns with respect to the degree to which referential factors determine gender agreement with these two types of noun controllers. In particular, hybrid nouns represent a mixed category in which a default gender specification (masculine) may be optionally overridden referentially, producing feminine agreement. The resulting competition between masculine and feminine agreement patterns involves multiple semantic, pragmatic, and stylistic factors, which collectively determine the choice of one agreement pattern over the other (see Section 1.4 above). Nevertheless, since the grammatically specified masculine value of hybrid nouns selects the masculine pattern of agreement as the least marked option, the feminine pattern is more restricted in its occurrence. In contrast to hybrid nouns, common gender nouns lack a pre-defined grammatical gender value. Instead, the interpretation of gender with these nouns is fully dependent on the gender of their discourse referent. As a result, the occurrence of masculine or feminine agreement morphology on adjectives and verbs is

considerably less restricted, predicting no sharp bias towards one of the two possible agreement patterns.

With these considerations in mind, we may expect to obtain differential results for conditions involving hybrid nouns and common gender nouns in bilinguals. Assuming that referential assignment represents the locus of difficulty for heritage language speakers, the greatest gap between heritage and baseline speakers may be predicted in conditions involving common gender nouns, where the choice of agreement marking requires the evaluation of contextual information external to the noun. If ambiguity resulting from underspecification is associated with amplified difficulties in bilinguals, we may further hypothesize that heritage language speakers may reanalyze common gender nouns as more compatible with one of the two possible agreement patterns. This strategy would serve to minimize the need to maintain reference tracking in discourse by encoding gender on the nominal form itself. Based on their phonological form and declensional behavior, common gender nouns are likely to be grammaticalized in heritage Russian as feminine nouns. Thus, the specific prediction for the group of heritage speakers is the pattern of higher ratings for sentences in which common gender nouns occur with feminine, rather than masculine, agreement.

Conversely, hybrid nouns may be predicted to shift towards an invariably masculine agreement in the grammars of heritage language speakers. The hypothesized loss or reduction in the use of referential (feminine) agreement with hybrid nouns predicts a more categorical preference for masculine agreement in the heritage speaker group, compared with the baseline ratings.

Fourth, comparisons between paired and unpaired hybrid nouns in feminine agreement contexts in the ratings obtained from heritage and baseline Russian speakers can offer additional insights into the lexical and pragmatic factors involved in the use of referential agreement with hybrid nouns in Russian. In particular, comparing the use of feminine agreement with nouns like *vrač* 'doctor,' which have no direct feminine counterparts, and *poet* 'poet,' for which a dedicated feminine form exists (*poetessa* 'female poet'), allows us to consider the availability of contextual alternatives as a correlate of the acceptability of referential agreement with these nouns. We can hypothesize that native Russian speakers will exhibit higher acceptance rates for feminine agreement markers with unpaired hybrids, i.e. in cases when no specifically feminine option is available to refer to a female individual. In the absence of a dedicated feminine counterpart, the generic masculine form like *vrač* 'doctor' can be predicted to be more open to the feminine interpretation and to occur with feminine agreement more freely. In comparison, the occurrence of

feminine agreement could be more restricted with paired hybrid nouns due to the availability of a grammatically feminine derivative, under the assumption that the latter form could have been used in the same context.

It remains to be seen if heritage language speakers might exhibit a similar sensitivity to the availability of contextual alternatives in their ratings of referential agreements with paired and unpaired hybrid forms. A target-like contrast between these conditions in the heritage language group would point to two observations: first, it would show that heritage speakers pay attention to associated words when evaluating lexical items; second, it would indicate that heritage speakers are sensitive to considerations of pragmatic informativeness in their rating of agreement in variable contexts. Specifically, the differentiation of paired and unpaired hybrid forms implicates the maxim of quantity, a pragmatic principle that prompts the speaker to use a more informative option over the less informative option in contexts where both options are available. Studies of pragmatic competence in bilinguals have shown that bilingual children outperform age-matched monolinguals in their sensitivity to Gricean maxims (Siegal *et al.*, 2009). If heritage speakers are found to exhibit target-like differentiation between paired and unpaired hybrids, they must also be attuned to the availability of associated lexical forms and able to access and evaluate these lexical alternatives while performing linguistic judgments.

The summary of predictions for the group of heritage language speakers appears in (7) below.

(7) Summary of predictions for heritage language speakers:

a. Differential results between fixed and variable agreement patterns (greater difficulty with variable agreement);
b. Greater preference for masculine agreement with hybrid nouns;
c. Emergence of predominantly feminine agreement with common gender nouns;
d. Differentiation between paired and unpaired hybrid nouns (higher ratings for feminine agreement for unpaired hybrids).

4   Results and Discussion

The results of the study were analyzed using Welch's unequal variances t-test with a Bonferroni correction. The mean ratings and standard deviation values obtained from baseline speakers (Table 1) and heritage language speakers (Table 2) for each condition of the experiment are presented below.

TABLE 1   *Mean ratings and standard deviation values for baseline Russian speakers (1–5 scale).*

	GENDER	adjective.M	verb.M	adjective.F	verb.F
fixed	**Lexical**				
	noun.M	4.88 (sd = .61)	5 (sd = 0)	1.08 (sd = .58)	1 (sd = 0)
	noun.F	1 (sd = 0)	1.04 (sd = .29)	5 (sd = 0)	5 (sd = 0)
	Morphological				
	noun.F	1.02 (sd = .14)	1 (sd = 0)	5 (sd = 0)	5 (sd = 0)
variable	**Referential**				
	noun.HYB (unpaired)	5 (sd = 0)	4.98 (sd = .14)	2.94 (sd = 1.8)	3.48 (sd = 1.77)
	noun.HYB (paired)	4.9 (sd = .52)	5 (sd = 0)	1.46 (sd = 1.13)	1.65 (sd = 1.3)
	noun.CG	4.54 (sd = 1.11)	4.62 (sd = 1.02)	4.65 (sd = .89)	4.85 (sd = .55)

