Word order choice, expression of information status and global intonation patterns in heritage Russian

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Ich versichere, dass ich die vorliegende Arbeit mit dem Titel “Wortstellung, Informationsstatus und Intonation im Russischen als heritage Sprache” selbständig verfasst und keine anderen als die angegebenen Quellen und Hilfsmittel benutzt habe; aus fremden Quellen entnommene Passagen und Gedanken sind als solche kenntlich gemacht.

Declaration of Authorship

I hereby certify that the dissertation entitled “Word order choice, expression of information status and global intonation patterns in heritage Russian” is entirely my own work except where otherwise indicated. Passages and ideas from other sources have been clearly indicated.

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Devoted to my daughter Elisa
who is growing up to be a
heritage speaker of Russian
and Hungarian

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List of Abbreviations

ACC..... *Accusative case*
AM theory .... *Autosegmental-metrical theory of intonation*
CUs..... *Communication units*
DAT..... *Dative case*
DP ..... *Determiner phrase*
F ..... *Feminine*
F0..... *Fundamental frequency*
FBT..... *Final boundary tone*
FUT..... *Future*
GEN ..... *Genitive case*
HL ..... *Heritage language*
HS ..... *Heritage speaker*
IKs..... *Intonacionnye konstrukcii ("intonational constructions")*
INS..... *Instrumental case*
IP..... *Intonation phrase*
IPFV ..... *Imperfective*
IPO..... *Institute of perception research*
L1 ..... *First language*
L2 ..... *Second language*
LILt..... *L2 intonation learning theory*
M ..... *Masculine*
MAE_ToBI .. *Mainstream American English ToBI*
ML..... *Majority language*
MULTIDIR.. *Multidirectional*
NEG ..... *Negation*
NOM ..... *Nominative case*
NP ..... *Noun phrase*
NPA..... *Nuclear pitch accent*
PA..... *Pitch accent*
PFV..... *Perfective*
PL..... *Plural*
POS ..... *Part of speech*
PP..... *Prepositional phrase*
PrV..... *Preverbal position of a referent*
PV..... *Postverbal position of a referent*
RUEG..... *Research Unit "Emerging Grammars in Language Contact Situations: A Comparative Approach"*
ToBI ..... *Tone and Break Indices*
ToDI..... *Transcription of Dutch intonation*
ToRI ..... *Transcription of Russian intonation*
UNIDIR ..... *Unidirectional*
YNQ ..... *Yes/No question*

Abstract

The current thesis investigates semi-spontaneous narrations across different formalities (formal/informal) and modes (spoken/written) produced by heritage speakers (HSs) of Russian in the US and monolingual speakers of Russian. The thesis focuses on global intonational features, choice of different word orders, and expression of information status by the two aforementioned groups.

With respect to global intonational features, this thesis showed that heritage and monolingual speakers were similar to each other regarding some prosodic patterns (e.g., inventory of pitch accents and boundary tones). The two speaker groups also differed from each other regarding some other intonational patterns, but this difference was always modulated by other factors such as gender and formality (e.g., female HSs produced more H* pitch accents and fewer rising accents than monolingual female speakers). Furthermore, the results showed that formality was an important factor for some prosodic features but only for monolingual speakers (i.e., final boundary tones and pitch accent placement). Formality was not found to have an effect on the intonation of HSs. Finally, the results showed a general effect of age and gender that was similar for monolingual and HSs regarding some specific intonational patterns (e.g., adolescent speakers produced more H* and fewer L* accents than adult speakers; female speakers produced more high boundary tones than male speakers).

With respect to the choice of different word orders, this thesis showed that HSs and monolinguals used a similar word order repertoire by producing all six grammatically possible word orders. Also, both speaker groups, similar to each other, produced some word orders more frequently (SVO, OVS, and SOV) than others (OSV, VSO, and VOS). Further, word orders of HSs differed from those of monolinguals only in formal and written situations, but not in informal and spoken ones. Specifically, HSs produced more SVO utterances in the written mode and fewer OVS utterances in formal situations compared to monolinguals.

With respect to the expression of information status, it was found that HSs were similar to monolingual speakers by producing the three most frequent word orders (SVO, OVS, and SOV) according to the underlying discourse principles that govern word order variation in Standard Russian (e.g., OVS was frequent with O being discourse-*given* and S being discourse-*new*). Furthermore, this thesis examined the expression of referents with the order *new-given* that is unexpected in formal monolingual Russian. The results showed that both speaker groups produced *new-given* referents with HSs leading quantitatively. Further, HSs produced *new-given* referents across all investigated formalities and modes. Monolingual speakers produced such referents in

almost every situation except for the formal written one. Finally, the results showed that speakers of both groups used speaker-specific prosodic cues to mark *new* subjects in $S_{new}VO_{given}$ utterances.

In view of the results of this thesis, I conclude that (1) HSs of Russian in the US are often similar to monolingual speakers of Russian regarding some linguistic patterns, (2) when the two groups differ from each other, the differences are often found in situations that require formal instruction or exposure to a formal register in Russian and (3) linguistic patterns of HSs are often similar across different communicative situations, contrary to the patterns of monolingual speakers that are frequently influenced by formality and mode. The results in (2) and (3) can be possibly explained by the limited exposure of HSs to formal registers in their heritage language.

The results of this thesis show differences between HSs and monolinguals that relate to the frequency of some linguistic patterns and their distribution across different formalities and modes rather than qualitative differences between the grammars of the two speaker groups. Thus, HSs should be viewed as native speakers of their heritage language who demonstrate variation within the native grammar.

Deutsche Zusammenfassung

Die vorliegende Doktorarbeit befasst sich mit semi-spontanen Äußerungen von russischen Herkunftssprecher:innen (HS) in den USA und von monolingualen Russisch-Sprecher:innen in unterschiedlichen kommunikativen Situationen bezüglich Formalität (formell/informell) und Modus (gesprochen/geschrieben). Die Arbeit fokussiert sich dabei auf globale Intonation, Wahl unterschiedlicher Wortstellungen und Markierung von Informationsstatus durch die beiden benannten Sprecher:innengruppen.

Bezüglich Intonation zeigt diese Arbeit Ähnlichkeiten zwischen HSs und monolingualen Sprecher:innen in einigen prosodischen Aspekten (z.B. dem Repertoire von Tonakzenten und Grenztönen). Die gefundenen Unterschiede zwischen den Gruppen werden durch andere Faktoren z.B. Formalität der kommunikativen Situation und dem Geschlecht der Sprecher:innen moduliert. So produzieren weibliche HS mehr monotonal hohe (H*) als steigende Tonakzente im Vergleich zu monolingualen Sprecherinnen. Die Formalität der Situation erwies sich als ein wichtiger Faktor für einige prosodische Aspekte jedoch nur bei monolingualen Sprecher:innen (Grenztöne und Tonakzentplatzierung). Für HS wurde kein Unterschied der Intonation in unterschiedlichen Formalitäten beobachtet. Die Ergebnisse zeigen zudem generelle Tendenzen bezüglich des Geschlechts und Alters der monolingualen und HSs bezogen auf bestimmte Intonationsmuster (z.B. produzieren Jugendliche mehr hohe und weniger tiefe Tonakzente als Erwachsene und weibliche Sprecherinnen produzieren mehr hohe Grenztöne als männliche).

Bezüglich der Wortstellung zeigt die Arbeit ein vergleichbares Repertoire von sechs grammatikalisch möglichen Wortstellungen im Russischen für monolinguale und HSs. Dabei zeigt sich das einige Wortstellungen häufiger auftreten (SVO, OVS, SOV) als andere (OSV, VSO, VOS). Unterschiede zwischen den Sprechergruppen finden sich vor allem in der formellen Situation und im geschriebenen Modus und nicht im Informellen und Gesprochenen. Insbesondere die SVO Struktur wurde von HS häufiger in geschriebenen Äußerungen und die OVS Struktur seltener in formellen Äußerungen im Vergleich zu monolingualen Sprecher:innen produziert.

Bezüglich des Informationsstatus zeigt sich eine häufige Verwendung derjenigen Wortstellungen SVO, OVS und SOV, die den Prinzipien des Diskurses im Standardrussischen entsprechen (z.B. OVS war häufig in Kontexten in denen *gegebene* O den *neuen* S vorausgehen) sowohl von monolingualen als auch von HS. Diese Arbeit zeigt auch unerwartete Strukturen, in denen die *neuen* Referenten den *gegebenen* voraus gehen. Diese Struktur wird überwiegend von HS produziert, findet sich aber auch in den Äußerungen von monolingualen Sprecher:innen mit

Ausnahme der formell geschriebenen Sprache. Eine weiterführende Untersuchung der Prosodie zeigt individuelle intonatorische Markierung *neuer* Subjekte in der Struktur $S_{neu}VO_{gegeben}$.

Die Ergebnisse dieser Arbeit lassen die folgenden Schlüsse zu: (1) HS des Russischen in den USA ähneln monolingualen Sprecher:innen in einigen linguistischen Bereichen. (2) Unterschiede zwischen den Gruppen finden sich in den kommunikativen Situationen und Modi, die formelle Instruktionen oder dergleichen in der Russischen Sprache voraussetzen. (3) Sprachliche Strukturen in HS gleichen sich häufig über Situationen und Modi, während monolinguale Sprecher:innen Sensibilität für Formalität und Modus zeigen. Die Ergebnisse zu (2) und (3) lassen sich durch eine begrenzte oder gänzlich fehlende Anwendung eines formellen Registers im herkunftssprachlichen Kontext erklären.

Die Ergebnisse dieser Arbeit zeigen Unterschiede zwischen HS und monolingualen Sprecher:innen in der Häufigkeit bestimmter linguistischer Phänomene und deren Verteilung im Zusammenspiel mit Formalität und Modus. Sie lassen jedoch auf keine qualitativen Unterschiede zweier Sprachsysteme schließen. Die Arbeit liefert damit weitere Hinweise für den Status von HS als Muttersprachler ihrer Herkunftssprache die spezifische Variation aufzeigt.

1 Introduction

Heritage speakers (HSs) form a unique group of speakers due to the early acquisition of one language at home (their HL) and the subsequent or simultaneous acquisition of another language of the larger society (the majority language, ML) which typically becomes dominant.

HSs form quite a heterogeneous group of speakers regarding their proficiency in their HL: some HSs may be very fluent in their HL while some HSs may only comprehend their HL but not speak it (Polinsky, 2015, p. 10). HSs typically receive the main input in their HL from their family members in an informal spoken form (Polinsky, 2015; Flores & Rinke, 2020).

Heritage language bilingualism has received a great deal of attention over the past two decades for at least two reasons. First, it is highly relevant in our current society. The number of HSs has risen substantially in recent years due to increased global immigration. Thus, the language needs of HSs are increasingly salient in the education system. A main focus is early support for developing linguistic skills in the ML while support for maintaining the HL is also increasing in many school systems. Second, the study of HSs is particularly relevant linguistically since it presents excellent testing grounds for the theories of language contact, acquisition and maintenance and language processing theories, as well as for formal linguistics.

The current thesis analyzes semi-spontaneous productions across different communicative situations (formal/informal, spoken/written) in the two speaker populations, HSs of Russian in the US and monolingual speakers of Russian. This thesis investigates three linguistic areas, namely word order, information status, and global intonation patterns.

HSs were often found to show more differences from monolingual speakers in areas such as morphology or syntax than in the production of speech sounds, leading to what was called a "phonetic advantage" (Polinsky, 2018, pp. 115-116; Chang, 2021, pp. 582-3). Such an advantage may arise as a result of early exposure to a HL (Kan, 2021, p. 74). However, early exposure to an HL does not guarantee a monolingual-like production of segmental and suprasegmental aspects during the lifetime of HSs since speech sounds as well as stress or prosodic differences might be subject to variation and change (Polinsky, 2018, p. 116; Kan, 2021, p. 74).

Impressionistically, HSs are typically perceived somewhere between monolingual speakers and L2 learners, forming a separate speaker group. The speech of HSs is often rated as more accented than that of monolingual speakers and less accented than that of L2 learners[1], but what exactly distinguishes HSs from the monolingual group remains unclear (Flores & Rato 2016; Kupisch et al., 2014; Polinsky, 2018; Chang & Yao, 2016).

[1] An L2 learner is considered to be a learner of their second language in adulthood (Polinsky, 2018, p. 114).

In addition to the differences in the segmental domain, studies on suprasegmental aspects such as stress, rhythm, and intonation report that HSs differ from both monolingually-raised speakers and L2 learners (for a detailed overview see Chang, 2021, pp. 593-597). In first language acquisition, intonation was found to be fully acquired late. Thus, for a child who grows up being exposed to several languages simultaneously at a young age, there is considerable room for cross-linguistic interactions and variation in both the HL and the ML. The cross-linguistic influence might arise regarding the inventory and distribution of categorical phonological elements (systemic dimension), their functionality (semantic dimension), phonetic implementation (realisational dimension), and frequency of use (frequency dimension) (Mennen, 2015). HSs were found to differ from monolingually-raised speakers in every dimension of intonation, and the differences were attributed to the influence from the ML or to some general effects of bilingualism related to processing, fluency or decreased language exposure or use (see Colantoni et al., 2016; Kim & Repiso-Puigdelliura, 2021; Kim, 2023 & Kachkovskaia et al., 2022 on the influence of MLs on a HL; see Zuban et al., 2023 or Zerbian et al., 2022 on general effects of bilingualism).

It has to be acknowledged that intonation of HLs in general and heritage Russian in particular has received far less attention than other areas of HL grammar (Rao & Polinsky, 2024). Further, the majority of the studies focus on one particular phenomenon such as question intonation, Uptalk or intonation of different information-structural categories (e.g., Dehé, 2018; Dehé & Rommel, 2024; Zuban et al., 2023; Kim & Repiso-Puigdelliura, 2021; Kim, 2023; Kim, 2019; Zerbian et al., 2022; Calhoun et al., 2024; Feldhausen & del Mar Vanrell, 2024). However, it is less clear what global intonation features of HSs are, i.e., the overall inventory of pitch accents and boundary tones as well as their type and distribution. Thus, being one of the first studies on global intonational patterns of HSs of Russian, this thesis aims to shed more light on the possible reasons behind the perceived accent of HSs and why HSs are often seen as a group of speakers that fall between monolingual and L2 speakers (Rao & Polinsky, 2024).

Furthermore, age and gender-related differences have been extensively reported by the studies on prosody in monolingual populations, and age and gender are among the crucial factors that influence language variation (Tagliamonte, 2016; Nagy, 2017). The inclusion of speakers of different ages and genders will allow us to see whether the differences between HSs and monolinguals are modulated by these sociolinguistic factors.

Finally, intonation was found to differ not only between speakers of different genders and ages but also between different speaking styles (e.g., formal vs. informal). Research on the influence of different speaking styles on intonation of HSs is extremely scarce. A study by Comstock (2018) on one HS of Russian found that the HS did not vary their linguistic patterns in different interviews

while Zerbian et al. (2024) report mixed results with respect to register differentiation across HSs of Russian in the US and monolinguals. On the one hand, HSs were sensitive to the differences between formal and informal registers in a way similar to monolingual speakers regarding some prosodic patterns (e.g., both speaker groups produced more pitch accents on the verbs in informal situations). On the other hand, in the case of the size of intonational phrases, HSs did not show any effect of formality, contrary to monolingual speakers whose intonational phrases were shorter in formal situations. Taking the scarcity of previous studies on the possible effect of different speaking styles on intonation and their mixed results, this thesis will contribute to the field of heritage grammar by including speech of different formalities.

This thesis will investigate general intonation patterns of adolescent and adult HSs of Russian in the US as well as monolingual speakers of Russian in semi-spontaneous formal and informal narrations. The present thesis is, to my knowledge, one of the first detailed investigations of the global prosodic features of HSs of Russian based on a large data set and including multiple factors that may influence speakers' choice of a particular intonation pattern (i.e., bilingualism, formality, age and gender). This thesis will examine *pitch accent type* (H*, L*, rising and falling accents), *boundary tone* (H% or L%), and *pitch accent placement* produced by HSs of Russian in the US.

Although both monolingual Russian and English are intonational languages, they are not identical regarding the specific intonational patterns. For instance, it has been reported that monotonal pitch accents H* and L* are frequently used in monolingual English while bitonal accents are typical for monolingual Russian (Comstock, 2018). Such differences between monolingual English and Russian may give rise to differences between HSs and monolingual speakers, if there are traces of cross-linguistic influence from the ML.

Moving to the syntactic properties of HLs, word order was reported to be susceptible to change and transfer from the ML (e.g., Heine, 2008, p. 34; Polinsky, 2018, p. 273). Further, languages that allow word order variation show less varied order patterns in HLs and increased use of basic word orders (cf. Polinsky, 2018, p. 273; Montrul, 2015, p. 82; Lohndal, 2021). In languages that allow for word order alternations, such alternations are typically highly governed by information structure/status. Studies that examined the encoding of information structure through word order in HLs report different findings. Some researchers report on the substantial differences between HSs and monolinguals (e.g., Zapata et al., 2005; Laleko & Dubinina, 2018) while other studies found only subtle differences between the former and the latter group or no differences at all (e.g., Hoot & Leal, 2023; Sequeros-Valle et al., 2020; Ionin et al., 2020).

Monolingual Russian has a basic SVO order in a broad focus context, but unlike monolingual English, allows for remarkable word order alternations. Word order variation depends on many

factors, among which information structure/status and intonation are claimed to be the most influential (Kallestinova, 2007; Slioussar, 2007). Furthermore, monolingual Russian follows a cross-linguistic tendency to place *given* referents before *new* ones in formal speech. In informal speech, the *given-new* order can be violated since intonation plays a stronger role in the expression of information structure/status (Sirotinina, 2003, p. 152). Specifically, the information status of a referent, similar to English, can be expressed solely by intonation without any word order permutations (Kallestinova, 2007). Furthermore, different communicative situations as well as clause type were reported to be important for the use of particular word orders (Sirotinina, 2003; Slioussar, 2007; Bailyn, 2012).