TABLE 2   *Mean ratings and standard deviation values for heritage Russian speakers (1–5 scale).*

|	GENDER	adjective.M	verb.M	adjective.F	verb.F
fixed	**Lexical**				
	noun.M	4.58 (sd = 1.06)	4.63 (sd = .98)	1.51 (sd = 1.12)	1.48 (sd = 1.09)
	noun.F	1.39 (sd = .92)	1.49 (sd = 1.08)	4.68 (sd = .89)	4.71 (sd = .78)
	Morphological				
	noun.F	1.42 (sd = .97)	1.49 (sd = 1.12)	4.7 (sd = .92)	4.56 (sd = 1.03)
variable	**Referential**				
	noun.HYB (unpaired)	4.74 (sd = .85)	4.46 (sd = 1.21)	2.37 (sd = 1.66)	2.79 (sd = 1.72)
	noun.HYB (paired)	4.65 (sd = .83)	4.74 (sd = .85)	1.83 (sd = 1.45)	1.89 (sd = 1.5)
	noun.CG	2.82 (sd = 1.74)	2.48 (sd = 1.66)	4.11 (sd = 1.53)	4.42 (sd = 1.11)
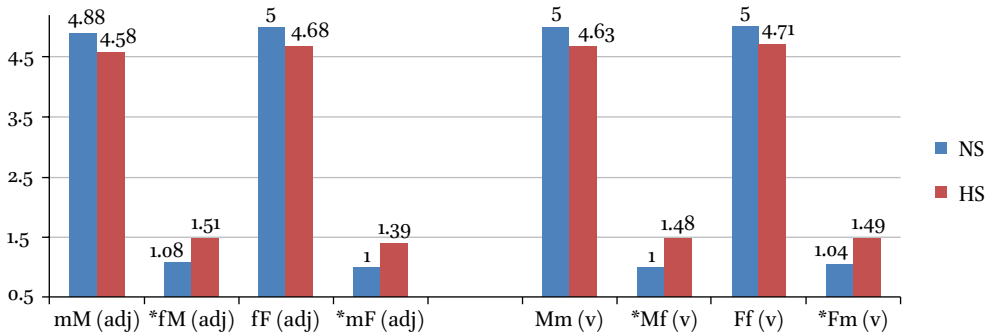
FIGURE 1   *Lexical gender: matched and mismatched agreement combinations.*
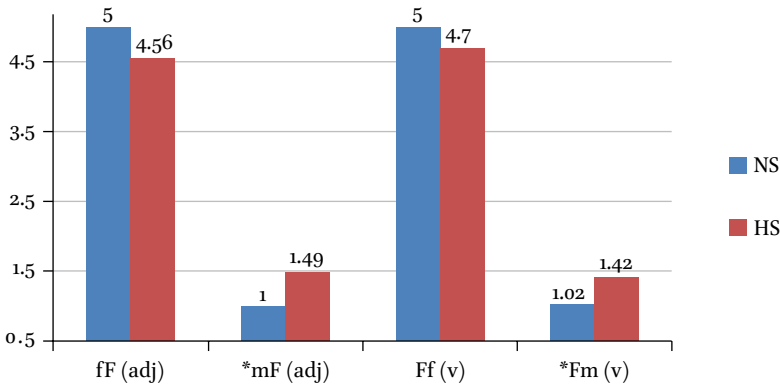

FIGURE 2   *Morphologically derived feminine forms: matched and mismatched agreement combinations.*

First, I discuss the results for the class of fixed gender animate nouns, which display invariable agreement patterns. As mentioned previously, in Russian this nominal class includes nouns with an inherent lexical gender feature (Fig. 1) and derived feminine forms marked with a gender-specific suffix (Fig. 2). For both types of fixed gender nouns, only one agreement pattern (masculine or feminine) is grammatically possible. Ratings for matched and mismatched agreement combinations with fixed gender nouns are compared below.[4]

As shown in Fig. 1 and Fig. 2 above, heritage Russian speakers exhibit target-like acceptability contrasts between conditions involving congruous

---

4   The following labeling conventions are used in all figures: the small letter represents the gender value of the agreement target (adjective or verb); the capital letter indicates the gender value of the noun controller. The asterisk marks unacceptable combinations. All ratings are presented separately for conditions involving agreement with adjectives (adj) and verbs (v).

and incongruous agreement patterns in invariable gender agreement contexts. In all experimental conditions, the differences observed between matched and mismatched agreement combinations are highly statistically significant (p < 0.01) for all participant groups. These results suggest that, just like native speakers in the control group, heritage language speakers are successful in taking advantage of unambiguous lexical and morphological cues in gender assignment, and that they employ this information productively to differentiate between possible and impossible agreement combinations.

In order to tease apart the contribution of lexical and morphological cues in gender categorization, further statistical comparisons were performed between lexically specified and morphologically derived feminine forms in the experiment. The analysis revealed that speakers in both groups treat lexical and morphological cues very uniformly. No significant differences were observed between nouns representing these two mechanisms of gender assignment across any of the matched and mismatched conditions (p > 0.05). In other words, regardless of whether the feminine value for a given noun was specified lexically or by means of a dedicated feminine suffix, all invariably feminine forms yielded similar ratings in both groups throughout the experiment: they were rated equally high in acceptable conditions, and equally low in unacceptable conditions. These findings indicate that transparent derivational morphology and inherent lexical specification both serve as valid facilitative cues for computing gender agreement in heritage and baseline Russian.

Thus, consistent with our first prediction, heritage language speakers converge with baseline speakers in identifying congruous and incongruous agreement patterns with fixed gender nouns. Within the class of animate nouns with a lexically specified gender value, this result attests to the relatively unproblematic status of equipollent oppositions in the heritage language (cf. Laleko, 2010, 2015 for similar findings in the domain of verbal aspect). Indeed, binary oppositions of the equipollent type are characterized by high transparency, which stems from the unambiguous and logically complementary feature specification of the two members of the opposition. One particular outcome of this symmetrical relationship between lexically masculine and lexically feminine nouns is equal ungrammaticality of agreement mismatches involving each member of the opposition: since the masculine and feminine nouns occur in non-overlapping distribution, neither member can take on the agreement pattern of the other member.

In order to test the equipollent nature of the lexical gender opposition in both varieties of Russian, statistical comparisons were performed for agreement mismatches in the masculine and feminine conditions (e.g., *staršaja.F brat.M 'older brother' vs. *mladšyj.M sestra.F 'younger sister'). As predicted, no significant differences were obtained with adjectives or verbs (p > 0.05) in

either participant group. These results suggest that neither member of the lexical gender opposition has a privileged status in these speakers' grammars and provide empirical support to the equipollent status of the lexical gender opposition, a domain in which the two grammars of Russian converge.

A different picture emerges for the privative relationship that holds between the unmarked masculine and morphologically marked feminine forms of the type discussed in Section 1.3 above (e.g., *učitel'*.M – *učitel'nica*.F 'teacher'). Fig. 3 below presents ratings for the formally masculine hybrid nouns that serve as counterparts of the derived feminine forms in Fig. 2. As discussed earlier, the privative character of the opposition at this level of gender assignment is manifested through distinct interpretive properties and asymmetrical agreement patterns displayed by the corresponding masculine and feminine forms. With respect to interpretation, the unmarked hybrid nouns may be used in reference to male and female individuals, whereas the marked feminine forms can occur only with female referents. With respect to agreement, only hybrid nouns are compatible with both patterns of agreement, masculine (syntactic) and feminine (semantic), although the latter pattern is considerably more restricted in its occurrence. This tendency is evident in Fig. 3 below, which presents the ratings obtained for masculine and feminine agreement contexts with paired hybrid nouns.

Overall, the results reveal a strong preference for masculine agreement with paired hybrid nouns in both groups of Russian speakers. This pattern proved to be robust with near-ceiling ratings for masculine forms obtained of both types of agreement targets, adjectives and verbs. Conversely, conditions representing feminine agreement yielded very low ratings in both groups of speakers.
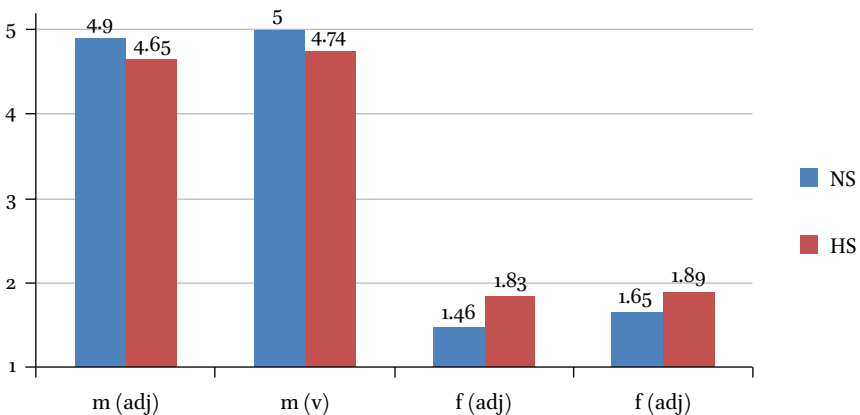

FIGURE 3   *Paired hybrid nouns: syntactic (m) and semantic (f) agreement patterns.*

At first glance, the heritage and baseline groups appear to be similar in their dispreference for feminine agreement with formally masculine hybrid forms (p > 0.05). However, I will argue below that the two populations nevertheless differ with respect to the markedness status of these masculine forms in their grammars. In particular, additional analyses demonstrate that baseline controls maintain these forms as part of a privative opposition, in which the masculine serves as the unmarked or underspecified member, while the corresponding derived feminine form is unambiguously marked for gender. In contrast, heritage speakers reanalyze hybrid nouns as forming equipollent oppositions with the corresponding derived feminine forms. In effect, the morphological gender opposition becomes more similar to the lexical gender opposition, in which each member is characterized by a pre-determined feature specification.

In order to confirm the privative status of the relationship holding between the masculine hybrid noun and the corresponding derived feminine form (e.g., *učitel'*.M – *učitel'nica*.F 'teacher') in baseline Russian, statistical comparisons were performed between agreement mismatches with derived feminine and unmarked generic masculine nouns (e.g., **opytnyj*.M *učitel'nica*.F vs. ?*opytnaja*.F *učitel'*.M 'experienced teacher'). In a privative opposition, the unmarked member has a wider contextual distribution than the marked member; in some contexts, it may occur in contexts in which the marked member is typically expected. Accordingly, mismatched agreement combinations in a privative opposition should not be fully symmetrical, because the two members are not logically complementary. As expected, native speakers displayed a significant contrast (p < 0.01) between generic masculine and derived feminine forms in both adjective and verb mismatched agreement contexts. While rated generally low, the feminine agreement forms with hybrid nouns were nevertheless significantly more acceptable than the masculine agreements occurring with derived feminine forms (the latter being a truly ungrammatical combination in Russian). An asymmetry of this type is indicative of a privative opposition, where the unmarked masculine has a wider distributional range than the marked feminine.

In contrast to native controls, heritage language speakers showed no significant differences between the same agreement mismatches involving generic masculine and derived feminine forms. In this participant group, masculine agreements used with derived feminine nouns were rated on par with feminine agreement markers occurring with hybrid nouns (p > 0.05). This symmetrical status of the two types of agreement mismatches points to an important structural shift in the heritage grammar with respect to the unmarked status of the masculine. In equally rejecting agreement mismatches in marked and unmarked contexts, heritage language speakers in effect reinterpret the privative

morphological opposition in equipollent terms (cf. the results shown for lexical gender in Fig. 1 above).