Numerous studies on heritage Russian reported that HSs of Russian in the US increased the use of SVO and decreased the use of non-SVO word orders (e.g., Polinsky, 1995, 2006; Isurin & Ivanova-Sullivan, 2008; Laleko & Dubinina, 2018). However, some recent studies showed that HSs did not differ from monolinguals across the board, but the more frequent use of the SVO was modulated by other factors such as clause type, i.e., HSs were found to be similar to monolinguals in main clauses but not in embedded ones, where they predominately produced SVO orders (Zuban et al., 2021). Moreover, some studies such as Martynova et al. (in press) reported that HSs of Russian in the US and monolingual speakers did not differ from each other regarding the choice of the OV/VO orders.

Although word order in monolingual Russian is discourse-driven, fewer studies focused on the syntactic expression of information structure/status by HSs of Russian. Some studies make observations that HSs do to not always produce contextually appropriate word orders (Brehmer & Usanova, 2015 on heritage Russian in Germany; Zuban et al., 2021; Martynova et al., in press). Some studies report a substantial amount of contextually infelicitous word orders produced by HSs, up to 20% or 30% of all the word orders (Laleko & Dubinina, 2018). Finally, contrary to the aforementioned studies, there is also evidence that HSs of Russian generally know the discourse principles that govern word order variation in Russian (production study by Kisselev, 2019; perception study by Ionin et al., 2020).

Previous findings on the frequencies of different word order patterns as well as their use to express information structure/status generally show that one can expect that HSs and monolingual speakers of Russian would differ from each other. Furthermore, the two speaker groups are expected to differ from each other following the predictions of the Interface Hypothesis according to which phenomena at an external interface (here syntax and discourse) are predicted to have increased variability under language contact (Sorace, 2011).

It is important to point out that the studies on word order and information structure/status in heritage Russian did not usually look at the multiple factors that could influence the word order choice and the expression of information structure/status by HSs (e.g., clause type, different formality or mode) but typically only concentrated on the differences between the speaker groups (i.e., HSs vs. monolingual speakers) (e.g., Isurin & Ivanova-Sullivan, 2008; Laleko & Dubinina, 2018; Kisselev, 2019). However, recent studies show that other factors such as clause type or object role can influence the word order choice of HSs (see Zuban et al., 2021 and Martynova et al., in press).

Studies regarding HSs' knowledge of different registers provide different results. On the one hand, HSs were often found to not vary their linguistic patterns in different language situations (e.g., Schroeder et al., in press on postverbal elements in heritage Turkish; Alexiadou et al., 2022 plural indefinite article *kati*). However, there is also evidence that HSs have an underlying knowledge of different registers (Pashkova et al., 2022; Martynova et al., 2024, both on different clause types, the former is on heritage German while the latter is on heritage Russian). As in the case of intonation of HSs, this thesis will contribute to research on the possible effect of different language situations on word order and information status of HSs of Russian.

Since information structure/status is not only influenced by word order in monolingual Russian but also by intonation, the role of intonation in the expression of information structure by HSs of Russian in the US is an interesting topic. To my knowledge, prosodic expression of information structure/status in HSs of Russian has received almost no attention in current studies except a master's thesis by Ivashchyk (2019) who investigated a small number of HSs. Investigation of intonation will give a better picture of the structure of the HL and the strategies of HSs in their HL, e.g., if the information structure/status is not always expressed by the word order, it is important to determine whether other strategies such as intonation are at play.

Finally, some of the factors that could influence the word order choice and the expression of information structure/status by HSs of Russian in the US, to my knowledge, have not been looked at (i.e., different age groups).

Against this background, this thesis investigates the word order choice by HSs of Russian in the US as well as monolingual speakers of Russian considering the influence of bilingualism, formality, mode, clause type, and age. Furthermore, this thesis will examine how HSs and monolingual speakers use the three most frequent word orders (SVO, OVS, SOV) to express information status across different formalities, modes, and age groups.

Further, this thesis will concentrate on the combinations of referents that are not expected to appear in formal Standard Russian, namely *new-before-given*. I will examine whether such

unexpected instances appear in the data, and if they do, where it typically happens (i.e., with which word orders, in which formality and mode). Moreover, I will look at the intonation of the unexpected *new* referents.

It is important to acknowledge that HSs of different languages were often found to differ from monolingual speakers regarding various linguistic phenomena, and these differences were often discussed as HSs having incomplete acquisition of their HL or its attrition. Also, if HSs differed from monolingual speakers such differences were often classified as errors, and the HL was often viewed as vulnerable (see Polinsky & Scontras, 2019; Polinsky, 2018; Montrul, 2008, 2015 for discussion).

The recent studies on bilingual speakers, however, view HSs as native speakers of their HL who show variation within native grammars. Under this view, the differences that arise between HSs and monolingual speakers are not errors but innovations, and their HL is not vulnerable but dynamic (e.g., Embick et al., 2020; Flores & Rinke, 2020; Rothman & Treffers-Daller, 2014; Kupisch & Rothman, 2018; Wiese et al., 2022). In line with the current studies, this thesis seeks to promote a positive perspective on bilingualism by pointing out that HSs are native speakers of their HL, and they should not be viewed differently only because they do not always converge with monolingual speakers.

To sum up, the current thesis aims at gaining new insights into HSs' grammar and promote a positive view on bilingualism investigating different linguistic domains in a large-scale study that includes multiple factors that can influence the performance of HSs.

This thesis will contribute to the theories of language contact (*L2 Intonation Learning Theory*, Mennen, 2015; *Interface Hypothesis,* Sorace, 2011) and will show how the HL is maintained among HSs of Russian in the US in the three investigated areas. For the benefit of theoretical linguistics, the obtained results may help identify stable and dynamic domains of Russian HL and, thus, contribute to the ongoing research of the HSs' linguistic system. Furthermore, if HSs and monolinguals show differences, this thesis will try to shed light on the source behind these differences.

Finally, the results of this thesis can be used in HL education to improve the existing programs teaching HLs. The topics of my research might be particularly challenging for a HL classroom since they either require the knowledge of different contexts (word order variation for information structural purposes) or they require the knowledge of subtle nuances for their mastery (i.e., intonation patterns).

The structure of this thesis

Chapter 2 starts with a definition of heritage speakers and further presents an overview of factors that may influence their linguistic behavior (age, gender, different communicative situations). It also gives a short description of the history of heritage speakers of Russian in the US due to the relevance of these speakers for the current thesis. Finally, chapter 2 finishes with a short overview of the research questions this thesis will answer.

Chapter 3 addresses the general methodology used in this thesis for data collection as well as data analysis. Chapter 4 focuses on participants of this thesis regarding their metalinguistic background, fluency, and general performance. Chapters 5, 6, and 7 present three corpus studies on various linguistic topics. Chapter 5 examines global prosodic patterns of heritage and monolingual speakers of Russian. Chapter 6 investigates the word order choice of the two aforementioned speaker groups while Chapter 7 deals with the expression of information status.

Chapter 8 provides an overall summary of the main findings of this thesis, points to some limitations of this thesis and finishes with further possible directions.

2 Heritage Speakers

This chapter is devoted to the speaker group that is at the core of this thesis, namely heritage speakers. It starts with the definition of HSs and moves to a brief summary of studies that report on the differences and similarities between heritage and monolingual speakers in various linguistic areas. Furthermore, the chapter presents the possible reasons for the differences between HSs and monolingual speakers. Moreover, this chapter motivates the research questions of this thesis by describing how age and gender, being the main social categories crucial for language variation and change, may influence the way HLs are used. Next, this chapter describes the performance of HSs regarding different formalities (formal vs. informal) and modes (spoken vs. written). Furthermore, this chapter gives a short historical overview of HSs of Russian in the US since these speakers are of direct relevance to this thesis. Finally, this chapter presents a general summary of the research questions that will be addressed in this thesis.

2.1 Heritage speakers: Definition

Definitions of HSs vary depending on the perspective. HSs can be broadly identified based on their cultural heritage rather than a HL. In this case, HS may not speak their HL at all (Van Deusen-School, 2003). However, such a definition is not of interest in this dissertation since only HSs who possess linguistic knowledge of their HL will be looked at.

According to a definition that takes the knowledge of a HL into account, "HSs are individuals who were raised in homes where a language other than the dominant community was spoken and thus possess some degree of bilingualism in the heritage language and the dominant language" (Polinsky, 2015, p. 8).

HSs are also referred to as early bilinguals (Zárate-Sández, 2015), simultaneous or sequential bilinguals (Montrul, 2012), unbalanced bilinguals (Baker & Jones, 1998) or incomplete acquires (Montrul, 2002). *Early bilinguals* learn their home language in childhood or since birth (early); HSs who learn both their HL and the ML since birth are called *simultaneous bilinguals*; HSs may start learning their HL before their ML, and such HSs are usually referred to as *sequential bilinguals*. HSs are also called *unbalanced* in the sense that they may be much more proficient in their ML compared to their HL; HSs' knowledge of their HL is sometimes referred to as "incomplete" pointing out the fact that HSs may have never fully learned their HL in comparison with their parents or monolingual speakers of their HL.

I will adopt a definition of a HL by Rothman (2009, p. 156) according to whom a HL "is a language spoken at home or otherwise readily available to young children, and crucially this language is not a dominant language of the larger (national) society." Also, a person can be called

a HS only if they have some knowledge of their HL that was acquired naturalistically. Besides, the competence of a HS in their HL is expected to differ from a monolingual speaker of a similar age (Rothman, 2009, p. 156). HSs typically have some knowledge of their HL, but they are usually more dominant in their ML (Polinsky & Scontras, 2019; Montrul, 2012). HSs form quite a heterogeneous group of speakers regarding their proficiency in HL from those who can barely be distinguished from monolingual speakers to those who are hardly competent in their HL (Polinsky, 2015, p. 10).

HLs are usually not supported outside the family in the way MLs are. HSs typically receive their education in their ML but not in their HL. If HSs do not receive any formal support in their HL, they are usually not literate in their HL (Rothman, 2009, p. 157; Polinsky, 2015). Those HSs who are literate in their HL are predicted to be more fluent in reading than writing (Polinsky, 2015).

The input and the use of a HL may dramatically decrease since HSs feel pressure to assimilate into the surrounding dominant society and begin to speak the ML at home more frequently. The decrease in HL input may affect the language command of HSs compared to monolingual speakers of a similar age (Rothman, 2009, p. 157). Further, HSs' input is usually restricted in terms of language use and number of speakers (mainly everyday informal topics, and small groups of family members that do not show the whole language range). Furthermore, HSs may be exposed exclusively to one language variety that differs from the standard one (Polinsky, 2015; Flores & Rinke, 2020).

2.2 Heritage speakers and monolingual speakers: Source of differences

By the time HSs become adolescent or early adult speakers their HL usually differs from the language of monolingual speakers. Generally, HSs have good speaking and listening abilities and a large, but quite specific, vocabulary, and they are fluent overall in their HL. The language of HSs is characterized as informal[2] and stereotypical (i.e., it contains a set of words or expressions that usually appear together) (Rothman, 2009, p. 157).

Among the language areas in which HSs were reported to be particularly different from monolingual speakers are nominal and verbal morphology (Montrul, 2015, p. 54). In terms of nominal morphology, HSs were frequently found to inconsistently mark gender, number and case in their HLs, produce regular plural forms instead of irregular ones, omit overt case marking, and use fewer cases than in the baseline language. In terms of verbal morphology, HSs were found to

[2] The terms "informal", "colloquial" and "vernacular" are used interchangeably in this thesis referring to language that people use in everyday situations (e.g., at home) as opposed to language used in official contexts (e.g., in court).

differ from monolinguals regarding aspect and mood, but their use of tense and agreement was reported to be more monolingual-like (see Zombolou, 2011; Montrul & Potowski, 2007; Albirini et al., 2013; Polinsky, 2006, 2008a, b, 2018 pp. 177-179; Bolonyai, 2007; Montrul et al., 2012; Laleko, 2010; Montrul, 2002, 2007, 2009).

In the research on HLs, it is common to compare HSs against a monolingual standard, and if HSs differ from monolinguals regarding a particular phenomenon, such differences are often classified as errors, deviances, or mistakes. If speakers of the ML show some changes, but HSs do not, then HSs are described as conservative (Polinsky, 2018, p. 129). Different outcomes between HSs and monolinguals are typically attributed to the quantity and the quality of the input or to the economy of online resources which can result in the avoidance of ambiguity, resistance to irregularity, and the shrinking of structure (Polinsky & Scontras, 2019, pp. 10-11). Language areas where such different outcomes occur are often described as vulnerable. The potential sources for such differences that are typically discussed in the literature are the following: transfer, attrition, and divergent attainment (Polinsky & Scontras, 2019, p. 2; Polinsky, 2018; Montrul, 2008, 2015).

Transfer from the ML was reported for different language domains of HLs (Polinsky, 2018, chapter 2; Brehmer & Usanova, 2015; Montrul, 2010). However, transfer was not always found to be the reason for differences between HSs and monolinguals (e.g., Zuban et al., 2023; Zuban et al., 2021; Polinsky, 2011).

Another possible reason for the differences between HSs and monolinguals is attrition: HSs may have acquired a particular language phenomenon but then lost some or all the features of this phenomenon (Polinsky & Scontras, 2019, p. 3).

Finally, it is also possible that the system acquired by HSs is not similar to the one acquired by monolingual speakers, and in this case, one speaks of divergent attainment (or incomplete acquisition) (Polinsky & Scontras 2019, p. 4). According to Polinsky & Scontras (2019), it is often not easy to determine whether transfer from the ML or a divergent attainment is at play. If HSs don't produce a phenomenon in their HL that does not exist in their ML, but exists in the baseline it is not clear whether it is a result of transfer or a divergent attainment.

Other recent approaches promote a positive, multilingual perspective on HSs by reanalyzing the concept of vulnerability of linguistic domains as linguistic domains that are dynamic. In line with this approach, HSs do not suffer from language attrition or divergent attainment but create innovative structures. Under this view, HSs show variation within native grammars (Embick et al., 2020; Flores & Rinke, 2020; Rothman & Treffers-Daller, 2014; Guijarro-Fuentes & Schmitz, 2015; Kupisch & Rothman, 2018; Pascual y Cabo & Rothman, 2012; Flores, 2015; Rinke &

Flores, 2014; Wiese et al., 2022). Rothman and Treffers-Daller (2014) and Kupisch and Rothman (2018) point out that HSs are native speakers of their HLs, and they should not be viewed differently only because they do not always converge with the monolingual standard to which they are often compared.

In a paper by Pascual y Cabo and Rothman (2012), the authors challenge the concept of incomplete acquisition that has been used to describe the competence of HSs for quite a long time. First, it is impossible to find out whether HSs that were tested as adults did not acquire a particular phenomenon or whether they acquired it but later forgot it (i.e., attrition). Second, even if someone were to show (in a longitudinal study) that HSs acquired a particular phenomenon during their childhood but then "lost" it later on, such results would not necessarily need to be explained in terms of incomplete acquisition. Instead, one could say that HSs follow a different path of complete development (Pascual y Cabo & Rothman, 2012, p. 453). Pascual y Cabo and Rothman (2012) suggest that the differences in language use shown by HSs do not have to be considered as deficits but should be viewed as outcomes in their own right (see Pires, 2011; Kupisch & Rothman, 2018 for a similar idea).

Furthermore, differences between monolingual and HSs may be related to the type of speech, namely colloquial vs. formal. As noted earlier, HSs are typically exposed to colloquial variants of a language and usually do not receive formal education in their HL (Flores & Rinke, 2020; Lohndal et al., 2019; Pascual y Cabo & Rothman, 2012; Flores, 2015). As a result, differences that are found between HSs and monolinguals may be attributed to the differences in language situations, i.e., HSs are more likely to differ from monolinguals in formal situations than in informal ones. Thus, it is important that HSs' language use is not only compared to the standard language but also to its vernacular variant (see Flores & Rinke, 2020, p. 25 for a similar idea).

A study by Rothman (2007) supports the abovementioned point. Rothman (2007) examined the knowledge of inflected infinitives by 11 HSs of Brazilian Portuguese with the ML American English who did not receive a consistent formal education in Portuguese. Inflected infinitives were argued not to be a property of colloquial Portuguese, but they exist in formal standard Brazilian Portuguese. The results of the study showed that HSs (most of the tested participants) did not have a knowledge of inflected infinitives. Rothman (2007) explains such results not by attrition or incomplete acquisition, but by the fact that HSs were not exposed to the formal variety of Portuguese, and in this case, they simply did not acquire inflected infinitives at all.

Similarly, Kupisch and Rothman (2018) found that differences that arose between HSs and monolinguals were not caused by the incomplete acquisition of the HLs, but by other factors such as quality of input and general inaccessibility to formal education in a HL. Kupisch and Rothman

(2018) summarized a series of studies that used the same methodology to investigate four linguistic phenomena (gender marking, adjective placement, determiner in generic expressions, and voice onset time) by HSs of French and Italian residing in Germany. Importantly, HSs of French attended a Francophone school in Germany that followed the curriculum of the French Ministry of Education and allowed the students to graduate from two schools simultaneously (German Abitur and French Baccalauréat). HSs of Italian living in Germany attended monolingual German schools and only some of the HSs attended Sunday schools during their childhood where they learned how to read and write in Italian.

The results of these studies revealed that HSs of French were closer to monolingual speakers than HSs of Italian (Kupisch & Rothman, 2018, pp. 570-573). Such results are explained with reference to formal education. Texts that are discussed in schools go beyond colloquial language (e.g., classic literature or technical texts) and thus learners are exposed to various grammatical structures and vocabulary. Moreover, teachers at bilingual schools are more likely to speak a standard variety of a language that differs from the language HSs hear at home (Kupisch & Rothman, 2018, p. 576). HSs of French attended Francophone schools for more than ten years and were familiar with academic (formal) language and had experience taking exams in French (Kupisch & Rothman, 2018, p. 573). HSs of Italian did not have the same linguistic experience as HSs of French, and, consequently, the former speakers were more distinct from monolingual speakers than the latter. Kupisch and Rothman (2018) conclude that consistent education gives HSs quantitatively and qualitatively more opportunities to converge more closely with monolingual speakers.