In order to further test the hypothesis that heritage speakers reanalyze the privative morphological gender opposition into an equipollent opposition, additional statistical comparisons were performed between the lexically specified masculine nouns (*brat*.M 'brother') and hybrid nouns (*učitel'*.M 'teacher') in feminine agreement contexts. If these two types of masculine nouns participate in different types of oppositions, as discussed in Section 1.2 and Section 1.3 above, we should observe a statistically significant improvement in the availability of feminine agreement with the unmarked hybrid nouns, compared to the lexically marked masculine nouns. In the former case, the feminine agreement pattern may be disfavored, while in the latter case, altogether ungrammatical.

This prediction is borne out in the data obtained from the baseline Russian speakers. As expected, speakers in the control group displayed a reliable statistical difference between feminine agreements occurring with lexically marked masculine nouns (e.g., **staršaja*.F *brat*.M 'brother') and those occurring with hybrid nouns (e.g.,*?byvšaja*.F *učitel'*.M 'teacher'), with significantly higher ratings for the latter condition (p < 0.05). In contrast, heritage language speakers exhibited no statistically significant differences in these two conditions (p > 0.05), suggesting that hybrid nouns and lexically masculine nouns are treated similarly in this group. Taken together, these findings point to the lexicalization of hybrid nouns in heritage Russian and the restructuring of the privative gender opposition into an equipollent opposition, in which the masculine no longer displays the characteristics of the unmarked member. As I discuss further below, this reorganization of the gender opposition in the heritage grammar may be motivated by considerations of processing economy, which favor the more transparent one-to-one mappings between forms and features over the more ambiguous one-to-many mappings associated with multi-valued forms.

Further evidence of lexicalization and reduction in agreement variability with hybrid nouns in heritage Russian comes from the analysis of conditions involving unpaired hybrids, i.e. formally masculine nouns for which no equivalent feminine counterparts are available in Russian. The ratings for masculine and feminine agreement patterns with these nominal forms are presented in Fig. 4 below.

In both agreement contexts (adjectives and verbs), heritage speakers significantly under-rated the feminine agreement forms, compared to the native speakers (p < 0.01). These findings offer additional support to the claim that hybrid nouns are treated as generic masculine forms in baseline Russian, but are reanalyzed as specifically masculine forms in heritage Russian, a shift
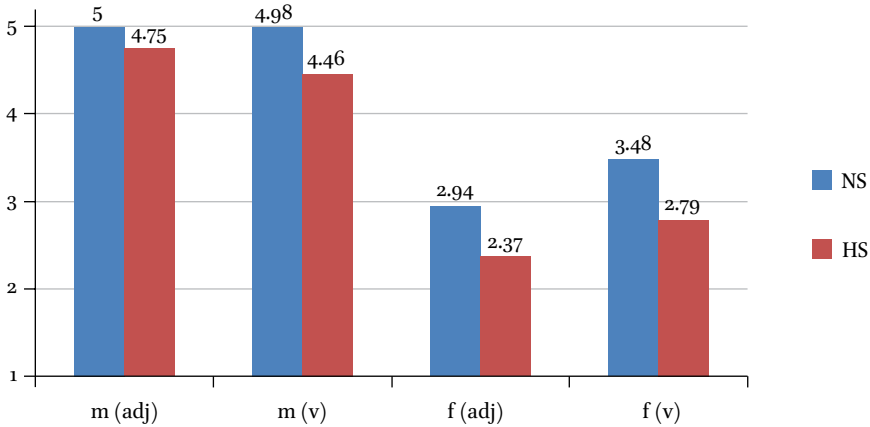
FIGURE 4   *Unpaired hybrid nouns: syntactic (masculine) and semantic (feminine) agreement patterns.*

that places restrictions on the use of feminine agreements with these forms. The observed difference between the two participant groups with respect to the acceptability of feminine agreement attests to the pervasive nature of the previously observed reduction in the generic use of hybrid forms in heritage Russian, possibly as a result of greater indeterminacy of the unmarked and underspecified categories in the heritage language.

Our next prediction pertaining to the status of hybrid nouns in the two varieties of Russian under investigation concerns the role of contextual alternatives as a possible factor associated with the occurrence of the feminine agreement pattern with these nouns. As predicted, statistical comparisons between conditions involving paired (Fig. 3) and unpaired (Fig. 4) hybrid nouns demonstrate that heritage and baseline speakers alike show a measurable improvement ($p < 0.01$) in the acceptance rates of feminine agreement forms with unpaired hybrid nouns. This finding is important because it demonstrates that formal factors alone do not determine the agreement behavior of hybrid nouns in both varieties of Russian, and that this behavior is sensitive to additional lexical and pragmatic factors. In contexts where a more specific (and therefore more informative) feminine form is available, speakers in both groups strongly disfavor the use of feminine agreement with hybrid nouns. As noted earlier, this tendency may be accounted for with reference to the Gricean maxim of quantity, a pragmatic principle that favors the use of a more informative form over the relatively less informative one. Hence, the use of a formally masculine hybrid noun with feminine agreement is viewed as relatively more acceptable in contexts where no alternative feminine form exists to identify the noun's

referent as a female. Crucially, the differentiation of paired and unpaired hybrid nouns is attested in the ratings of baseline speakers and heritage speakers, suggesting that participants in both groups employ comparable strategies in their linguistic assessment of hybrid forms, which for both groups involves the identification of lexical alternatives and evaluation of their pragmatic informativeness.