Wiese et al. (2022) consider HSs to be native speakers of both HL and ML with evidence from a large-scale cross-linguistic study. The study examines the productions of HSs with heritage Greek, Russian, and Turkish and majority American English and German as well as heritage German in the US and monolingual speakers from Greece, Russia, Turkey, the United States, and Germany. The datasets include speakers' productions in different language formalities and modes: formal and informal as well as written and spoken.

Wiese et al. (2022) report three main results. First, not only HSs, but also monolingual speakers, were found to produce non-canonical phenomena in the areas of intonation (final boundary tones in yes-no questions in Russian), pragmatics (referents introduction in English and position of *new* referents in Turkish) and, morphology and syntax (word order and bare NPs in German, formation and use of participles in Russian).

Second, monolingual speakers sometimes showed a higher degree of lexical and morphosyntactic inter-speaker variation compared to HSs.

Third, in MLs, non-canonical patterns typically appeared in informal or/and spoken situations, and this trend held for HSs and monolingual speakers (e.g., non-canonical *new* and *given* referents in majority English were associated with the spoken mode rather than with the written mode across bilinguals and monolinguals; non-canonical V3 patterns in majority German were associated with informal situations rather than with formal ones). Some non-canonical patterns in informal situations were produced more frequently by bilingual speakers compared to monolinguals.

As for HL use, Wiese et al. (2022) report that some patterns typical for informal situations in the narrations of monolingual speakers were extended to formal situations in the narrations of HSs leading to register-leveling processes (e.g., HSs of German in the US produced non-canonical V3 word order patterns or bare NPs in both formal and informal situations roughly equally frequently while monolingual and bilingual speakers in Germany produced such patterns in informal situations but not in formal situations). Register-leveling is presumably caused by the lack of formal education in the HLs.

Wiese et al. (2022) conclude that HSs and monolinguals do not have distinct grammatical patterns, but rather differ from each other quantitatively and have different register distributions. Thus, HSs should be viewed as native speakers of both HL and ML. Moreover, the study revealed that monolingual speakers produced patterns that were reported to be non-canonical according to the literature, and these patterns typically occurred in informal and spoken situations. Therefore, it is important to include the data of monolingual speakers as well as informal and spoken situations for the investigation of HSs' productions since it may turn out that HSs show no effect of bilingualism in these situations and behave just like monolingual speakers.

Furthermore, although language variation was reported to be a feature of all language communities it was found that colloquial language serves as the main source of linguistic variation whereas formal and written language is less prone to variation. Since HSs are usually not exposed to the formal variety of their HL, they tend to increase variation that already exists in monolingual speech (Flores, 2015, p. 254).

Another important issue to tackle is to whom should adult HSs be compared. Current studies emphasize that HSs should not be directly compared to monolingual homeland speakers since monolinguals do not serve as their input. HSs should rather be compared to first-generation immigrants since this group of speakers provides the input for HSs in their HL. Besides, the language spoken by first-generation immigrants may differ from the language of monolingual homeland speakers (Polinsky, 2018, pp. 10-13; Polinsky & Scontras, 2019; Benmamoun et al., 2013a, b; Madsen, 2018, the last three studies are cited by Polinsky & Scontras, 2019, p. 4).

However, if one investigates acquisition of a HL a comparison with homeland children is appropriate (Polinsky, 2018, pp. 11-12).

The idea that HSs should not be measured against the monolingual standard does not mean that monolingual data should not be considered at all. Data from monolingual speakers are also fruitful since monolinguals show language variation as well, and one can compare degrees of variation in monolingual and heritage groups without judging how "complete" the grammar of HSs is (Guijarro-Fuentes & Schmitz, 2015, p. 244). Such variation can be particularly detected if not only formal, but also informal language situations are included in the analysis. Thus, the inclusion of the monolingual group and different language situations (formal and informal) will allow for distinguishing contact-induced phenomena from general patterns of variation.

To sum up, a bulk of studies name transfer, attrition, and incomplete acquisition to be the reasons for the differences between HSs and monolingual speakers. According to more recent approaches HSs do not show language attrition or incomplete acquisition but create innovative structures. Furthermore, current studies emphasize the importance of the vernacular language in HL research since HSs are typically not exposed to the formal language. This thesis adopts a positive approach to bilingualism and views HSs as the native speakers of their HL who show variation within native grammars.

2.3 Heritage speakers and sociolinguistic factors

Since gender and age have been claimed to be among the most crucial factors that influence language variation these sociolinguistic factors will be discussed in more detail for bilingual populations. Furthermore, gender-related differences have been reported to be particularly prominent in the area of phonetics, phonology, and intonation. Therefore, the subchapter on gender will mainly concentrate on the studies related to the abovementioned linguistic areas.

2.3.1 Age

Age was reported to be one of the crucial factors that influences language variation and change. Adolescent speakers were identified as a major social group for linguistic variation and change (Kerswill, 1996; Tagliamonte, 2016; Smith & Holmes-Elliott, 2022). Nagy (2017, p. 35) summarizes the widely-in-press sociolinguistic generalizations regarding age (the references to the authors below are given by Nagy, 2017, p. 35):

- Younger speakers show newer phases of variety than older speakers (Bailey et al., 1991)
- Peak of innovations is reached at the adolescent age (D'Arcy, 2013, p. 490)
- Vernacular reorganization of language by younger speakers (Labov, 2001)

- Language stabilizes during adulthood (Walker & Meyerhoff, 2013, p. 178; Sankoff, 2013, p. 261, but counter-examples by D'Arcy, 2013, p. 489 and Sankoff, 2013, p. 270)

As for the HSs, it has been shown that HSs of different age groups differ from age-matched monolingual speakers. For example, Alexiadou et al. (2021) examined gender agreement mismatches in the narrations by HSs of Greek in the US and monolingual speakers of Greek. Speakers of two age groups were included: adolescents (N = 32 in each group; mean age = 16.2 for HSs and 15.3 for monolinguals) and adults (N = 32 in each group; mean age = 30.2 for HSs and 27.4 for monolinguals). All participants were tested in language situations that were distinct regarding formality (formal vs. informal) and mode (spoken vs. written). The results of the study revealed that HSs of both age groups, unlike monolingual speakers, showed mismatches in gender agreement. Formality and mode did not have an effect on the production of gender mismatches; however, there were significant differences observed between HSs of different age groups. Specifically, adult HSs showed gender agreement mismatches less frequently than adolescent HSs (Alexiadou et al., 2021).

The differences between adolescent and adult HSs are explained with reference to the literacy practices in Greek (i.e., listening to music/radio/audiobooks, watching TV/movies/videos, texting, writing emails or blogs). The regression analysis revealed the following significant difference between adult and adolescent HSs: adult HSs were found to have higher literacy practices in Greek than adolescent HSs (Alexiadou et al., 2021). However, no correlation was found between the frequency of gender agreement mismatches and literacy practices. The input in HL as well as visits to Greece did not correlate with the frequency of gender agreement mismatches either. A weak positive correlation between the frequency of total productions and literacy practices was identified, i.e., adolescent HSs with significantly lower literacy practices in Greek than adult HSs were also found to produce significantly fewer overall instances of agreement (Alexiadou et al., 2021).

Alexiadou et al. (2021) also provide some preliminary results of the mismatches in gender agreement produced by HSs of Greek residing in Germany (adolescents: N = 21, mean age = 16.5; adults: N = 27, mean age = 28.4) although the full analysis of the German group has not yet been carried out since the data collection was still ongoing. The preliminary results suggest that HSs in Germany of both age groups show fewer mismatches in gender agreement than HSs in the US. Further, there seems to be no difference between adolescent and adult HSs in Germany (Alexiadou et al., 2021). Thus, the differences between HSs of different age groups may not be similarly pronounced in HSs with different MLs.

Sometimes younger HSs were found to be more similar to monolingual speakers of their HL than adult HSs. For instance, Polinsky (2011) investigated the comprehension of subject and object relative clauses by HSs of Russian in the US and monolingual speakers of Russian. The speakers belonged to two age groups: children (mean age: 6, 6 years old for monolinguals and 6.2 for HSs) and adults (mean age: 32 years old for monolinguals and 22 for HSs) (Polinsky, 2011, p. 316). The results of the study revealed that children of both speaker groups behaved similarly to each other while adult HSs differed from adult monolinguals. Specifically, adult HSs showed significantly weaker results than adult monolinguals in interpretation of object relative clauses but not subject relative clauses. The findings of the study were interpreted as language attrition.

It has also been found that depending on an investigated phenomenon, HSs of different age groups may differ from monolinguals or be monolingual-like. A study by Van Osch et al. (2019) examined the knowledge of word order in intransitive sentences by HSs of Spanish living in the Netherlands. HSs of three age groups were investigated: children (circa 9 years old), early adolescents (approximately 13 years old), and adults (from 19 to 36 years old, mean age = 25). The data of HSs were compared to age-matched monolingual speakers of Spanish. The speakers were tested regarding their sensitivity to the verb type, focus, and definiteness (these constraints are relevant for the word order choice with intransitive verbs in Spanish) and their preference for the preverbal or postverbal position of subjects.

The results of the study showed that monolingual speakers of all three age groups were sensitive to all three factors that are relevant for the word order, namely verb type, focus, and definiteness. As for the HSs, HSs of all age groups were sensitive to the verb type. The results for focus and definiteness were different for HSs of different age groups. Younger HSs (both children and young adolescents) were not sensitive to the factor "focus" while adult HSs were. This result shows that the effect of focus on word order eventually forms part of the HSs' grammar (Van Osch et al., 2019). As for the effect of definiteness, younger HSs (both children and young adolescents) were sensitive to this factor while adult HSs were not. This result shows that the knowledge of some phenomena can become weaker later in life (Van Osch et al., 2019). Results regarding the overall word order preference in intransitive sentences reveal the following. Monolingual children showed a preference for SV order while young adolescent and adult speakers did not show any preference for a particular word order. As for the HSs, younger HSs (children and adolescents) did not show any preference for a particular word order while adult HSs showed preference for the VS order (Van Osch et al., 2019). The results of the study are explained with reference to the reduced input and the use of the HL together with the increased input and use of the ML.

Polinsky (2016) summarizes the findings of different studies related to HSs of different age groups (children and adults) regarding various outcomes. Some studies showed that child HSs, adult HSs, and monolingual speakers were similar to each other regarding some phenomena (e.g., Polinsky, 2016, p. 550). Some research reported that child HSs pattern with monolingual children, but adult HSs do not pattern with adult monolinguals (e.g., Polinsky, 2011). Another possible scenario of age-related differences is that child HSs differ from monolinguals while adult HSs are similar to monolingual speakers (Polinsky, 2016, pp. 555-557).

Adult HSs were sometimes found to show some similarities with young L1 children (e.g., Sekerina & Sauermann, 2015). However, it was also found that adult HSs differ from the baseline while young L1 children do not (e.g., Polinsky 2011). Furthermore, in some language domains, HSs were found to be similar to the baseline while L1 children were not (e.g., Arslan et al., 2015).

Adult HSs were also sometimes found to show some similarities with L2 learners, another group of bilinguals. Such similarities were found in areas where the language transfer is quite strong: word order, lexical expressions (calques or translations from the dominant language), the use of overt elements, or the absence of infrequent forms (Polinsky & Scontras, 2019, p. 3).

As it can be seen adult HSs may be closer to monolingual speakers of their HL, contributing data from a linguistically more stable age (e.g., Alexiadou et al., 2021 on HSs of Greek in the US). At the same time, adults might be more dominant in their ML and have less contact with their HL (since they typically do not live with their families anymore), and consequently they may be more different from monolingual speakers of their HL than younger HSs (e.g., Polinsky, 2011). The same holds for adolescent HSs: they may be similar to monolingual speakers of their HL (e.g., Van Osch et al., 2019 on the effect of definiteness on word order), or they may differ from adolescent monolingual speakers (e.g., Van Osch et al., 2019 on the effect of focus on word order). Additionally, the exact linguistic phenomenon may influence the performance of HSs at different ages as shown by Van Osch et al. (2019).

2.3.2 Gender

Age is not the only important parameter for linguistic variation and change. Along with age, gender was reported to be among the main social categories crucial for language change. Specifically, female adolescent speakers were found to be a driving force of linguistic change (Tagliamonte, 2016, p. 43). Nagy (2017, p. 35) summarizes the widely-in-press sociolinguistic generalizations regarding gender:

- Women use stigmatized variants less frequently than men (Bayley, 2013, p. 14)
- Women are the innovators in linguistic change (Labov, 1990, p. 205)

- Women are similar to men of the immediately higher social class (Bayley, 2013, p. 14)

Although some studies on HLs did not find an effect of gender in bilingual populations (Nagy, 2017; Nagy & Brook, 2020) many studies on HLs report that gender may have an effect on the way HLs are used. For instance, a study by Portes and Hao (1998) investigated the proficiency of HSs of different HLs in the US. It was found that female students whose parents came from Latin America were more proficient in their HL than male students presumably because females spent more time at home and were exposed to their HL more often than male speakers (Portes & Hao, 1998, p. 279).

Gender differences have been frequently reported in studies on phonetics, phonology, and intonation in monolingual as well as bilingual populations. As for the HSs, Sheikhbahaie (2020) investigated the acoustic features of vowels – first and second formants – produced by HSs of Farsi residing in the US. Generally, HSs were similar to first-generation immigrants (who had lived in the US for about 25 years), and first-generation immigrants were similar to monolingual speakers of Farsi. There were gender differences regarding one vowel, namely /æ/. Female HSs and first-generation immigrants were similar to female monolingual speakers of Farsi while male HSs and male first-generation immigrants produced /æ/ that was relatively higher than the one of male monolingual speakers of Farsi.

Ordin and Mennen (2017) investigated the differences in fundamental frequency (F0) range in the read speech of simultaneous Welsh-English bilinguals. The findings reveal an interesting effect of gender on the frequency range. Specifically, only female speakers, but not male speakers, showed differences in their F0 in Welsh and English by producing wider spans and higher F0 maxima in their Welsh compared to their English. Such results are explained with reference to cultural and personal identity. Specifically, men are often raised to be more independent and competitive while women are often raised to be cooperative and follow the rules of society. Thus, when women produced distinctive F0 patterns in both Welsh and English they accommodated to each of the languages as opposed to men who behaved more independently by not changing their F0 values in different languages (Ordin & Mennen, 2017).

Van Rijswijk et al. (2017) investigated different focus structures in the ML Dutch of HSs of Turkish residing in the Netherlands. It was found that HSs and monolinguals differed from each other the most with respect to the pitch range in broad focus. Specifically, Dutch monolinguals demonstrated declination whereas HSs did not; they had the same pitch level during the whole sentence which was consistent with the intonational system of Turkish (Van Rijswijk et al., 2017, p. 65). Furthermore, HSs of different genders were found to use different strategies to maintain pitch at the same level: female HSs produced a higher peak on the object compared to female

monolingual speakers while male HSs produced a lower peak on the subjects than male monolingual speakers. Gender was found to be important for some other F0 differences between speaker groups. Female bilinguals differed from female monolinguals by producing higher peaks on the subject and object in every tested condition while male bilinguals differed from male monolinguals by producing lower peaks on subjects and objects than monolingual male speakers.

Apart from the difference between gender and speaker groups, there was an effect of gender on its own. Male speakers of both groups produced a larger fall on the object compared to female speakers of both groups.

Additionally, male bilingual speakers were found to differ from other speaker groups by producing a similar fall on the object in broad and contrastive focus as opposed to other groups that produced a steeper fall on the contrastive focus compared to other focus conditions (Van Rijswijk et al., 2017, p. 64).

The results of the gender differences are explained with reference to two factors. The first factor has to do with culture and society. For instance, both male speaker groups produced steeper falls on the object than female speakers and such falls were reported to be associated with self-confidence and masculinity (Van Rijswijk et al., 2017, p. 65 citing Gussenhoven, 2005). The second factor that may explain the gender differences is related to the prestige and attitude towards the language. Male bilingual speakers did not mark the contrastive focus with a larger fall while all other speaker groups did. Male bilingual speakers possibly showed an influence from Turkish since in Turkish contrastive focus is not expressed by a large fall while female bilingual speakers did not show an influence from Turkish adopting Dutch intonation since Dutch is the prestigious language in the Netherlands. Such gender differences go hand in hand with previous findings about women often taking a leading role in language change and using the prestigious language variants (Van Rijswijk et al., 2017, p. 65 citing Labov, 2001; Simonet, 2011).

Some studies found an effect of gender in one of the populations of HSs, but not in another population. For instance, a study by Altenberg and Ferrand (2006) investigated the mean F0 and the F0 range of two bilingual populations: HSs of Russian and HSs of Cantonese residing in the US. Participants were tested in their heritage and majority language in connected speech (i.e., participants were asked to describe their summer vacation). All the participants including monolingual speakers of American English were female speakers. The results of the study revealed that HSs of Russian produced significantly higher mean F0 in their HL than in their ML while HSs of Cantonese did not demonstrate a significant difference between their mean F0 in the HL and ML. Besides, both speaker groups behaved similarly to monolingual speakers of English regarding their mean F0 (Altenberg & Ferrand, 2006, p. 92). The results of the mean F0 are

explained with reference to the differences in language proficiency and linguistic and cultural characteristics. Most of the HSs of Cantonese were born in the US while the majority of HSs of Russian came to the US during their childhood between 4 and 13 years of age. Thus, HSs of Cantonese were supposedly less proficient in their HL than HSs of Russian. However, this assumption turned out not to be entirely plausible since one HS of Cantonese who was born in Burma did not show the higher mean F0 in Cantonese, but in English. Thus, Altenberg and Ferrand (2006) conclude that it is linguistic and cultural differences between two HS groups that contribute to the differences in the mean F0 rather than proficiency in HL.

Gender and age were also found to interact. For example, monolingual speakers of Russian of different age groups and genders were found to show different linguistic behavior. Specifically, they were found to show differences in the frequency of null subjects depending on age and gender: younger speakers and male speakers produced null subjects less frequently than older speakers and female speakers (Nagy, 2015, p. 320).

Simonet (2008, 2011) investigated utterance-final pitch accents (PAs) in the narrations of Catalan-Spanish bilinguals in Majorca who were either more dominant in Spanish or in Catalan. Different age groups (younger and older speakers) and genders were included as factors that could influence the production of utterance-final PAs. It was found that Spanish-dominant female speakers produced more accents in their Spanish that are typical of Catalan than Spanish-dominant male speakers. As for the productions in Catalan by Spanish-dominant speakers, it was found that female speakers produced PAs in their Catalan that were similar to the PAs of Standard Catalan while male speakers transferred PAs from their dominant Spanish into their Catalan. As for the effect of age, it was found that younger Spanish-dominant speakers produced more accents in their Spanish typical for Catalan while older speakers generally produced accents typical for Spanish.

Overall, Simonet (2008) showed that the utterance-final PAs in Spanish were influenced by the age and gender of speakers. The speakers can be placed on the following scale, from more Spanish-like accents to more Catalan-like accents: "older Spanish-dominant males > younger Spanish-dominant males" and "older Spanish-dominant females > younger Spanish-dominant females > younger Catalan-dominant females and males" (Simonet, 2008, p. 157). Simonet (2008) argues for the contact-induced language change in the intonational system of Spanish in Majorca initiated by female speakers who showed more PAs in their Spanish that were typical of Catalan than male Spanish-dominant speakers. Simonet (2008, p. 157 citing Labov, 2001) further points out that women were reported to be linguistic innovators in Western societies.

To sum up, studies on HLs report that gender is an important factor that may influence the way HLs are used. The findings related to gender are diverse. For instance, it was found that female

HSs patterned with monolingual female speakers while male HSs did not pattern with male monolingual speakers (Sheikhbahaie, 2020). It was also found that bilingual female speakers differed from monolingual female speakers and bilingual male speakers differed from monolingual male speakers (Van Rijswijk et al., 2017).

Against this background, this thesis will include the sociolinguistic factors of age and gender in the analyses of HSs' narrations. These factors will indicate whether transfer and/or general contact-related dynamics are dominant in certain phases (e.g., in adolescence, which is a particularly dynamic phase, or in adulthood when a HL may gradually be used less) or are related to a specific gender (e.g., to female speakers who are reported to be the innovators of linguistic change). Further, the inclusion of monolingual speakers of different age groups and genders will shed light on the possible ongoing changes in the language that are expected to be led by adolescent and female speakers.

2.4 Heritage speakers and different language situations

This subchapter focuses on the linguistic behavior of HSs in different communicative situations since previous research has shown that the performance of HSs may be influenced by a particular language situation, i.e., formality and mode.

As it was mentioned earlier HSs are typically exposed to the informal HL spoken at home, and they usually do not receive formal education in their HL (Polinsky, 2018, p. 324). Apart from the formality dimension (formal vs. informal), there is another dimension of a language, namely mode (spoken vs. written). HSs are typically literate in their ML, but this is usually not the case for their HL (especially if the HL and ML have different orthography). If HSs are literate in their HL, they are likely to be better in reading than in writing (Polinsky, 2014, p. 7).

Studies on HSs usually do not deal with different formalities and modes at the same time (i.e., formal spoken, informal spoken, formal written, and informal written), typically concentrating on one of these dimensions (e.g., Wolski-Moskoff, 2018 on the knowledge of formal situations by HSs of Polish in the US; Schleppegrell & Colombi, 1997 on formal written productions of two HSs of Spanish in the US).

HSs were found not to possess the same knowledge of different communicative situations as monolingual speakers. For example, a pilot study by Wolski-Moskoff (2018) examined the receptive knowledge of forms of address used in formal situations (e.g., in a talk with a policeman, an adult stranger, or a doctor) by nine HSs of Polish in the US, four Second language (L2) learners of Polish, and six monolingual speakers of Polish. Polish uses different forms of address depending on formality, social status, age, and familiarity (Wolski-Moskoff, 2018, p. 120).

Participants were presented with a picture of a particular formal situation accompanied by four sentences containing different forms of address. Only one sentence was grammatically and pragmatically appropriate according to the standard rules of Polish. Participants had to evaluate each sentence for their contextual appropriateness (Wolski-Moskoff, 2018, pp. 127-129). HSs in the study were found to differ significantly from both monolingual speakers of Polish and L2 Polish learners and showed limited knowledge of formal forms of address both in terms of grammar and the contexts that require such forms. Since the formal forms of address typically occur in formal situations in standard Polish the performance of HSs is discussed with reference to their lack of formal instruction in Polish (e.g., formal education or formal linguistic situations in Polish outside their family) (Wolski-Moskoff, 2018, pp. 139-140).

HSs were also found not to distinguish between different communicative situations in the same way monolingual speakers do. Schroeder et al. (in press) investigated the post-verbal position of elements in semi-spontaneous spoken and written narrations of adolescent and adult HSs of Turkish residing in the US and Germany. The narrations were elicited in two formalities: formal and informal. The study looked at the frequency of word orders with post-verbal elements as well as their type, appearance in different communicative situations, and their information status. Standard Turkish is an SOV language that allows the elements to appear post-verbally under certain conditions (e.g., in informal situations). Among the elements that can appear in the post-verbal position are modal adverbs and manner adverbs, discourse markers, forms of address and connectives, etc (see Schroeder et al., in press for detailed description). Standard German is an SOV language with V2 features whereas Standard English is a strict SVO language with little reordering options.

Regarding the frequency of distribution of post-verbal elements in different communicative situations, all speaker groups (except for monolingual adolescents) showed a similar pattern: post-verbal elements were used most frequently in the informal spoken situation followed by the formal spoken, informal written, and formal written situations. Schroeder et al. (in press) conclude that the postverbal position of elements is a characteristic of the spoken mode for both HSs and monolingual speakers. Although the general pattern of the distribution of postverbal elements was similar across all speaker groups and communicative situations, the distribution of these elements within every particular situation was different for different speaker groups. Specifically, it was found that HSs (especially HSs in the US) tended to level out the register differences, i.e., the difference in frequency of post-verbal elements in different communicative situations is less pronounced compared to monolingual speakers.

As for the information status of post-verbal referents, the results of the study showed the following trends. According to the literature on standard Turkish, discourse-*new* referents are not predicted to appear post-verbally. Schroeder et al. (in press) annotated the 20 most frequently used nominal referents as either *new, given,* or *bridging*. It was found that monolingual speakers of Turkish used discourse-*new* post-verbal referents only in informal situations (adult speakers used them only in informal spoken situations while adolescent speakers used them in informal spoken and written situations). HSs of both groups, contrary to monolingual speakers, produced *new* referents in the post-verbal position across all communicative situations. Thus, the general result of the study is the leveling of register differences in heritage Turkish.

Another study by Alexiadou et al. (2022) reported similar results for the use of the plural indefinite article *kati (some)* by adult and adolescent HSs of Greek in the US and Germany. *Kati* is a determiner that is typically used in informal situations in Standard Modern Greek. It was found that HSs of both groups used *kati* across all communicative situations while monolingual speakers of Greek used it only in informal situations (Alexiadou et al., 2022).

Further evidence for the register-leveling processes in HSs' productions comes from a study by Wiese et al. (2022). It was found that HSs of German in the US showed a similar distribution of noncanonical bare NPs in both formal and informal situations in contrast to monolingual speakers of German and bilingual speakers of majority German who mainly produced such bare NPs in informal situations. Furthermore, it was found that HSs of German in the US produced V3 structures in both formal and informal situations while such structures mainly appeared in informal situations in the narrations of monolingual German speakers.

In the area of intonation, Comstock (2018) investigated intonational patterns of one HS of Russian in the US and two monolingual Russian-speaking journalists (the study will be described in detail in chapter 5.6). Two types of political interviews were examined: antagonistic (more formal) and affiliative (more informal). It was found that, unlike monolingual speakers, the prosodic patterns of the HS almost did not differ in two different kinds of interviews (Comstock, 2018: 267).

While HSs were found to show register leveling in many cases, they also were found to show knowledge of formality or mode similarly to monolingual speakers of their HL in other cases. For instance, Schleppegrell and Colombi (1997) investigated the use of different clause types (paratactic, hypotactic, and embedded) in formal written productions (university essays) by two HSs of Spanish residing in the US. The HSs received formal education in English, but not in Spanish, i.e., they were not taught writing in Spanish for academic purposes (Schleppegrell & Colombi, 1997, p. 482). The results showed inter-individual variation for two HSs regarding their

clause-combining strategies (e.g., one HS used hypotactic clauses more frequently than another HS) (Schleppegrell & Colombi, 1997, p. 490). Interestingly, the two HSs used the same strategies of clause-combining in both their majority English and heritage Spanish. Schleppegrell and Colombi (1997, p. 493) assume that HSs developed knowledge of academic writing in their HL based on their knowledge of formal writing in their ML.

A study by Pashkova et al. (2022) showed that HSs had an underlying knowledge of different communicative situations in their HL. The study looked at the distribution of three clause types (independent main clause, coordinate main clause, and subordinate clause) in the narrations of adolescent HSs of German in the US (in their heritage German and majority English) as well as in the narrations of age-matched monolingual speakers of English and German. Pashkova et al. (2022) looked at the distribution of different clauses in four communicative situations: formal spoken, formal written, informal spoken, and informal written. It was found (among other things) that HSs' productions were similar to those of monolingual German speakers across different communicative situations. For example, both HSs and monolingual speakers of German used more independent main clauses in the written than in the spoken mode. Also, both speaker groups produced more coordinate main clauses in the informal than in the formal situation, and both HSs and monolinguals had more coordinate main clauses in the spoken situation compared to the written one. The authors suggest that HSs have an underlying awareness of language use in different communicative situations in their HL although their HL may be used in a smaller range of situations.

Martynova et al. (2024) provide findings similar to Pashkova et al. (2022) by looking at the clause type preference (main vs. embedded) by HSs of Russian in the US and Germany. The study reports increased use of embedded clauses in formal situations by HSs of both groups as well as monolingual speakers of Russian.

Finally, Zerbian et al. (2024) report mixed results with respect to register differentiation across HSs of Russian in the US and monolinguals (the study will be described in detail in chapter 5.6). On the one hand, HSs were sensitive to the differences between formal and informal registers similar to monolingual speakers by producing more pitch accents on verbs in informal situations and more high final boundary tones in formal situations. On the other hand, HSs did not show any effect of formality on the size of intonation phrases, contrary to monolingual speakers whose IPs were shorter in formal situations. However, Zerbian et al. (2024) state that IP length might not be a feature that differs according to register but rather relates to processing costs.

Overall, findings about HSs' knowledge of different communicative situations are somewhat conflicting. On the one hand, HSs were found not to possess the knowledge of formal speech

(Wolski-Moskoff, 2018), and they were also found to use one pattern across multiple communicative situations as opposed to monolingual speakers whose patterns would differ depending on a particular situation (e.g., processes of register-leveling in HSs) (Schroeder et al., in press; Alexiadou et al., 2022; Wiese et al., 2022; Comstock, 2018). On the other hand, HSs were also found to generally pattern with monolingual speakers of their HL regarding their knowledge of different communicative situations (e.g., Pashkova et al., 2022; Schleppegrell & Colombi, 1997; Martynova et al., 2024; Zerbian et al., 2024).

In order to see whether and how different communicative situations influence the linguistic behavior of HSs and monolingual speakers, this thesis will address the role of different formalities (formal vs. informal) and modes (spoken vs. written) in detail.

2.5 Heritage speakers of Russian in the US: History

This chapter provides a short historical background on heritage Russian in the US since this speaker group is of direct relevance to this thesis.

The number of Russian speakers in the US has been constantly increasing from 173,226 speakers in 1980 to 241,798 speakers in 1990, 706,242 speakers in 2000, and 854,955 speakers in 2010 (U.S. Census Bureau, 2011).

Russian immigration to the US during the 20th century is typically described in terms of different waves with the first one starting in 1917 after the Russian revolution and the collapse of the Russian Empire. The second wave of immigration is attributed to the end of the World War II. The third wave of immigration occurred during the Soviet time, in the early 1970s, and the majority of immigrants were Jews. The fourth wave of immigration took place after the collapse of the Soviet Union (Laleko, 2013; Kagan, 2010). The last two waves of immigration are of particular importance for the understanding of the linguistic landscape of Russian spoken in the US. Immigrants of the post-Soviet times were those of different ethnic groups, and they often came to the US for better education or career opportunities.

It is worth pointing out that the term "Russian immigration" to the US during the Soviet time is inaccurate since not all people who immigrated from the Soviet Union to the US were ethnically Russians. Further, they could have spoken languages other that Russian as well (e.g., Ukrainian, Kazakh, etc). When they arrived in the US they automatically became "Russians" regardless of their ethnic background but based on the fact that they spoke Russian, were taught in Russian in schools, and went through the Soviet educational system (Kasatkina, 2011, p. 37; Dubinina & Polinsky, 2013, p. 131; Ivanova-Sullivan, 2019, p. 221). Thus, the term "Russian immigrants" is

mainly based on the language the immigrants spoke, i.e., Russian, and not on the ethnic identity of the immigrants.

Russian immigrants to the US were driven by various reasons at different points in time. Among those reasons, the following can be named: discrimination and persecution of particular groups of people during Soviet times, discrimination of some ethnic groups after the collapse of the Soviet Union (e.g., ethnic Armenians in Russia or ethnic Russians in the former Soviet republics), deteriorating economic conditions and better career opportunities in the US (Kasatkina, 2011, pp. 37-38).

Russian immigrants from the former Soviet Union and post-Soviet immigrants substantially differ from each other. Russian immigration during Soviet times was primarily caused by state persecution, religious and political (Kasatkina, 2011, p. 38). Russian immigrants to the US in recent years typically are not fleeing because of persecution, but rather searching for better job opportunities or to study. Russian immigrants of the current years do not necessarily settle in the US for the rest of their lives but can return to Russia or live between two countries (Dubinina & Polinsky, 2013, p. 132). Moreover, recent immigrants have a better chance of maintaining the Russian language and following the current developments in Russia through the Internet. Such options were not available for those who left the Soviet Union. As a result, the Russian language still plays an important role for the post-Soviet immigrants while the immigrants from the former Soviet Union did not expect to go back and thus the Russian language had more of a nostalgic rather than practical value (Dubinina & Polinsky, 2013, p. 132).

Russian-speaking immigrants can be found in nearly all major cities of the US with dense settlements in New York, Los Angeles, Chicago, New Jersey, Boston, Washington DC, Miami, Philadelphia, Houston, Detroit, San Francisco, and Minneapolis (Dubinina & Polinsky, 2013, p. 133; Laleko, 2013, p. 382). New York has the greatest number of Russian-speaking immigrants (nearly one-third of all Russian-speaking immigrants in the US) with its famous district Brighton Beach. Brighton Beach – sometimes called “Little Odessa” – would be striking to a person who does not speak Russian since the communication on Brighton Beach mainly takes place in Russian, and English is joked to be a minority language. Also, Brighton Beach is a place where one can find Russian shops, kindergartens, cultural and educational centers, and newspapers. Apart from Brighton Beach, there are no other large Russian-speaking communities and Russian speakers are scattered all over different American cities (Dubinina & Polinsky, 2013, p. 133; Laleko, 2013, p. 382).

2.6 Research questions: Summary

This thesis investigates general intonational patterns, word order choice, and expression of information status by HSs in the US and monolingual speakers of Russian. The overall research questions with respect to general prosodic patterns are the following:

- What are general intonational patterns of HSs of Russian in the US and monolingual speakers of Russian regarding the production of different pitch accent types, final boundary tones, and the number of pitch accents?
- Do the factors of age, gender, or formality influence the production of different pitch accents, boundary tones, and the number of pitch accents?

The overall research questions with respect to the choice of word order and the expression of information status are the following:

- Do HSs of Russian in the US and monolingual speakers of Russian have a similar word order repertoire, i.e., do both speaker groups produce all six word orders that are grammatical in monolingual Russian (i.e., SVO, OVS, SOV, OSV, VOS and VSO)?
- Are there differences in preferences of particular word orders in the narrations by HSs and monolinguals?
- Is the production of different word orders influenced by additional factors such as clause type, formality, mode, or age?
- How are different frequent word order combinations (i.e., SVO, OVS, and SOV) organized regarding the information status of subject and object constituents (i.e., *given-new*, *new-new*, *given-given*) in the narrations of HSs and monolinguals?
- Are there unexpected sequences of referents (i.e., *new-given*) in the narrations of HSs and monolinguals? If such instances occur, what is their frequency, and in which communicative situations are they typically found?
- If both HSs and monolingual speakers produce *new* referents before *given* ones, what is the intonational pattern of *new* referents?

All the research questions and the exact hypotheses are spelled out in detail in the following chapters 5.7, 6.4, 7.5, 7.9. All the research questions will be addressed by analyzing semi-spontaneous spoken and written narrations produced by HSs of Russian residing in the US and by monolingual speakers residing in Saint Petersburg. A detailed description of the method, general data analysis, and participants of this thesis will be presented in the following chapter 3.