Finally, Fig. 5 below presents ratings of the masculine and feminine agreement patterns with common gender nouns. Recall that the class of common gender nouns in Russian exhibits the greatest degree of discourse-dependence, as evidenced by their flexibility in taking masculine and feminine agreement patterns in accordance with the biological sex of the discourse referent in a given context. As predicted, speakers in the control group displayed equally high ratings for sentences in masculine and feminine agreement conditions, in both adjective and verb agreement contexts, with no significant differences emerging between the two patterns in either condition (p > 0.05). In contrast, ratings obtained in the group of heritage speakers point to a clear preference for feminine agreement over masculine agreement with common gender nouns. This preference was equally strong in statistical terms (p < 0.01) with both types of agreement targets, adjectives and verbs.

In line with our predictions, these results demonstrate a major difference between the heritage and baseline grammars of Russian with respect to the representation of gender with animate nouns of common gender, i.e. nouns for which the gender value is not determined in the lexicon but assigned referentially in context. In the absence of a pre-determined gender specification,
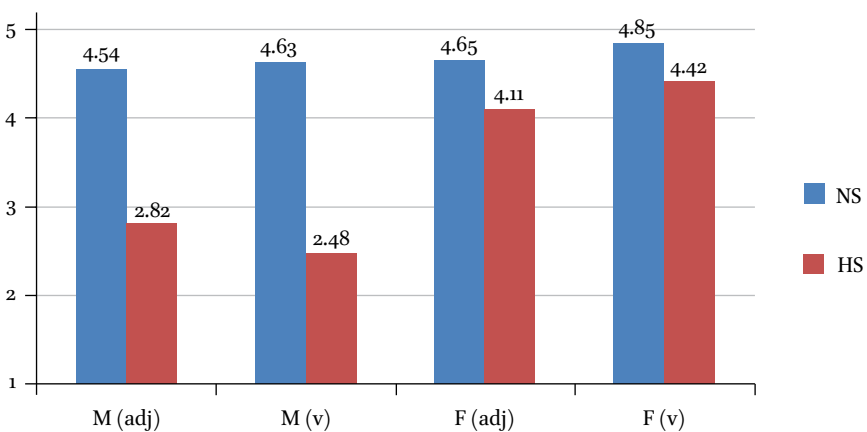

FIGURE 5   *Common gender nouns with masculine and feminine agreement patterns.*

these nouns are free to take either masculine or feminine agreement, a pattern indicative of their dual gender status in the grammars of native speakers. However, the heritage speakers in this study treated common gender nouns as predominantly feminine, as evidenced by a strong bias in favor of feminine agreement attested with these nouns in this group. In assigning common gender nouns to the feminine class, heritage speakers are in all likelihood guided by their morpho-phonological form. As mentioned earlier, the majority of nouns that end in *-a/-ja* in Russian belong to the feminine gender; hence, it is not entirely surprising that, when faced with uncertainty in the absence of an unambiguously marked gender specification, heritage language speakers rely on the morpho-phonological shape of the noun as a possible cue to its gender.

Given the formal similarity between feminine nouns with a lexically specified gender value and underspecified common gender nouns ending in *-a/-ja*, additional comparisons were performed between these two classes of nouns in feminine agreement conditions (e.g. *mladšaja*.F *sestra*.F 'little sister' vs. *strogaja*.F *sudja*.F 'strict judge'). If speakers systematically differentiate between lexical and referential principles in gender assignment, unequal ratings may emerge for these conditions. Specifically, forms associated with relatively greater difficulty may yield statistically lower ratings. The feminine agreement morphology is perfectly acceptable with both classes of nouns in Russian, with the main difference concerning the source of the feminine interpretation. As discussed previously, the gender value for nouns representing lexical assignment comes from their intrinsic lexical properties, whereas common gender nouns, being inherently unmarked for gender, can only obtain the feminine reading via identification with an external referent in discourse. Given the previously documented difficulty experienced by heritage language speakers with constructions characterized by a high degree of discourse-dependence (Laleko and Polinsky, 2016, 2017), extra computational demands necessary for evaluating referential assignment may cause a measurable decrease in these speakers' ratings in the corresponding conditions.

This prediction has been borne out in the statistical analysis. Baseline Russian speakers in the control group treated feminine agreements with lexically feminine nouns and common gender nouns uniformly ($p > 0.05$), suggesting no extra difficulty with discourse-level computation in this group. As expected, native speakers are equally efficient in computing gender agreement in both lexical and referential assignment contexts. However, heritage language speakers provided significantly lower ratings for feminine agreement with common gender nouns, compared to feminine agreement with lexically marked feminine nouns ($p < 0.05$). This difference between lexical and discourse-pragmatic

gender assignment principles in the group of heritage language speakers is particularly notable considering that the feminine agreement clearly emerged as the preferred pattern with common gender nouns for these speakers (as shown in Fig. 5, masculine agreements are rated much lower in this participant group).

In the concluding section that follows below, I turn to the question stated in the title of this article. After reviewing the key findings of the study, I outline the specific areas in which the grammatical gender system of heritage Russian either converges with or differs from the corresponding baseline system. In accounting for the obtained findings, I suggest that differences evident in the ratings of heritage language speakers may be unified as stemming from a more general difficulty with the evaluation of underspecified and excessively ambiguous forms.

5   Summary and Conclusions: What is Difficult about Gender?

The paper examined the role of lexical, morphological, and referential factors in gender assignment with animate nouns in heritage Russian. In order to explore the extent to which these different interfaces present challenges in heritage language acquisition, experimental evidence was obtained for the occurrence of masculine and feminine agreement marking on adjectives and verbs with distinct types of fixed and variable gender nouns. The analysis of concordant and discordant agreement patterns with nouns representing each type of gender categorization mechanism has shown that not all interfaces are associated with the same level of difficulty for heritage language speakers. Unequal problems were observed with different types of gender allocation strategies, as evidenced by heritage speakers' differential judgments of gender agreement patterns in fixed and variable contexts. In particular, heritage speakers converged with baseline speakers in identifying congruous and incongruous agreement patterns with nouns whose gender specification is fixed, or inherently specified in the noun's lexical entry. Based on these results, the lexical gender opposition emerges as the least problematic domain of the heritage Russian gender system.