3 Methodology

The current dissertation was developed within the RUEG project (Research Unit "Emerging Grammars in Language Contact Situations"[3] which investigates the linguistic resources and repertoires of HSs both in their heritage and majority languages. RUEG looks at HSs of different languages (Russian, Turkish, Greek, and German HSs residing in the US and HSs of Russian, Turkish, and Greek residing in Germany) and monolingual speakers of the MLs and HLs. Additionally, the data are investigated with respect to different formalities (formal vs. informal) and modes (spoken vs. written) as well as different age groups (adolescents and adults). RUEG is formed by various projects that focus on different language pairs and language areas but use a common methodology and core research questions about the status of noncanonical phenomena in HSs' two languages from the perspective of emerging grammars (the first phase, 2018-2021, RUEG 1) and the linguistic dynamics in HSs' repertoires (the second phase, 2021-2024, RUEG 2).

I was part of the P7 project (RUEG 1) that investigated how non-standard intonation relates to word order and information structure in the population of HSs of Russian in the US. The project looked at heritage Russian and monolingual Russian as well as the majority English by HSs of Russian and monolingual speakers of English. In the second phase of the project (RUEG 2), I was part of the P8 project that investigated the dynamics in the linguistic expression of information structure in the repertoires of HSs.

3.1 Data elicitation

The data for this thesis were elicited within the project RUEG using the methodology that is called "Language Situations" (Wiese, 2020). The stimuli and the data collection procedure were unified for every RUEG project to assure comparability.

The experimental set-up targeted elicitation of different formalities (formal and informal) and modes (spoken and written). Two elicitors took part in the elicitation (I together with the student assistant in P7). One elicitor elicited formal productions ("bad cop", I) and another elicitor elicited informal productions ("good cop", the student assistant in P7). The "bad cop" dealt with organizational issues (consent forms, receipts, information about the study), addressed participants formally (used formal language, e.g., the formal form of you in Russian "Vy"), and wore formal clothes (trousers and a jacket). The "good cop" behaved informally, used colloquial language, and wore informal clothes (e.g., a T-shirt, jeans, and sneakers).

[3] https://www.linguistik.hu-berlin.de/en/institut-en/professuren-en/rueg

The order of formality was balanced as well as the order of spoken and written elicitations within formal and informal parts. Participants were tested in two languages (Russian and English) during two separate sessions with a 3 to 5-day break between them. Only one language was spoken during one session. I elicited the speakers' narrations in Russian together with the student assistant in P7 while another RUEG project was responsible for the elicitations in English. The duration of one session was about 45 minutes or one hour. The order of the language that was tested first was balanced. At the end of the second session, participants filled out a background questionnaire in their ML.

Elicitation took place in two separate rooms. One room looked as formal as possible (blackboard or a typical office working place) while another room looked as informal as possible (e.g., some pictures on the walls, some tablecloth with snacks and beverages) to create a comfortable atmosphere for participants.

The "bad cop" always started the elicitation by greeting a participant, shortly explaining the purpose of the study, and going through the information sheet about the study and the consent form. After that depending on the elicitation order the "bad cop" either continued the elicitation or the participant was accompanied by the "bad cop" to the room where the "good cop" was waiting. There was a break between the formal and informal elicitations. If the elicitation started with the formal productions, the "good cop" started with the informal productions with a 15-minute informal chit-chat (informal topics such as favorite food, free time, weather, etc). If the elicitation started with the informal part, the "bad cop" started the formal part with a 5-minute official break (formal topics, e.g., how participants found the experiment, how they got to the place of elicitation, etc). Every participant had an informal chit-chat independently of the elicitation order either at the beginning of the experiment or in the middle, after the formal part. The formal break was only present in the middle of the elicitation, but not if the elicitation started with the formal setting. At the end of the second session, participants were compensated for their time.

Participants had been asked to imagine themselves witnessing an incident on the video they were about to watch. After that, participants watched a short video of a car accident that was played twice. Then participants were asked to describe what they saw in four different situations:

- Formal spoken (participants were asked to give their account of what they saw by leaving a spoken message on the police voicemail. Participants were given a mobile phone and were asked to call the police. Participants were recorded with a Dictaphone)
- Formal written (participants were asked to provide their witness report in a written form and send it to the police. Participants typed their testimonies on a laptop)

- Informal spoken (participants were asked to record a voice message to a friend using WhatsApp and tell the friend what they just witnessed)
- Informal written (participants were asked to write a WhatsApp message to a friend about the accident)

The data were elicited using a laptop with a 15-inch screen and the Windows operating system. Russian Cyrillic stickers were used to enable HSs to write in Cyrillic if they could. NotePad was used to elicit formal written productions to avoid auto-correction, and the data were saved in a UTF-8 format. WhatsApp was used to elicit informal written productions (the auto-correction, swiping, and word suggestion were switched off). A Dictaphone was used to record spoken data.

HSs investigated in this thesis were recruited and tested in the Washington metropolitan area (Virginia, Washington, D.C., Maryland) in October 2018 and New York City in March 2019 by myself and a student assistant YI from the project P7. The data elicitation of monolingual speakers of Russian was performed by the RUEG P3 project.

All the research questions addressed in this thesis will be answered using the semi-spontaneous spoken and written narrations of HSs and monolingual speakers of Russian elicited with the "Language Situations" method described earlier.

3.2 Recruitment: Strategies and challenges

The participants' recruitment and testing for the current project was not a trivial task since the project did not have any official pre-established contacts with US institutions. Thus, the recruitment was a combination of two techniques. The first one included the search of participants online from Germany before the beginning of the experiment. The second one was the fieldwork in the US. One should bear in mind that two groups of participants of different age groups had to be recruited, and the same searching techniques did not work for these two groups because adults did not form a "language group" anymore in the sense that they did not belong to any language-specific community (i.e., a language Sunday school). That is why the recruitment strategies differed regarding the two aforementioned groups.

The Russian-speaking community in Washington, D.C. is gathered around Russian-speaking institutions such as language Sunday schools or the Russian Orthodox church. Further, HSs of Russian are typically teenagers or children. Thus, most of the adolescent participants were recruited in the Washington metropolitan area.

As for the adolescent group, we were fortunate to get support from the Metaphor Academic Center for Russian Language & Culture in Virginia which was our main partner in the Washington, D.C. area. The Metaphor provided the place for the experiment, helped distribute

information about the study, and found most of the participants in the adolescent group. The rest of the participants were found with the great help of a Russian teacher in one of the High Schools in Maryland.

Other institutions have also been contacted in order to find participants: day care centers, dance schools or sports clubs for Russian-speaking communities, the Russian embassy and embassies of the former Soviet Republics, Russian weekend schools, social networks (Facebook, Vkontakte), The Russian Cultural Centre in Washington, D.C., and friends of participants. It has to be noted that social networks on the Internet did not bring any success in searching for the younger participants since the speakers were underaged and their parents did not want their children to participate in any study. The best way to find participants was to talk to the potential audience personally.

As for the recruitment of adult HSs, New York City was chosen, not only because it has the largest Russian-speaking population in the US (Dubinina & Polinsky, 2013; Laleko, 2013), but also because the Russian-speaking community in NYC is older compared to that of Washington, D.C. Adult HSs were recruited through language meetups, cultural events that targeted Russian-speaking audience (e.g., Maslenica which is a religious and folk holiday celebrated during the last week before Great Lent). An advertisement about the study was placed in a newspaper for the Russian-speaking community of the Washington metropolitan area and NYC. Furthermore, a Google campaign was launched that targeted the Russian-speaking community of NYC. Moreover, I gave an interview to one of the Russian-speaking radios (RUSA radio) broadcasting in the Greater New York area.

A particular challenge for conducting an experiment like this one is the necessity of having lots of tasks that have to be addressed simultaneously in an unknown country during a limited period of time, i.e., participants' recruitment, recording, constant cooperation with another RUEG project responsible for the English part of the experiment. Some particularly difficult parts of our experiment were duration, impossibility of conducting it online and the requirement to participate in two sessions on two different days with at least being 3-5 intervening days. The last requirement was difficult for both the elicitors and participants. Adult participants were very busy and did not have time to come twice, and teenagers heavily depended on their parents who had to bring them to the place of testing twice.

The target number of participants was 32 in each group. However, some participants had to be replaced due to unforeseen circumstances (e.g., some participants did not appear for the second session or got sick). Fortunately, these instances were rare. Overall, five teenagers and one adult had to be substituted by different participants.

3.3 Data analysis

In this section, the data analysis will be described. The data analysis includes the transcription and annotation as well as the data extraction and statistical modeling. Note that this chapter does not describe the specific annotations relevant for this thesis in detail. All the annotations used to answer the research questions of this thesis will be presented in detail in Chapters 6.5, 7.6, and 5.8.

3.3.1 Transcription and annotation

After the data had been collected they were transcribed and annotated based on the common and language-specific guidelines. The transcribed and annotated data were anonymized and integrated into the multimodal and multi-layer RUEG corpus, different versions of which were already released (Wiese et al., 2021).[4]

It is important to distinguish the annotation layers that were already available for further analysis and the layers that were added by the P7 project (I together with the student assistant of P7).

The following layers were automatically added by the Pd[5] project:

- Diplomatic: word-level segmentation
- Normalization: additional word-level layer that contains standardized forms regarding the orthography of reference. This layer was needed to facilitate the corpus search. Russian data normalization was based on the Small Academic Dictionary of Standard Contemporary Russian (Evgen′eva, 1957-1984)
- Lemmatization: a standardized form which may occur in different realizations
- Part of speech (POS) tagging
- Universal Features: lexical and inflectional

Lemmata, POS-tagging, and universal features were created using the Universal Dependencies (Nivre et al., 2016) for all the languages in the project. For Russian, an additional language-specific tagger MySteam was applied for POS and lemmatization layers (Segalovich, 2003). The aforementioned layers had to be further manually corrected. The manual correction was performed by the P3[6] project. Also, the P3 project transcribed the spoken data in Russian (both by HSs and monolingual speakers) and segmented the data into communication units (CUs) (for a detailed description of a CU see Hughes et al., 1997).

[4] The RUEG corpus can be freely accessed here: https://zenodo.org/record/5808870
[5] The Pd project is responsible for the RUEG corpus architecture.
[6] The P3 project (RUEG-1) investigated nominal morphosyntax and word order in heritage Russian across MLs.

The P7 project contributed to the overall RUEG project by providing prosodic annotations and annotations of information status for HSs of Russian in the US in their HL and ML, monolingual speakers of Russian, and monolingual speakers of American English. The software Praat was used for the annotations of spoken data (prosodic annotations and the annotations of information status) (Boersma, 2014). For the written data, the Partitur-Editor of EXMARaLDA was used (Schmidt, 2009; Schmidt & Wörner, 2014). I additionally annotated the selected parts of the speakers' narrations for word order and clause type using the same programs, respectively. I only dealt with the narrations of participants in Russian. The GitHub desktop client was used to upload and download the annotations. GitLab was used for project-related documentation.

All the annotations that are relevant to this thesis will be described in detail in Chapters 6.5 (syntactic annotation), 7.6 (annotation of information status), and 5.8 (prosodic annotation).

3.3.2 From raw data to statistics

In this chapter, the necessary data preparation process is described. After the relevant dataset was annotated, the data had to be transformed from raw data to a form that could be used in further analyses (descriptive statistics and statistical tests).[7] The written data were annotated in EXMARaLDA. This was the project's decision to allow the incorporation of data in a corpus easily. The annotation of the spoken data was performed in the well-known free computer software Praat which is an excellent tool for the annotation of intonation. Each production resulted in a separate file. Overall, there were 320 productions (80 speakers with productions each).

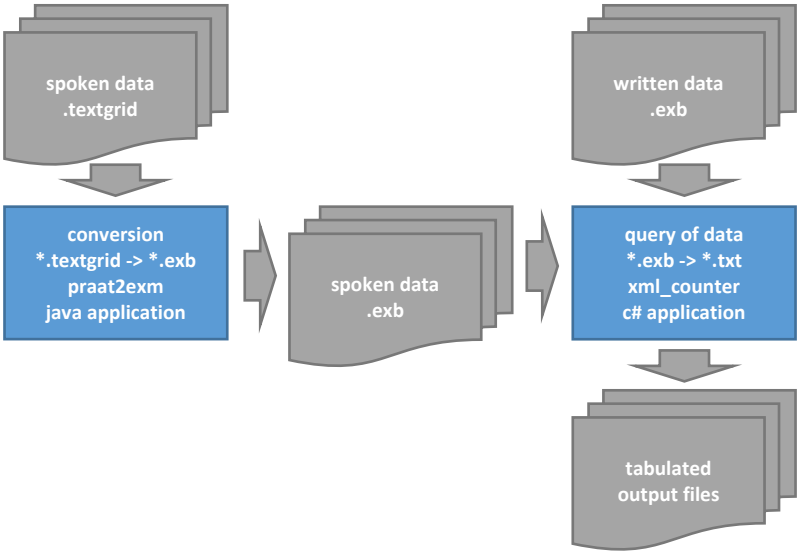
In particular it means that the two raw data formats, EXMARaLDA basic transcriptions. (.exb files) and PRAAT transcriptions (.textgrid files) had to be converted into a tabulated text file that could be directly imported to spreadsheet software or R.

The conversion was done in two steps. The first common denominator was EXMARaLDA. Afterward, all the files were converted together to tabulated format aggregates.

To see an overview of the process, see Figure 1 below.

[7] It was planned that this step would not be necessary since the data were expected to be available in the RUEG corpus. However, due to some challenges related to corpus work (e.g., the multi-lingual and multi-level nature of the corpus), the integration of the data into the corpus was not performed at the time I was writing this thesis (for details on corpus work and its challenges see Shadrova et al., in press). Thus, some further steps were necessary to extract the data for further analyses.

Figure 1 Overview of data preparation



Conversion of PRAAT .textgrid to EXMARaLDA .exb.

To reach a common file format the PRAAT .textgrid files were first converted to EXMARaLDA .exb files. The graphical interface of EXMARaLDA by itself does not support batch conversion, i.e., converting multiple files at a time; however, the source code of the java program available on GitHub allows the direct usage of the converting program (PRAAT2EXM.java). This algorithm was used for all the spoken data first.

Query of the Data

The second step was the extraction of the data from the .exb files. The .exb files are actually .xml files with a simple structure of annotation layers and annotation times. These files were read in a C# .NET application xml_counter.exe that was created solely for this purpose.

The program does the following:

- Read the data
- Analyze the data
- Print the data to tabulated text files (tables)

Reading in the data

Reading the data was straightforward since the file structure of .exb files already gives meaning to the data inside. (It is a property of .xml files to be human and machine-readable). The data were structured in the program into classes that corresponded to this study: experiment, productions, and tiers.

Search in the data

To be able to query the data the following solution was implemented. The queries were hard-coded in the software. A user interface is not available to tune or modify the queries.

A query contains:

- Tier name to specify a range that one is searching in (e.g., all "main clauses")
- Tier name with the information one wants to extract (e.g., "referent type")
- Optional condition on another tier (e.g., only for "objects" on the "word order" tier)
- Optional restriction of range
- Optional type of match: exact or partial match required for the search text
- The following queries were created:
    - Collect all clauses and their properties (word order, referents, pitch accents)
    - Collect all referents and their properties (pitch accent and position)
    - Collect all pitch accents and their properties (boundary tone on the same word)
    - Collect all intonation phrases and their properties (pitch accent type, boundary tone)

Furthermore, properties always contained the speaker, the timestamps (start and end), the formality, the mode, and some further columns that are not the focus here.

Save the outputs

The outputs of the queries were saved in tab-delimited text files (tables). This was optimal for further processing in a spreadsheet or R software for descriptive statistics, statistical tests and for statistical modeling.

Remarks, data clean up

To ensure that all the annotated data could be read by the program, the inaccuracies in the annotations had to be corrected manually. Such corrections were time-consuming, but they were inevitable for the next steps. It is worth mentioning that since two annotators (I together with the student assistant of the project) worked on the annotation of intonation and partially on referent types, the chance of having inaccuracies in the annotations increased.

3.3.3 General remarks on the statistical analyses of this thesis

After the annotations were extracted from the PRAAT textgrids and EXMARaLDA files they were ready for the statistical analyses. Generalized linear mixed-effects modeling was used to answer most of the research questions of this thesis. Such modeling allows one to investigate multiple fixed effects and their interactions at the same time. Also, a generalized linear mixed-effect model is especially attractive when the data are not independent (i.e., when each participant

produces more than one data point) since the model can deal with clusters of not independent data by including the preferences of every individual speaker in the analysis (Winter, 2020, chapter 14.4). Moreover, the main strength and motivation behind statistical modeling in comparison to descriptive statistics is the ability to use the complete dataset without averaging data points (to reach independence) and losing details.

One important decision one needs to make is how to build up an appropriate model. Winter (2020, chapter 16) outlines two main approaches for modeling: stepwise regression and theory-driven modeling. Stepwise regression is an automatic technique to choose one model out of many possible models. Stepwise regression can be one of three different types: "forward selection" (one starts with an empty model and adds predictors keeping only those that are significant), "backward selection" (one starts with a full model and removes predictors that are not significant) or their combination (Winter, 2020, p. 277). Winter (2020, p. 277) further points out that a stepwise regression presents itself as an objective way of modeling, but it has some problems. For instance, it is quite frequent that a researcher presents the final model selected via stepwise regression as a result of confirmatory analysis as if the result were predicted in advance. However, the best model is not confirmatory, but exploratory since it was found by many trials. Such an approach can often result in Type I errors. Besides, stepwise regression "has a tendency to overfit and you have absolutely no guarantee that the final model generalizes well to novel data" (Winter, 2020, p. 277).

Winter (2020) suggests a theory-driven modeling instead of stepwise regression. The theory-driven approach relies on the theoretical assumptions about each predictor and their interactions which are added into a model. The assumptions and hypotheses should be formulated early before even collecting the data for further analysis.

Furthermore, Winter (2020, p. 275) points out that one needs to be aware of the type of modeling one is doing, i.e., either confirmatory or exploratory. Confirmatory modeling relies on the exact hypotheses formulated before starting the modeling while exploratory modeling does not require such hypotheses and its main goal is to generate hypotheses, i.e., find new relations in the data. Furthermore, if one performs exploratory modeling, its results cannot be reported in a confirmatory fashion and have to be confirmed using a different data set (Roettger et al., 2019).

The approach to modeling used in this thesis is confirmatory, i.e., each model is hypothesis-driven and was built taking previous findings on the topic into account. Thus, all the models that are created to answer the specific research questions include the full random effect structure (i.e., all theoretically relevant independent variables and their interactions), and they were not

simplified in a backward-fitting procedure.[8] All the generalized linear mixed-effects models in this thesis are binomial, i.e., they model binary outcomes (e.g., SVO order and all non-SVO orders; rising pitch accents and all not-rising pitch accents). Binomial models were chosen since the dependent variables in this thesis are categories, they form so-called nominal data, i.e., they do not have an inherent order or ranking. Multinomial modeling would be possible if the dependent variables were ordinal or interval data, i.e., they could be ranked (which is not the case in this thesis).

All the models that will be presented in this thesis are based on a reliable number of data points reported by Gries (2021). According to Gries (2021), this reliable number of data points for a binomial model is counted as a minimal sample size *m* divided by 15. The next step is to compare this number to the number of predictors (*p*) without the intercept. If *p* is less than *m/15* "a fitted regression model is likely to be reliable" (Gries, 2021, p. 371).

Although the binomial generalized linear mixed-effects models are powerful in data analysis, not all the data of this thesis could be modeled (e.g., due to the low number of occurrences of an investigated phenomenon or due to the nature of some research questions that could not be answered with modeling, but by inspecting the raw data). For the data that could not be modeled, other appropriate statistical analyses were performed (e.g., statistical tests).

For all the statistical analyses an alpha level of 0.05 was used.

The data for this thesis (i.e., .csv and Excel files) as well as .R scripts are available at the OSF repository (https://osf.io/c5k3q/).

[8] One model was, however, built in a backward-fitting procedure since this model was not based on specific predictions and it was not used to directly answer any research questions. It is a model of speech rate (see Section 4.2.2 for a detailed description of the model).

4 Participants

This chapter is set to describe the metalinguistic data of participants that were obtained from the online questionnaires. Next to the data extracted from participants' questionnaires, I will present the measurement that was used in this thesis to assess the speakers' fluency in Russian. I measured the participants' speech rate (words/minute) since it was reported to be predictive of HSs' performance (Polinsky, 2008a; Kagan & Friedman, 2003; Nagy & Brook, 2020). Finally, this chapter will present HSs' performance regarding different linguistic phenomena (e.g., nominal inflectional morphology, verbal system, or phenomena outside the clause). All the information about HSs aims to provide the reader with an idea about the HSs' overall use of and performance in Russian.

4.1 Metalinguistic background of the speakers

This chapter will concentrate on the participants of this thesis, covering various metalinguistic information such as participants' place of birth, education, Russian language skills (self-assessment), and media use in Russian. Some meta-information is exclusively relevant for HSs and not for monolinguals (e.g., age of arrival, language acquisition, use of the Cyrillic alphabet, hobbies and activities in Russian, language use with parents).

The data for the current study consist of 40 HSs of Russian in the US and 40 monolingual speakers of Russian.[9]

Table 1 Data set for the study: participants

Speaker Group	Age Group	Speaker N	Mean age, SD	N of females
HSs of Russian, ML American English	Adolescents	20	16.78 SD=1.28	10
	Adults	20	27.48 SD=2.76	15
Monolingual speakers of Russian	Adolescents	20	17.00 SD=0.6	13
	Adults	20	27.59 SD=2.55	15

The data of both monolingual and HSs come from two sociolinguistically different age groups: adolescents and adults. Adolescent speakers are particularly interesting since they have been identified as a central group for language change (Kerswill, 1996; Tagliamonte, 2016; Eckert, 2000). Adult speakers will provide data from a more stable age, and they might produce more

[9] This is a subcorpus of the following RUEG corpora of monolingual and heritage Russian: overall corpus (https://korpling.org/annis3/#_c=UlVFRy1SVV8wLjQuMA) and prosodic corpus (https://korpling.org/annis3/#_c=UlVFRy1SVS1TUE9LRU5fUFJFVklFVw) (Wiese et al., 2021). These two corpora were not used in this thesis due to the late integration of relevant annotations.

unexpected patterns in their HL due to the dominance shift toward their ML. Participants did not have any reported speech or hearing disorders.

Almost all monolingual speakers were born in Russia except for one adult speaker who was born in Kyrgyzstan (Batken Region). That speaker reported to speak Russian as the only native language. As for the regions of birth, almost all adolescent speakers were born in Saint Petersburg (N = 17), two speakers come from the Northwestern region and one participant comes from the Siberian region. As for the adults, seven participants come from Saint Petersburg. Other adult participants come from different Russian regions: Northwestern (N = 4), Central (N = 1), Volga (N = 1), Southern (N = 2), North Caucasian (N = 2), Far Eastern (N = 2). Monolingual speakers had Russian as the only target language spoken at home.

Previous studies have shown that the performance of HSs in their HL depends on proficiency, input, and use as well as specific biographical variables (e.g., age of acquisition, place of birth, etc) (for an overview see Polinsky, 2018; Montrul, 2015). In what follows, the biographical data as well as the information about the HSs' input and use of their HL (and sometimes ML for comparative reasons) will be given. This information will help to shed light on the linguistic behavior of HSs in this thesis.

As for the HSs, most adolescent HSs were born in different regions of the US: Washington, D.C. (N = 6), Maryland (N = 5), Virginia (N = 3), NYC (N = 4), and California (N = 1). One adolescent HS was born in Moscow. Most of the adult HSs were born in countries where Russian is one of the languages of communication: Russia (Moscow: N = 4, Central region: N = 1), Ukraine (Kiev: N = 2, Kharkov: N = 1, unknown region: N = 2), Belarus (Minsk: N = 2, Gomel: N = 2), and Uzbekistan (Tashkent: N = 1). Five adult HSs were born in the US: NYC (N = 2), Southwestern region (N = 1), Texas (N = 1), and unknown region (N = 1). Although most adolescent HSs were born in the US while most adult HSs were not born there the members of the latter group came to the US as small children (see details further).

As far as the participants' education is concerned, all monolingual adolescent speakers were attending high school at the moment of testing. As for the adolescent HSs, 15 of them were in high school while five of them finished high school and were enrolled in the first year of college. As for the adult monolingual speakers, most of them reported having a master's degree (N = 17), one speaker finished their Bachelor's studies and two participants finished high school. As for the

HS group, one speaker reported to have a master's degree, five HSs finished their Bachelor studies and 14 speakers reported a high school degree as their highest degree.[10]

Regarding the HSs' age of arrival in the US, those HSs who were not born in the US went there at an early age: before the age of five (N = 14), at the age of five (N = 1), and at the age of six (N = 1).[11]

All HSs were exposed to Russian from birth at home; however, adolescent and adult HSs had a different number of Russian-speaking people surrounding them. Since adolescent HSs still lived with their Russian-speaking parents (or parent) they were exposed to Russian more at the moment of testing than adult HSs who had already moved away from their family. On average, every adolescent HS had 1.85 Russian-speaking family members at home while every adult HS had on average 0.65 Russian-speaking family members at home.

All participants were asked to report on their media use in Russian regarding the following media:

- Video (TV, movies, shows)
- Audio (radio, music, audiobooks)
- Social media (writing of text or WhatsApp messages, emails, blogs)
- Reading (reading of books, magazines, blogs)

Participants were asked whether and how often they used the abovementioned media using the following options: *often, sometimes, never.* These options have been transformed into scores from 0 to 1 where '0' is 'never' and '1' stands for 'often.' The results will be presented not only with a split into HSs and monolingual speakers but also into different age groups (adolescents vs. adults) since age will be a predictor for the statistical models used in this thesis.

Generally, adolescent HSs use media in Russian more frequently (the average score for all four media is 0.54) than adult HSs (the average score for all four media is 0.45). The only medium that received similar scores by both adolescents and adults was "social media." (i.e., writing). Both speaker groups showed the lowest score for reading in Russian. As for the monolingual speakers, both adolescent (1) and adult (0.97) groups received high average scores for media use in Russian. It can be seen that monolinguals often use different types of media in Russian while HSs only do

[10] There seems to be a different educational background of adult monolingual and heritage speakers of Russian that can reflect possible differences in the educational systems between the US and Russia. This factor was not explicitly accounted for since different educational degrees were not of primarily interest of RUEG.

[11] The threshold of 5 years of age for arrival in the US was set for HSs following the recent work on HSs (e.g., Flores et al., 2017; Rinke & Flores, 2018; Bayram et al., 2019).

so sometimes (adolescent HSs) or even less frequently (adult HSs). The scores for the exact medium are summarized in Table 2 below:

Table 2 Average scores of media use in Russian by HSs and monolinguals

Speaker Group	Video	Audio	Social media (writing)	Reading	Average
HSs adolescents	0.63	0.53	0.58	0.43	0.54 SD=0.34
HSs adults	0.50	0.41	0.56	0.32	0.45 SD=0.3
Monolinguals adolescents	1	1	1	1	1 SD=0
Monolinguals adults	0.93	1	1	0.95	0.97 SD=0.18

The scores for the media use in the ML of HSs differ from those in their HL. Specifically, the average scores of HSs of both groups were almost at ceiling: 1 for adults and 0.99 for adolescents. The scores for the exact medium are summarized in Table 3. It can be seen that HSs of both age groups use the different media more frequently in their ML than in their HL, suggesting that they use English as their main language in daily life.

Table 3 Average scores of media use in English by HSs

Speaker group	Video	Audio	Social media (writing)	Reading	Average
HSs adolescents	1	0.94	1	1	0.99 SD=0.12
HSs adults	1	1	1	1	1 SD=0

Next to the speakers' self-assessments of media use, all participants were asked to assess the knowledge of their HL and ML in four domains: *understanding, speaking, reading, and writing.* Participants answered the following question: *How easy do you find it to understand spoken/ speak/ read/ write (in) your HL/ML?* Participants could choose one of the five answers: *Very easy, easy, neither easy nor difficult, difficult, very difficult.* The answers were transformed into scores from 0 to 1 with 0.25 intervals where 0 stands for "*very difficult*" while 1 stands for "*very easy*."

Regarding the speakers' answers about their knowledge of Russian, the average scores of HSs were lower than the scores of monolingual speakers, as shown in Table 4. Furthermore, while monolingual speakers of both age groups were similar to each other, adult HSs had a lower average score compared to adolescent HSs. Also, *understanding* and *speaking* received higher scores than *reading* and *writing* by both adolescent and adult HSs.

Table 4 Average scores of language skills in Russian by HSs and monolinguals

Speaker Group	Understanding	Speaking	Reading	Writing	Average
HSs adolescents	0.86	0.76	0.63	0.61	0.72 SD=0.26
HSs adults	0.79	0.68	0.47	0.38	0.58 SD=0.29
Monolinguals adolescents	0.95	0.88	0.94	0.81	0.90 SD=0.14
Monolinguals adults	0.91	0.89	0.93	0.85	0.90 SD=0.14

Regarding the HSs' answers about their knowledge of English, their average scores were higher than those on their knowledge of Russian (see Table 5 below). These results suggest that HSs feel more competent in their ML than in their HL.

Table 5 Average scores of language skills in English by HSs

Speaker Group	Understanding	Speaking	Reading	Writing	Average
HSs adolescents	1	1	1	1	1 SD=0
HSs adults	1	1	1	1	1 SD=0

Further self-assessment involved questions that were only relevant for HSs, but not for monolinguals. HSs answered a question about being a native speaker of Russian. The majority of HSs (adolescents: 15 out of 20, adults: 14 out of 20) reported that they felt like native speakers of Russian.

During the experiment, participants were asked to produce two types of written texts: formal (police report) and informal (WhatsApp message to a friend). HSs were instructed to use the Russian Cyrillic Script if they could. If participants could not write in Cyrillic, they used the Latin Script for writing words in Russian. Generally, HSs of both age groups used the Russian Cyrillic script more frequently than the Latin script (i.e., around 80% of the time). The HSs' ability to write in Cyrillic gives insights about their linguistic knowledge of Russian, i.e., these are literate speakers of Russian (of course based on this information one cannot say how well they could write, but their willingness and wish to write in Cyrillic should be taken as an indicator of their literacy in Russian).

Further questions of the questionnaire asked about different activities of HSs in Russian (e.g., learning or hobbies). The majority of HSs did not learn Russian in a formal setting. Only four adolescent HSs reported learning Russian in a Sunday school. One HS did not report on the length of Russian language learning while the other three HSs learned Russian for nine years on average. As for the adult HSs, five participants learned Russian in a formal setting for 2.6 years on average. None of the participants attended bilingual schools where all subjects were taught in both English and Russian.

As for hobbies in Russian, eight adolescent HSs reported to have activities in Russian (e.g., theater, music, or dance lessons). Four of them also learned Russian in a formal setting. As for the adult group, six adult HSs reported taking part in activities in Russian (e.g., church choirs, orchestra). Two of these participants also learned Russian in a formal setting. Thus, eight adolescent HSs and nine adult HSs had an activity that involved Russian (either a Sunday school or a hobby).

To further quantify the language input of HSs, they were asked about the language use with their mothers and fathers, i.e., which language (s) is (are) used in a daily conversation with their parents (ML, HL, or both). Participants' answers were transformed into scores on a scale from 0 to 1, where 0 is "ML", 1 is "HL", and 0.5 are "both." The higher the score the more frequently HSs used the HL with their parents at home. The maximum score could be 4 for each speaker group. The scores are summarized as follows: 2.51 for adolescent HSs and 2.8 for adult HSs. It can be seen that adult HSs engage in everyday conversations in Russian with their parents slightly more frequently than adolescent HSs. Table 6 shows the average scores of language use in families of HSs.

Table 6 Average scores of heritage and majority language use in bilingual families

Speaker group	I speak with my mother	My mother speaks with me	I speak with my father	My father speaks with me
HSs_adolescents	0,66	0,76	0,53	0,56
HSs_adults	0,67	0,77	0,63	0,73

Overall, adolescent HSs use their HL more often when they address their mothers than fathers, and they are addressed in Russian more often by their mothers than fathers. Adult HSs address both of their parents in Russian roughly similarly frequently, and they are also addressed in Russian by their parents nearly equally frequently. Generally, HSs' parents speak Russian with their children more frequently than their children speak Russian with them. Communication between adolescent HSs and their fathers is somewhat different since they generally speak Russian less frequently with each other compared to mothers or the adult group.[12] Also, HSs use both their HL and ML while addressing their parents rather than only one of the languages.

Further, according to HSs' reports, in 24 families both father and mother spoke Russian, in five families, mothers spoke Russian, but fathers did not, and in two families the situation was reversed. Also, in five cases HSs only provided information about one of their caregivers who either spoke Russian (N=4) or English (N=1). Finally, four HSs did not specify the languages of their mothers and fathers.[13]

To sum up, according to the different self-reports by HSs it can be seen that they grew up speaking Russian at home. They spoke Russian with their core family at the moment of testing, and they had enough knowledge to communicate in Russian (not only in a spoken but also in a written form). The average scores of HSs about their involvement with Russian or their knowledge

[12] It has to be noted that not all participants provided information about their communication with parents. One adolescent HS and five adult HSs did not have any information about their communication with parents.

[13] Note that it could happen that neither a mother nor a father of a HS spoke Russian, but another member of the nuclear family did (e.g., grandmother). In this case, HSs were included in this study since they were still exposed to Russian from birth at home.

of Russian (i.e., media use, language skills) were lower than the scores of monolingual speakers. These results are not surprising since HSs grew up bilingual and did not receive formal education in Russian. Further, the average scores of HSs regarding their involvement with English or their English knowledge suggest that HSs are more dominant in their ML than in their HL.

Another interesting pattern that emerges from the self-reports of HSs is a potential difference between adolescent and adult HSs. Adult HSs rate their knowledge of Russian lower than adolescent HSs. The former group consumes media in Russian less frequently than the latter group. Moreover, adult HSs have on average fewer Russian-speaking family members than adolescent HSs.

Overall, HSs of this thesis show a high involvement with Russian as indicated by their self-reports: they use different types of media in Russian, can write in Cyrillic, speak Russian regularly with their caregivers and some HSs engage in extra activities in Russian.

It has to be noted that the abovedescribed measures of language involvement should not be equated with language fluency or proficiency since the involvement was not measured by any standardized tests but presents the speakers' feelings about the knowledge of their HL and not their actual knowledge. Thus, a more reliable measure of the participants' fluency in Russian was chosen, which is their speech rate. The results of the speech rate will be presented in the following chapter 4.2.

4.2 Fluency of Speakers: Speech rate

It has been shown that speech rate can be used as a proxy for HSs' proficiency in their HL (Polinsky, 2008a; 2008c; Polinsky & Kagan, 2007; Laleko & Dubinina, 2018).

Polinsky (2008a, p. 56) found that HSs of Russian in the US showed significant individual variation in speech rates varying from rates that were close to those of monolinguals to rates that were three times slower than those of monolinguals. Those HSs whose speech rate was close to monolinguals (around 100 words/minute) maintained the three-gender system (as in Standard Russian) whereas those HSs whose speech rate was significantly slower than the rate of monolinguals (around 60 words per minute) reanalyzed the gender system into two genders (masculine and feminine, neuter nouns were assimilated to the feminine group) (Polinsky, 2008a, p. 57). Polinsky (2008a) grouped HSs into more proficient and less proficient based on their speech rates from the Frog stories narrated by participants. According to Polinsky (2008a, p. 58), it seems that more proficient HSs have less difficulty with lexical access and general clause construction, and, as a consequence, they speak faster. On the contrary, less proficient HSs seem to have more difficulty with lexical access, and, as a result, they speak slower.

Polinsky (2008c) reports on the loss of cases and the restructuring of aspect in two HSs of Russian in the US (a 9-year-old child and a 23-year-old adult). Both HSs are identified as having low proficiency in Russian by telling the Frog story considerably slower than monolingual speakers (child HS: 68 words/minute, monolingual child: 100 words/minute; adult HS: 59 words/minute, adult monolingual: 105 words/minute) (Polinsky, 2008c, p. 152).