The morphological opposition between generic masculine and derived feminine appears to present relatively more problems for heritage speakers, but these problems arise only in contexts where transparent morphological marking is absent. In particular, heritage speakers performed on par with baseline speakers in conditions involving nouns unambiguously marked as feminine

via an overt gender-marking suffix (*učitel'nitsa*.F 'teacher'). These results show that both heritage and baseline speakers alike are successful in taking advantage of transparently marked morphological cues in construing syntactic agreement. At the same time, heritage language speakers diverged from baseline speakers with respect to the status of hybrid nouns, i.e. generic masculine forms for which such overt gender-marking morphology is missing (*učitel'*.M 'teacher'), in their grammar of gender. Due to their increased flexibility in interpretation and agreement, hybrid nouns are typically analyzed as representing the unmarked member of a privative gender opposition in baseline Russian. Experimental results obtained from the Russian speakers in the control group corroborate this analysis. In sharp contrast, statistical analyses of the relevant distinctions in the heritage language data point to the lexicalization of hybrid nouns in heritage Russian, a pattern manifested in a reduction in the acceptability of semantic (feminine) agreement with these nouns in favor of syntactic (masculine) agreement. In treating hybrid nouns and lexically masculine nouns uniformly, heritage language speakers reorganize the privative gender opposition in equipollent terms, such that both members are treated as marked forms carrying logically opposite specifications. This reorganization increases the transparency of the potentially ambiguous forms, reduces optionality in the use of masculine and feminine patterns, and minimizes the need to rely on discourse-referential factors in computing gender agreement.

Indeed, the most pervasive difference between the gender systems in baseline Russian and heritage Russian was observed with common gender nouns, i.e. maximally underspecified forms compatible with both gender interpretations. Absence of statistically significant distinctions between the feminine and masculine agreement patterns in the ratings of baseline Russian speakers compellingly demonstrates that gender interpretations with these nouns are not fixed at the level of the nominal form but construed contextually on the basis of their discourse referents. In contrast, heritage language speakers categorized common gender nouns on the basis of their morpho-phonological form and showed a significant bias toward feminine agreement. This is another manifestation of the underspecification problem that underlies the pattern of results discussed above. As seen previously, the excessive ambiguity associated with underspecified forms is resolved by restricting the number of available interpretive options to a single option, one that is predictable from the noun's morpho-phonological shape. The resulting greater transparency of the heritage Russian grammatical gender system decreases the need for interpreting and evaluating underspecified forms and reduces the extra processing costs necessary for their disambiguation in context.

Appendix 1: Examples of Comments Provided by Heritage Russian Speakers in the Open-ended Portion of the Demographic Questionnaire

a.   "My family is responsible for any Russian that I know. I can read, speak, and if grammar is not harshly judged, write".

b.   "A lot of words in Russian have no translation equivalent so I feel more comfortable listening to others speak Russian than I do speaking myself."

c.   "Speak Russian daily. Fluently read, write, and speak. Read Russian literature in my free time."

d.   "I can understand Russian and read it fairly but well, but when I speak or write in Russian I'm told that I sound like an American speaking Russian not a native speaker of the language. This is largely due to the fact that I do not know all of the grammar rules very well."

e.   "I have just learned how to read and write in my high school class, but it has had a large impact on my performance level in the language."

f.   "I used to speak more and better Russian when I lived at home. Ever since I moved to school, four years ago, my Russian has been dwindling due to less practice and use."

g.   "Although I've only studied Russian for a year, my OPI scores indicate that I am an advanced low speaker."

h.   "I used to speak Russian much better but have lost most of my skill after moving out of my parents' home."

i.   "My parents are both Russian and I speak exclusively Russian with them, but have always went to international schools and speak English in an academic environment. I went to Russian language school for a bit after school, but my Russian was mostly learned through home and family."

Appendix 2: Examples of Stimuli for Each Experimental Condition

I   *Fixed Gender Agreement*
1   Lexically Specified Nouns
1)   *Masculine (м)*
a.   Счастливый/счастливая жених   готовится   к   свадьбе   *adj*
      happy-м/ғ   groom-м   prepare-3.sg   for   wedding
      'The happy groom is preparing for the wedding'

b. Муж   починил/починила   кран   на кухне   *v*
husband-M   fixed-M/F   faucet   at kitchen
'The husband has fixed the faucet in the kitchen'

2)   *Feminine* (F)
c. Пятнистый/пятнистая   корова   машет   хвостом   *adj*
spotted-M/F   cow-F   wag-3.SG   tail
'The spotted cow is wagging its tail'

d. Невестка   принёс/принесла   подарки свёкрам   *v*
daughter-in-law-F brought-M/F   gifts   in-laws-DAT
'The daughter-in-law has brought gifts for the in-laws'

2   Morphologically Derived Feminine Nouns
a. Молодой/молодая гимнастка летит   на   соревнования   *adj*
young-M/F   gymnast-F fly-3.SG to   competition
'A young gymnast is traveling to the tournament'

b. Художница   написала/написал   картину   маслом   *v*
artist-F   painted-F/M   picture   with-oil
'The artist has painted the picture with oil'

II   *Variable Gender Agreement*
3   Hybrid Nouns (HYB)
1)   *Paired*
a. Известный/известная   писатель раздаёт   автографы *adj*
famous-M/F   writer-HYB give-out-3.SG autographs
'The famous writer is giving out autographs'

b. Поэт   задумалась/задумался о   финале поэмы   *v*
poet-HYB pondered-F/M   about   end   poem
'The poet pondered the ending of the poem'