Polinsky and Kagan (2007, p. 377) state that the speech rate of low-proficiency HSs is typically between a third to one-half of the speech rate of monolingual speakers. As for the HSs of higher proficiency, it is less clear how to assess their knowledge of Russian based on speech rate. Polinsky and Kagan (2007, p. 385), referring to other studies by Kagan and Dillon (2001) and Kagan (2005), state that the speech rate of HSs who are close to monolinguals regarding their grammatical accuracy and width of vocabulary have "quite high speech rate, and their lexical knowledge is around 90-95%." Several things stand out. First, the description of "quite high speech rate" is vague and does not allow one to evaluate the speech rate of HSs and monolinguals based on any precise numbers. Second, the term "higher proficiency" does not only include speech rate (as in the case of low-proficiency HSs) but also includes an extra vocabulary test. Therefore, it seems that in cases when HSs' proficiency is not low it is less clear how to assess their HL proficiency solely based on the measures of speech rate.

For instance, Laleko and Dubinina (2018, p. 201) showed that HSs of Russian in the US and monolingual speakers of Russian were comparable in terms of their speech rate (HSs' mean rate: 89 words/minute, monolinguals' mean rate: 95 words/minute). These results were interpreted as an indicator that HSs had at least an intermediate knowledge of Russian, i.e., they had a good ability to build sentences and use language creatively.

It has to be pointed out that other studies on proficiency in bilingual populations view proficiency as a multidimensional phenomenon, i.e., a phenomenon that includes different measures (e.g., type-token ratio, ratio of main and subordinate clauses, word-internal code-switching and repetitions, word length, speech rate, empty and filled pauses, etc) (see Heegård Petersen et al., 2018; Montrul, 2015 on HSs; see Iwashita et al., 2008; Christoffersen, 2017 on L2 learners). For instance, Heegård Petersen et al. (2018, p. 22) state that "one cannot anticipate, for example, from a measure of speech rate or use of filled pauses that a speaker is likely to produce more L2 words, have a high or low type-token ratio or assume anything about their use of repetitions." Furthermore, Nagy and Brook (2020) report that although speech rate can clearly predict speaker generation (with monolingual speakers and first-generation immigrants speaking their home language of Italian, Russian, or Ukranian faster while the second and third-generation speakers speaking their HLs slower), speech rate was not found to correlate with the HSs' behavior

regarding different linguistic phenomena such as VOT, null subjects or number of pauses per second.

Thus, what emerges from the literature is that speech rate is a good indicator of fluency, which can indicate HSs' proficiency, but does not equal proficiency.

As mentioned before, the fluency or proficiency level of HSs in Russian was not explicitly tested before the study. In order to determine the speakers' fluency, their speech rate was measured as the number of words produced per minute. In the following subchapters, the results of the average speech rate will be summarized.

4.2.1 Ranges of the average speech rates

The average speech rate as the number of words per minute was calculated for two speaker groups (i.e., HSs and monolinguals). Monolingual speakers produced 119 words/minute (SD=19.0) on average while HSs produced 114 words/minute on average (SD=20.1). The lowest average speech rate produced by HSs was 55 words/minute while the fastest rate was 147 words/minute. As for the monolinguals, their slowest average speech rate was 88 words/minute while the fastest rate was 201 words/minute. It has to be noted, however, that only one HS showed a rather slow speech rate (i.e., 55 words/minute) and only one monolingual speaker spoke very quickly (201 words/minute). The variation of the average speech rate was not higher in HSs than in monolinguals, contrary to the reports by Laleko and Dubinina (2018) [14] or Polinsky (2008).

The descriptive analysis of the data points towards the possible influence of formality on the speech rate of monolingual speakers. Consider Table 7 below:

Table 7 Average speech rate (words/minute) across different formalities

Formality	HSs		Monolingual speakers	
Formal situation	110	SD=18.4	107	SD=18.6
Informal situation	118	SD=24.4	131	SD=26.2

One can see that monolingual speakers speak considerably faster in informal situations than in formal ones while HSs speak only slightly faster in informal situations compared to formal ones. Table 7 also shows that the two speaker groups might differ from each other in informal situations, but not in formal ones. In order to see whether formality and some other factors influence the speech rate of monolingual and HSs a linear mixed effect model was fit to the data.

[14] It was reported that HSs showed greater variation in speech rate than monolingual speakers (Laleko & Dubinina, 2018, p. 201). The lowest speech rate for HSs was 44 words/minute while the fastest rate was 141 words/minute. The lowest speech rate for monolinguals was 61 words/minute whereas the fastest rate was 128 words/minute, respectively.

4.2.2 Statistical modeling

A linear mixed effect model was fit to the data using R (R Core Team, 2020) and RStudio (Rstudio Team, 2020). The following packages were used for data transformation and visualization: lme4 package (Bates et al., 2015), sjplot (Lüdecke, 2020), readxl (Wickham & Bryan, 2019), tidyverse (Wickham et al., 2019). The model included the full random effect structure (Barr et al., 2013) which was subsequently simplified in a backward-fitting procedure. The best-fit model was chosen via a likelihood ratio test. This model was the only model built via a backward-fitting procedure since the model was not based on specific predictions and was not used to directly answer any research questions in this thesis. The model included the following fixed effects: formality (see the potential relevance of this factor earlier), age, and gender (these factors were shown to have an effect on speech rate e.g., Yuan et al., 2006; Stepanova, 2011; Kim, 2017; Jacewicz et al., 2010 on the effect of gender; Jacewicz et al., 2009; Jacewicz et al., 2010; Bóna, 2014 on the effect of age).

Speech rate was modeled as a function of *speaker group* (HSs/monolinguals), *formality* (formal/informal), *age group* (adolescents/adults), and *gender (females/males).* The *speakers* were treated as a random effect. The model included the interactions of *speaker group* with every other fixed effect. The motivation was to see if the group itself had an influence on the speech rate or if it rather influenced the speech rate together with one or more fixed effects. Complex interactions were not motivated by theory, and furthermore, according to Winter (2020) taking them into a model may lead to amplified interpretation problems.

For interpreting the results, the package ImerTest (Zeileis & Hothorn, 2002) was used.[15] For post hoc tests of interactions (pairwise Tukey test), the emmeans package (Russell, 2020) was used. The fixed effects were contrast-coded using sum contrast coding (either -0.5 or 0.5). This is essential to allow analysis of their interactions. Table 8 below shows the printed attributes of contrasts that will be helpful in interpreting the results of the models.

Table 8 Attributes of contrasts for the speech rate according to the linear mixed-effect model

Fixed effects	Levels of fixed effects	Attributes of contrasts
Speaker group (country)	Monolinguals (ru) HSs (us)	0.5 -0.5
Formality	Formal Informal	0.5 -0.5
Age group	Adolescents Adults	0.5 -0.5
Gender	Female Male	0.5 -0.5

[15] This package displays the p values in the model output.

4.2.3 Results

The best-fit model retained the interaction between *speaker group* and *formality* ($X^2 = 12.24$, $p < .001$). The results are shown in Table 9.

Formula: speechrate_model <- lmer (speechrate ~ country * (formality) + (1|speaker), data=speechrate_data, REML = FALSE).

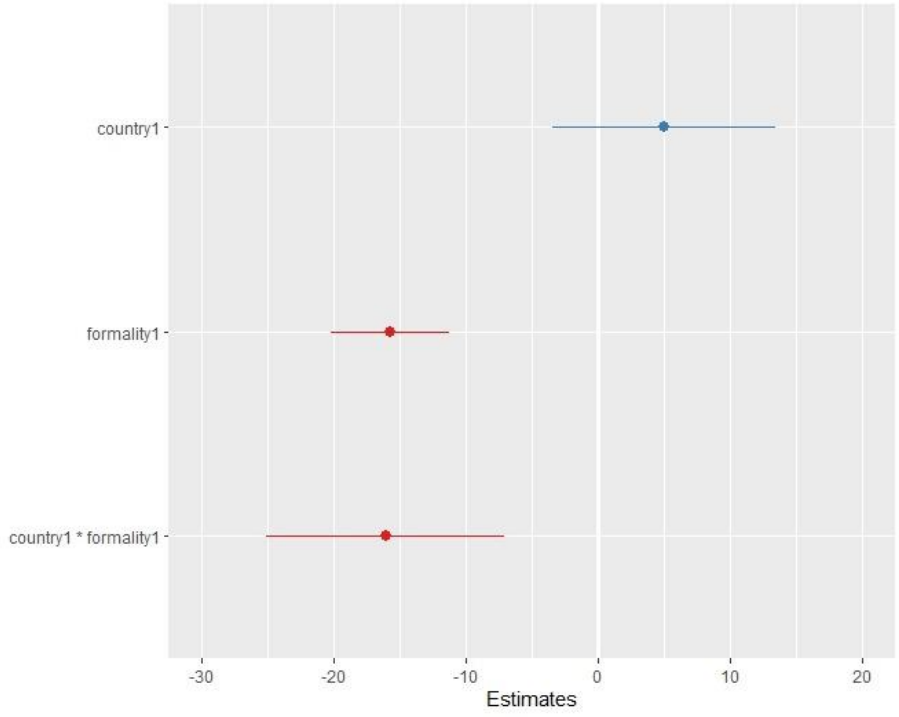
Table 9 Speech rate: outcome of the linear mixed-effect model

	Estimate	Std. Error	df	t value	Pr(>|t|)
(Intercept)	116.133	2.158	80	53.817	2.00E-16***
country1	4.943	4.316	80	1.145	0.255521
formality1	-15.783	2.302	80	-6.856	1.34E-09***
country1:formality1	-16.108	4.604	80	-3.498	0.000767***

The model showed one main effect and one interaction. A main effect of formality revealed that both HSs and monolinguals spoke slower in the formal situation compared to the informal one. Additionally, there was a significant two-way interaction between country and formality (see Figure 2 below for the estimates of all main effects and their interactions).

It should be noted that there was no main effect of the country on its own.

Figure 2 The estimates of all main effects and their 95% confidence intervals: Speech rate



For the interaction of country and formality, Tukey multiple comparison test was run. The results of Tukey's adjustment are presented in Table 10.

Formula: speechrate_model_emmmode <- emmeans (speechrate_model, list(pairwise ~ country:formality), adjust = "tukey")

Table 10 Speech rate: Tukey multiple comparison test

	estimate	SE	df	t.ratio	p.value
ru f - us f	-3.11	4.95	125	-0.628	0.9229
ru f -ru i	-23.84	3.3	82	-7.229	<.0001
ru f - us i	-10.84	4.95	125	-2.188	0.1321
us f - ru i	-20.73	4.95	125	-4.184	0.0003
us f - us i	-7.73	3.3	82	-2.344	0.0965
ru i - us i	13	4.95	125	2.624	0.0475

Tukey's adjustment revealed the following significant results (see Table 10). First, HSs demonstrated a slower speech rate in formal situations than monolingual speakers in informal situations. Second, monolingual speakers spoke slower in formal situations than in informal ones. Third, monolingual speakers spoke faster in informal situations than HSs.

Figure 3 Speech rate: Interaction of country and formality

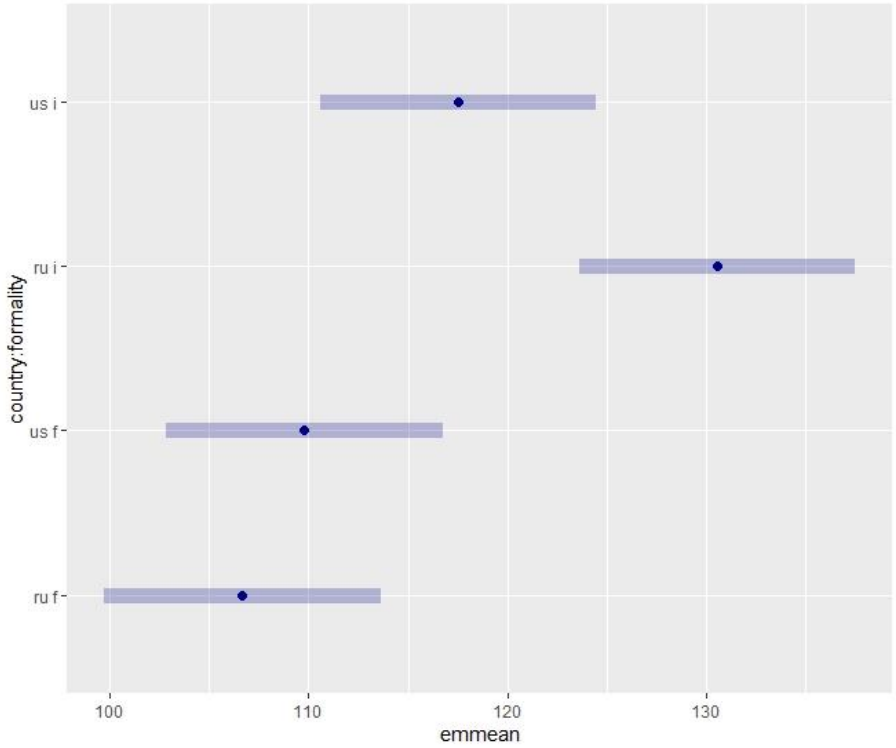


Figure 3 displays the estimates and their 95% confidence intervals. The same holds for all subsequent figures.

The main results of the speech rate modeling can be summarized as follows. HSs were found to speak slower than monolinguals but only in informal situations. In formal situations, the two speaker groups did not differ from each other. Furthermore, monolingual speakers were significantly slower in formal situations compared to informal ones. The speech rate of HSs was not influenced by formality, i.e., they showed a similar speech rate in both formal and informal situations. Age was not found to influence the participants' speech rate.

The results of the speech rate show that HSs in this thesis are generally fluent in Russian. The differences that arise between HSs and monolinguals are not found across the board but in a specific situation, namely informal.

4.3 Performance of the heritage speakers

The chapter will give a series of short overviews of heritage Russian in different linguistic areas such as nominal inflectional morphology (case and gender), verbal system, clause and beyond, and phonetics and phonology.

The main focus will be given to HSs of Russian in the US, but sometimes HSs of Russian with MLs other than American English will be discussed. After the summary of findings in a particular language area, some observations about HSs analyzed in this thesis will be given. The goal of these observations is to give the reader an impression of HSs presented in this thesis. It is important since HSs were not formally tested for their proficiency level in Russian during the elicitation experiment.

4.3.1 Nominal inflectional morphology

This chapter will give a short overview of the nominal inflectional morphology (case and gender) of HSs of Russian in the US. Some references to HSs of Russian with MLs other than American English will be made.

4.3.1.1 Case

There are six cases in Standard Russian (nominative, genitive, dative, accusative, instrumental, and prepositional) and almost every pronoun, noun, adjective, numeral, and wh-word has to be put in one of these cases (Bailyn, 2012, Part II; Timberlake, 2004, pp. 179-182).

Some studies report that the case system of heritage Russian in the US underwent a dramatic restructuring (Polinsky, 2006, 2008c). Specifically, it was found that heritage Russian retained a basic two-case system, namely the unmarked case and the accusative case. The nominative case was reported to substitute oblique cases and the accusative case was found to be used as a case for indirect objects. Moreover, Polinsky (2006, pp. 216-217) reports that the canonical case assignment is retained in so-called “chunks” (i.e., constructions that are very frequent in Russian such as *by him, by her, by them*).

Other studies, however, do not report that the case system of heritage Russian underwent such a tremendous simplification. For instance, Isurin and Ivanova-Sullivan (2008) found that HSs of Russian in the US did not use the nominative case with prepositions and they did not use the accusative case to mark indirect objects. Isurin and Ivanova-Sullivan (2008, pp. 77-84) found that

HSs used some cases where other cases were expected in Standard Russian (e.g., dative and accusative cases were used with personal pronouns instead of instrumental case). Overall, Isurin and Ivanova-Sullivan (2008, p. 84) interpret their results as "a reanalysis of case functions such as direction, location, means, etc" rather than a restructuring of the case system.

A more recent study by Minkov et al. (2019) investigated case and gender agreement by adolescent HSs of Russian (13-17 years old) with four different MLs: American English, Finnish, German, and Hebrew. The production data were obtained through the story of Mayer and Mayer (1978) "*Frog, Where are you*?" Minkov et al. (2019, p. 218) found the following types of non-canonical use of cases:

- Use of the nominative case instead of an oblique case (the main type of non-canonical use of case identified in the data)
- Non-canonical use of an oblique case
- Non-canonical use of the accusative case instead of the prepositional case to express location and non-canonical use of the prepositional case instead of the accusative case to express direction

Interestingly, HSs with different MLs showed different results. Specifically, HSs in Israel and in the US produced significantly more non-canonical instances of case assignment than HSs in Germany and Finland (Minkov et al., 2019, p. 227). HSs in Germany and Finland reported speaking predominantly Russian at home and they attended bilingual Russian schools. HSs in the US and Israel, on the other hand, did not receive formal schooling in Russian, and only some of the HSs used predominantly Russian at home. Minkov et al. (2019, p. 228) conclude that formal education in Russian as well as the use of Russian at home are "influential factors in the development of Russian noun inflectional morphology among HSs."

Moving to HSs presented in this thesis, it can be said that they did not show a dramatic reorganization of case system reported by Polinsky (2006, 2008c). Case system of HSs was not restricted to the nominative and accusative case, i.e., HSs used the whole range of cases available in Standard Russian. The use of cases, however, did not always converge with the use of cases expected in Standard Russian. In this thesis, I will exemplify a particular pattern found in the narrations of HSs and monolingual speakers using the following coding scheme:

Participants' code

Abbreviation	Meaning
US	data elicited in US
RU	data elicited in Russia
bi	Bilingual
mo	Monolingual
01-49	Participant's number, adult group
50-100	Participant's number, adolescent group
F	Female
M	Male
R	Russian (both heritage and the only language for monolingual speakers)
fs	Formal spoken
is	Informal spoken
fw	Formal written
iw	Informal written

Here are some examples of the coding with its interpretation:

USbi78MR_fsR: data collected in the US, bilingual, adolescent, male, formal spoken situation, heritage language Russian.