2)   *Unpaired*
c. Опытный/опытная   врач   выписывает   рецепт   *adj*
experienced-F/M   doctor-HYB issue-3.SG   prescription
'The experienced doctor is issuing a prescription'

d.　Директор　подписал/подписала　приказ　об　увольнении　*v*
　　director-ʜʏʙ　signed-ᴍ/ꜰ　　　　　document　about　letting-go
　　'The director has signed the dismissal paperwork'

4　　　　　Common Gender Nouns (ᴄɢ)
a.　Строгий/строгая судья　принимает важное　решение　*adj*
　　strict-ᴍ/strict-ꜰ　judge-ᴄɢ　make-3.sg　important　decision
　　'The strict judge is making an important decision'

b.　Коллега　　отправил/отправила　документы　почтой　　*v*
　　colleague-ᴄɢ　sent-ᴍ/ꜰ　　　　documents　mail-ɪɴsᴛʀ
　　The colleague has sent the documents by mail

References

Alexiadou, Artemis. 2004. Inflection class, gender and ᴅᴘ internal structure. In Artemis Alexiadou and T. Allen Hall (eds.), *Explorations in Nominal Inflection,* 21–49. Berlin: Mouton de Gruyter.

Bar-Shalom, Eva and Elena Zaretsky. 2008. Selective attrition in Russian-English bilingual children: Preservation of grammatical aspect. *International Journal of Bilingualism* 12(4): 281–302.

Benmamoun, Elabbas, Silvina Montrul, and Maria Polinsky. 2013. Heritage languages and their speakers: Opportunities and challenges for linguistics. *Theoretical Linguistics* 39: 129–181.

Comrie, Bernard, Gerald Stone, and Maria Polinsky. 1996. *The Russian Language in the Twentieth Century*. Oxford: Oxford University Press, 1996.

Corbett, Greville G. 1979. The agreement hierarchy. *Journal of Linguistics* 15(2): 203–224.

Corbett, Greville G. 1982. Gender in Russian: An account of gender specification and its relationship to declension. *Russian Linguistics* 6: 197–232.

Corbett, Greville G. 1983. *Hierarchies, Targets, and Controllers: Agreement Patterns in Slavic.* London: Croom Helm.

Corbett, Greville G. 1991. *Gender*. Cambridge: Cambridge University Press.

Corbett, Greville G. 2013. Gender typology. In Greville G. Corbett (ed.), *The Expression of Gender,* 87–130. Berlin: Mouton de Gruyter.

Crockett, Dina B. 1976. *Agreement in Contemporary Standard Russian*. Cambridge, ᴍᴀ: Slavica.

Dahl, Östen. 2000. Animacy and the notion of semantic gender. In Barbara Unterbeck, Matti Rissanen, Terttu Nevalainen and Mirija Saari (eds.), *Gender in Grammar and Cognition,* 99–115. Berlin: Mouton de Gruyter.

Doleschal, Ursula. 1999. Gender assignment revisited. In Barbara Unterbeck *et al.* (eds.), *Gender in Grammar and Cognition*, 134–155. Berlin: de Gruyter.

Doleschal, Ursula. 2015. Gender marking. In Peter O. Müller, Ingeborg Ohnheiser, Susan Olsen, and Franz Rainer (eds.), *Word-Formation: An International Handbook of the Languages of Europe*. Berlin: Mouton de Gruyter. http://www.academia .edu/9991836/Gender_marking. Accessed August 10, 2015.

Doleschal, Ursula and Sonja Schmid. 2001. Doing gender in Russian. In Marlis Hellinger and Hadumod Bussman (eds.), *Gender Across Languages,* 253–282. Amsterdam, Philadelphia: John Benjamins.

Dubinina, Irina and Maria Polinsky. 2013. Russian in the US. In Michael Moser and Maria Polinsky (eds.), *Slavic Languages in Migration,*1–28. Wien: University of Vienna.

Fraser, Norman and Greville G. Corbett. 1995. Gender, animacy, and declensional class assignment: A unified account for Russian. In Geert Booij and Jaap van Marle (eds.), *Yearbook of Morphology 1994,* 123–150. Netherlands: Kluwer Academic Publishers.

Gor, Kira. 2015. Phonology and morphology in lexical processing. In John W. Schweiter (ed.), *The Cambridge Handbook of Bilingual Processing,* 173–199. Cambridge, UK: Cambridge University Press.

Gvozdev, Aleksandr N. 1961. *Voprosy Izučenija Detskoj Reči.* Moscow: Izd-vo Akademii Pedagogičeskix Nauk RSFSR.

Heim, Stefan. 2008. Syntactic gender processing in the human brain: A review and a model. *Brain and Language* 106: 55–64.

Hellinger, Marlis and Hadumod Bussmann. 2001. Gender across languages: The linguistic representation of women and men. In Marlis Hellinger and Hadumod Bussman (eds.), *Gender Across Languages*, 1–27. Amsterdam, Philadelphia: John Benjamins.

Hernandez, Arturo. E., Kotz, Sonja A., Hofmann, Juliane, Valentin, Vivian V., Dapretto, Mirella, and Bookheimer, Susan Y. (2004). The neural correlates of grammatical gender decisions in Spanish. *Neuroreport* 15(5): 863–866.

Jakobson, Roman. 1971. The gender pattern of Russian. In *Selected Writings II: Word and Language,* 184–186. The Hague: Mouton.

Krongauz, Maksim A. 1993. Sexus, ili problema pola v russkom jazyke. In Russian Academy of Sciences, Institute for Slavic and Balkan Studies (ed.), *Rusistika, Slavistika, Indoevrpeistika*, 510–525. Moskva: Indrik.

Laleko, Oksana. 2010. *The Syntax-Pragmatics Interface in Language Loss: Covert Restructuring of Aspect in Heritage Russian.* Doctoral dissertation, University of Minnesota.

Laleko, Oksana. 2013. Assessing heritage language vitality: Russian in the United States. *Heritage Language Journal* 10(3): 89–102.

Laleko, Oksana. 2015. From privative to equipollent: Incipient changes in the aspectual system of heritage Russian. In Gerhild Zybatow, Petr Biskup, Marcel Guhl, Claudia Hurtig, Olav Mueller-Reichau and Maria Yastrebova (eds.), *Slavic Grammar from a Formal Perspective,* 273–286. Frankfurt am Main: Peter Lang.

Laleko, Oksana and Irina Dubinina. 2018. Word order production in heritage Russian: Perspectives from linguistics and pedagogy. In Susan Bauckus and Susan Kresin (eds.), *Connecting across Languages and Cultures: A Heritage Language Festschrift in Honor of Olga Kagan*, 191–215. Bloomington, IN: Slavica.

Laleko, Oksana and Maria Polinsky. 2013. Marking topic or marking case? A comparative investigation of heritage Japanese and heritage Korean. *Heritage Language Journal* 10(2): 40–64.

Laleko, Oksana and Maria Polinsky. 2016. Between syntax and discourse: Topic and case marking in heritage speakers and L2 learners of Japanese and Korean. *Linguistic Approaches to Bilingualism* 6(4): 396–439.

Laleko, Oksana and Maria Polinsky. 2017. Silence is difficult: Referential dependencies in bilingual grammars. *Zeitschrift für Sprachwissenschaft* 36(1): 135–163.

Manova, Stela. 2005. Derivation versus inflection in three inflecting languages. In Wolfgang U. Dressler, Dieter Kastovsky, Oskar Pfeiffer, and Franz Rainer (eds.), *Morphology and Its Demarcations: Selected Papers from the 11th International Morphology Meeting*, 233–252. Amsterdam: John Benjamins. http://www.academia.edu/991812/Derivation_versus_inflection_in_three_inflecting_languages. Accessed 11 August, 2015.

Montrul, Silvina and Tania Ionin. 2010. Transfer effects in the interpretation of definite articles by Spanish heritage speakers. *Bilingualism: Language and Cognition* 13(4), 449–73.

Mozdzierz, Barbara M. 1999. The rule of femininization in Russian. In Margaret H. Mills (ed.), *Slavic Gender Linguistics,* 165–181. Amsterdam: John Benjamins.

Nikunlassi, Ahti. 2000. On gender assignment in Russian. In Barbara Unterbeck, Matti Rissanen, Terttu Nevalainen and Mirija Saari (eds.), *Gender in Grammar and Cognition,* 771–791. Berlin: Mouton de Gruyter.

Padovani, Roberto, Calandra-Buonaura, Giovanna, Cacciari, Cristina, Benuzzi, Francesca, and Paolo, Nichelli. 2005. Grammatical gender in the brain: Evidence from an fMRI study on Italian. *Brain Research Bulletin* 65(4): 301–308.

Polinsky, Maria. 2006. Incomplete acquisition: American Russian. *Journal of Slavic Linguistics* 14: 191–262.

Polinsky, Maria. 2008. Gender under incomplete acquisition: Heritage speakers' knowledge of noun categorization. *Heritage Language Journal* 6(1): 40–71.

Polinsky, Maria and Olga Kagan. 2007. Heritage languages: In the 'wild' and in the classroom. *Language and Linguistics Compass* 1(5): 368–395.

Prévost, Philippe and Lydia White. 2000. Missing surface inflection or impairment in second language? Evidence from tense and agreement. *Second Language Research* 16(2): 103–33.

Ralli, Angela. 2002. The role of morphology in gender determination: Evidence from Modern Greek. *Linguistics* 40(3): 519–551.

Rappaport, Gilbert C. 2014. Determiner phrases and mixed agreement in Slavic. In Lilia Schürcks, Anastasia Giannakidou, and Urtzi Etxeberria (eds.), *The Nominal Structure in Slavic and Beyond*. Berlin: Mouton De Gruyter.

Rothstein, Robert A. 1973. Sex, gender, and the October revolution. In Stephan Anderson and Paul Kiparsky (eds.), *A Festschrift for Morris Halle,* 460–466. New York: Holt, Rinehart and Winston.

Schiller, Niels O., Munte, Thomas F., Horemans, Iemke, and Bernadette M. Jansma. 2003. The influence of semantic and phonological factors on syntactic decisions: An event-related brain potential study. *Psychophysiology* 40(6): 869–877.

Scontras, Gregory, Zuzanna Fuchs, and Maria Polinsky. 2015. Heritage language and linguistic theory. *Frontiers* 6: 1545. http://www.ncbi.nlm.nih.gov/pmc/articles/PMC4598584. Accessed April 10, 2016.

Siegal, Michael, Laura Iozzi, and Luca Surian. 2009. Bilingualism and conversational understanding in young children. *Cognition* 110: 115–122.

Slabakova, Roumyana. 2014. The bottleneck of second language acquisition. *Foreign Language Teaching and Research* 46(4): 543–559.

Sorace, Antonella. 2009. Internal and external interfaces in bilingual language development: Beyond structural overlap. *International Journal of Bilingualism* 13(2): 195–210.

Sorace, Antonella. 2011. Pinning down the concept of 'interface' in bilingualism. *Linguistic Approaches to Bilingualism* 1: 1–33.

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.

Švedova, Natalia Ju. 1980. Podčinitel'nye svjazi slov i slovosočetanija. In Natalia Ju. Švedova (ed.), *Russkaja Grammatika II: Syntaksis*, 13–82. Moscow: Nauka.

Varlokosta, Spyridoula. 2001. The role of morphology in grammatical gender assignment: A psycholinguistic study in Greek. In Alexandra Galani, Glyn Hicks, and George Tsoulas (eds.), *Morphology and Its Interfaces,* 321–349. Amsterdam: John Benjamins.