RUmo73MR_isR: data collected in Russia, monolingual, adolescent, male, informal spoken situation, sole language Russian.

USbi18FR_fwR: data collected in the US, bilingual, adult, female, formal written situation, heritage language Russian.

RUmo08FR_iwR: data collected in Russia, monolingual, adult, female, informal written situation, sole language Russian.

The same way of presenting participants' examples will be used throughout this thesis. Also, all the examples of the data will be given in scientific Cyrillic transliteration. For the written narrations, the original spelling will be kept.

In the data of the present thesis several types of non-canonical use[16] of case assignment have been identified (similar to the previous findings on heritage Russian, see the examples in (1)).

Use of the nominative case instead of an oblique case[17]

(1)

a) Tama byla kak (-) nu devočka kak kak kotoraja (-) nu koljaska (-) d/ deržala
there was so well girl so so which well stroller.NOM held
'There was a girl who was holding a stroller.'
(USbi84MR_is)
(cf. Tama byla kak (-) nu devočka kak kak kotoraja (-) nu koljask**u**.ACC (-) d/ deržala)

[16] Non-canonical use of particular structures by HSs here and later refer to the structures that are unexpected in monolingual Russian according to the Standard descriptive grammar.

[17] An oblique case is defined as non-nominative case.

b) Sabaka zametila i pašla za mač
dog noticed and went after ball.NOM
'The dog noticed and went after the ball.'
(USbi28FR_iw)

(cf. Sobaka zametila èto i pobežala za mjač**om.**INS)[18]

Use of one oblique case instead of another one

A more frequent non-canonical pattern in the area of case assignment was found in the instances where one oblique case was used instead of another one expected in Standard Russian. The examples in (2) show such cases:

(2)

a) I: ono nu otskočilo v seredinu dorog-u
and it well bounced in middle road-ACC
'And it, well, bounced into the middle of the road.'
(USbi09FR_fs)

(cf. I: on nu otskočil v seredinu dorog-**i.**GEN)[19]

b) I sobaka počti pod mašin-e èm: (-) pobežala
and dog nearly under car-DAT ran
'And the dog ran nearly under the car.'
(USbi85FR_fs)

(cf. I sobaka počti pod mašin-**u**.ACC èm: (-) pobežala)

c) Context:
[ja uvidila avariju è malen′kuju vot]
[I saw a small accident]

Target:
nu smešno i nu i konečno žalko ljud-jam
well funny and well and of course sorry people-DAT.PL
'Well, it is funny and well of course I feel sorry for people.'
(USbi04FR_is)

(cf. nu smešno i nu i konečno žalko ljud-**ej.**GEN.PL)

It is worth pointing out that HSs of the current study often showed a canonical case assignment (consider one example below from the formal written text by a HS written in Russian Cyrillic Script):

[18] In this example, not only the instrumental case is expected to be used, but also a direct object should be added. Also, the verb after the conjunction should be changed to another one, namely *ran*.

[19] Here not only is the genitive case expected to be used, but also a different pronoun (masculine instead of neuter since that pronoun refers back to the 'ball' which has a masculine gender in Russian). The pronoun should agree in gender with the verb.

d) Junoša snačala perešël parkovk-u
young man first crossed parking lot-ACC
'The young man first crossed the parking lot'

i pomog ženščin-e s sobak-oj sobrat′ produkt-y s zeml-i
and helped woman-DAT with dog-INS collect groceries-ACC from ground-GEN
'and helped the woman to collect the groceries from the ground.'

(USbi78MR_fw)

4.3.1.2 Gender

Standard Russian has three genders (feminine, masculine, and neuter) for pronouns, nouns, adjectives, numerals, participles, and verbs in the past tense. Feminine nouns usually end with a vowel *–a* or a palatalized consonant, masculine nouns typically end with a consonant, and neuter nouns usually end with a vowel *–o* or *–e* (Minkov et al., 2019, p. 215).

According to Polinsky (2006), the main difference between HSs and monolinguals in terms of gender lies in two areas: feminine nouns with palatalized stem (e.g., noč′, myš′, ten′) and neuter nouns that have stressed stem. The first group of nouns was found to be treated by HSs as masculine instead of their canonical feminine gender (Polinsky, 2006, p. 221). One of the possible explanations for the use of the masculine gender instead of the feminine is the assumption that HSs produce the masculine gender as a default gender. Following this explanation, all new English borrowings should be treated as masculine by HSs. However, this was not supported by the data of Polinsky (2006). The second group of nouns (neuter nouns with stressed stem) was found to be produced with a feminine gender (e.g., bol′ša**ja** jablok**o**, mo**ja** derev**o**). Having stress on the stem of a neuter noun makes it difficult to distinguish such nouns from feminine nouns because they end with a schwa that makes them sound identical to feminine nouns that end with *–a* in Standard Russian (Polinsky, 2006, p. 223).

Another study on gender in HSs by Polinsky (2008a) reported the reduction of the gender system to two genders (masculine and feminine) for lower proficiency HSs of Russian. Those HSs who were more proficient in Russian kept the distinction of three genders (Polinsky, 2008a).

In a more recent study by Minkov et al. (2019, pp. 220-222) (a study that was briefly outlined earlier in chapter 4.3.1.1) the following types of non-canonical use of gender assignment are reported:

- Noun-pronoun agreement
  (the most frequent type of non-canonical gender agreement for all HS groups)
- Noun-verb agreement
- Noun-adjective agreement
  (this type of non-canonical gender agreement was reported to be infrequent)
- Non-canonical gender/declension assignment

Minkov et al. (2019) found the abovementioned non-canonical use of gender in the narrations of HSs of every group, but most of such instances were found in two speaker groups: HSs in the US and Israel (see similar findings by Minkov et al., 2019 on case in heritage Russian). HSs in Finland and Germany were found to outperform HSs in the US and Israel. Such results were explained by the use of Russian at home and formal schooling in Russian in the group of HSs in Finland and Germany (for a detailed explanation of results see Minkov et al., 2019, pp. 227-229).

As for the gender system of HSs of the present thesis, it was not restricted to the two-way system as reported by Polinsky (2008a for HSs with lower proficiency). The gender agreement, however, did not always converge with the gender agreement expected in Standard Russian. In the data of the present thesis, the types of non-canonical use of gender agreement similar to those reported by Minkov et al. (2019) have been identified. The overall impression is that the *noun-pronoun agreement* is a frequent type of non-canonical gender agreement for HSs. Non-canonical *noun-verb agreement* is less frequent but also sometimes occurs in the data. Non-canonical *noun-adjective agreement* and *gender/declension assignment* were found to be rare in HSs' productions (see examples (3) - (5)).

Noun-pronoun agreement

(3)

a) Kagda cabak-a oveedeela mach ohn prignool za machom na darogoo
when dog-F saw ball he.M jumped after ball on road
'When the dog saw the ball, it jumped after the ball onto the road.'
(USbi29FR_fw)
(cf. Kogda sobaka uvidela mjač, **ona**.F pobežala za nim na dorogu)

b) i: a:m i v ètot moment mašin-a kotor-yj problizalas′ k ètoj situacii (-)…
and and in this moment car-F which-M approached at this situation
'And and at this moment a car which was approaching this situation…'
(USbi20MR_fs)
(cf. i v ètot moment mašina kotor-**aja**.F približalas′ k ètoj situacii…)

c) Context:
[Poka (--) a: (-) mužčina i ženščina perexodili dorogu (-) mužčina slučajno a: uronil su:/ svoj mjačik.M]
[While the man and the woman were crossing the road the man accidentally dropped his ball.M]

Target:
Sobačk-a za n-ej (-) pobežala
dog-F after her-F ran
'The dog ran after it.'

(USbi80FR_is)

(cf. Sobačka za n-**im**.M pobežala)

d) Context:
[U nix è: (-) v mužčiny byl (-) è: mjač v ruke. potom čerez dorogu stojala ženščina. ona s sobakoj byla]
[By them the man had a ball in his hand. Then a woman was standing across the road. She was with a dog]

Target:
zagružala v e-go bagažnik (-) è: produkty
loaded in his-M trunk groceries
'(she) was loading the groceries into his trunk.'

(USbi02FR_fs)

(cf. zagružala v e-**ë**.F bagažnik (-) è: produkty)[20]

In the last example (3) due to the non-canonical gender assignment of the pronoun (masculine instead of feminine), one would think that the woman was loading the groceries into the man's trunk.

Noun-verb agreement

(4)

a) Mašin-a bistro ostonovil-sja
car-F quickly stopped-M
'The car stopped quickly.'

(USbi58FR_fw)

(cf. Mašina bystro ostanovil-**as'.**F)

b) Byl-a sobak-a. byl-a mjač. byl-a ženščin-a s produktami
was-F dog-F. was-F ball.M. was-F woman-F with groceries
'There was the woman. There was the ball. There was the woman with the groceries.'

(USbi05FR_is)

(cf. Byl-a sobaka. byl**Ø**.M mjač. byl-a ženščina s produktami)

[20] Here the pronoun *eë* would not be expected in Standard Russian at all. The pronoun would either be omitted or the reflexive possessive pronoun *svoj* would be used.

Noun-adjective agreement

(5)

I: (--) kogda vsë èto slučilosʹ tam byl-a golub-oj mašin-a i bel-yj mašina
and when all this happened there was-F blue-M car.F and white-M car.F
'And when it all happened there was a blue car and a white car.'
(USbi74MR_fs)
(cf. I: (--) kogda vsë èto slučilosʹ tam byl-a.F golub-**aja.**F mašina.F i bel-**aja**.F mašina.F)

Sometimes speakers hesitated before choosing a particular gender:

(6)

I: zatem stolknulasʹ s nej a: vtor-aja vtor-oe(-) vtor-aja mašina
and then collided with her second-F second-N second-F car.F
'And then the second car collided with it.' (with the first car)
(USbi01MR_fs)

To sum up, some studies on the nominal inflectional morphology (case and gender) of HSs of Russian in the US reported that the case and gender system of HSs underwent a dramatic restructuring (two cases instead of six; two genders instead of three for HSs with low proficiency in Russian) (Polinsky, 2006, 2008c, a). Other studies, however, did not report on such a tremendous simplification of case and gender system of HSs of Russian, but they found instances of case and gender that were produced non-canonically according to the grammar of Standard Russian (Isurin & Ivanova-Sullivan, 2008; Minkov et al., 2019). As for the HSs presented in this thesis, they were not found to have a restructuring of case and gender system, but their use of cases or gender agreement did not always converge with the use of cases and gender agreement expected in Standard Russian.

4.3.2 Verbs

This chapter is devoted to the verbal system (analytic verbal constructions and aspect) of heritage Russian in the US.

4.3.2.1 Analytic verbal constructions

Polinsky (2006) reported on the lack of synthetic forms of verbs in heritage Russian in the US and the use of analytic forms to express complex meanings. HSs were shown to regularly use a combination of a light verb which has little semantic content (e.g., to begin) and a notional verb to express perfectivity. In Standard Russian one single verb with a prefix is expected to be used. Contrary to the findings by Polinsky (2006), Isurin and Ivanova-Sullivan (2008, p. 77) reported that L2 learners of Russian used a combination of a light and content verb to express perfectivity, but HSs did not.

In the data of this thesis, HSs did not use the analytic forms described by Polinsky (2006) across the board. However, such forms were found in narrations of some HSs as examples (7) illustrate:

(7)

a) Potom tam sobaka uvidela ètot mjač i načinala nu kak begatʹ k mjaču
then so dog saw this ball and began so well run at ball
'So, then the dog saw this ball and well began to run towards the ball.'
(USbi09FR_fs)
(cf. Potom tam sobaka uvidela ètot mjač i PFV**po-bežala** k nemu)

b) Voditelʹ golub-oj mašin-y načal razvoditʹ rukami
driver blue-GEN car-GEN began throw up hands
'The driver of the blue car began to throw his hands up.'
(USbi77FR_fw)
(cf. Voditelʹ golub-oj mašin-y PFV**raz-vël** rukami)

c) Vdrug, sobaka kinulasʹ i stala lajatʹ na sinjuju mašinu
suddenly dog rushed and began bark on blue car
'Suddenly the dog rushed and began to bark at the blue car.'
(USbi78MR_fw)
(cf. Vdrug sobaka kinulasʹ (na dorogu) i PFV**za-lajala** na sinjuju mašinu)[21]

Many HSs, however, used the synthetic verb forms instead of the analytic constrictions (see the examples (8)):

(8)

a) sobaka na drugoj storone (-) PFVpo-bežala za mjačom
dog on another side ran after ball
'The dog on the other side ran after the ball.'
(USbi61MR_fs)

b) I mne kažetsja čto odin iz voditelej on PFVpo-zvonil v è: policejskij è: otdel
and me seems that one of drivers he called in police department
'And it seems to me that one of the drivers, he called the police department.'
(USbi18FR_fs)

4.3.3 Aspect

Russian verbs can be of two aspects: perfective and imperfective. Perfective verbs usually describe completed events while imperfective verbs are usually used to describe an action in process (Mikhaylova, 2019, p. 184). The findings regarding aspect of HSs of Russian are somewhat contradictory. Polinsky (2006, 2008b) reports on the severe restructuring of the

[21] Here the verb *kinut'sja* requires an object that was missing in the narration of the HS.

aspectual system in heritage Russian in the US while there are studies that do not report such restructuring (e.g., Laleko 2010; Isurin & Ivanova-Sullivan, 2008).

With respect to aspect, some studies report on the restructuring of the aspectual system in heritage Russian in the US. Polinsky (2006, p. 226; Polinsky, 2008b) reports that HSs tend to have only one form of a verb which is either perfective or imperfective. Such a tendency is connected with the reduced size of HSs' lexicon that has to do with the frequency of use of a particular verb. The choice of a particular member of the aspectual pair may further depend on telicity (Polinsky, 2006) or it may be connected to the different morphological system of HSs and monolinguals (which is said to be shallower in the case of HSs) (Polinsky, 2008b, p. 280).

Polinsky (2006, p. 228) further reports on the restructuring of aspect in heritage Russian with motion verbs that are not only distinguished by aspect in Standard Russian but also by directionality: unidirectional or multidirectional (Academy Grammar I: 590-96 is cited). The following example (9) of the verb *to go (in a vehicle)* is given by Polinsky (2006, p. 228).

(9)

a. imperfective
- i. unidirectional
- *exat'*
- ii. multidirectional
- *ezdit'*

b. perfective
- i. unidirectional
- *poexat'*
- ii. multidirectional
- *prefix+ ezdit'*

HSs were found not to use the multidirectional form of the motion verbs (Polinsky 2006, p. 228). Polinsky (2008b, p. 272) reports that HSs usually produced (in a frog narrative) only one form of a motion verb out of four forms available.

Although Polinsky (2006; 2008b) gives evidence for the restructuring of the aspectual system in heritage Russian compared to Standard Russian, she points out that restructuring may not mean disappearance. It is suggested that HSs of Russian may use different mechanisms to express aspect that are not used in Standard Russian (e.g., analytic forms that were described earlier).

In contrast to the findings by Polinsky (2006; 2008b), there are studies that do not report the restructuring of the aspectual system in HSs of Russian (e.g., Isurin & Ivanova-Sullivan, 2008; Laleko, 2010). Isurin and Ivanova-Sullivan (2008, p. 77) did not find that HSs of Russian in the US used analytic forms to express aspect. Such analytic forms were used by the advanced L2 learners of Russian with L1 English. Further, Isurin and Ivanova-Sullivan (2008) reported that HSs showed the non-standard use of aspect in only 4.1% of the data.

In a production study by Laleko (2010, p. 238) it was found (among other things) that adult HSs of Russian in the US converged in their use of the imperfective aspect in the atelic condition (i.e., the condition with verbs of achievements and accomplishments that is incomplete) with monolingual Russian speakers. However, HSs differed from monolinguals in the telic condition (i.e., in a condition with verbs of states or activities that are complete) by using the perfective aspect more frequently than monolinguals.

As for the HSs presented in this thesis, they generally maintained the aspectual distinctions in Russian. Non-standard use of aspect was mainly found with motion verbs that, apart from being either perfective or imperfective, have a further split into unidirectional and multidirectional. Polinsky (2006) reported that HSs often did not use the multidirectional forms of the verbs. However, HSs presented in this thesis were found to use multidirectional forms where unidirectional ones were expected, as the examples (10) demonstrate.

(10)

a) On igral s mjačom i ženščena vazila koljasu
he played with ball and woman pushed.IPFV.MULTIDIR stroller
'He was playing with a ball and the woman was pushing a stroller.'
(USbi53MR_fw)
(cf. On igral s mjačom, a ženščina **vezla**.IPFV.UNIDIR koljasku)

b) Ja xodil po doroge
i went.IPFV.MULTIDIR on road
'I was walking along the road.'
(USbi20MR_is)
(cf. Ja **šël**.IPFV.UNIDIR po doroge)

Some HSs were also found to produce one aspect instead of another one expected in Standard Russian. Consider the following examples (11) in which the verbs were used with the imperfective aspect instead of the perfective one:

(11)

a) Context:
[Mužik poterjal (-) è: svoj mjač (-) kotoryj è: na kotoryj sobaka (-) è: (-) za kotorym so/ za sobaka p/ è: (--) è: (-) za/ ot/ otbežala]
[A man lost his ball which/ to which a dog/ a dog ran after]

Target:
I potom (-) i=za ètogo è: (-) voditel′ pervoj mašiny (-) è: (--) tormozil
and then because of this driver first car braked.IPFV
'And then because of this, a driver of the first car was braking.'
(USbi03MR_fs)
(cf. I potom iz-za ètogo voditel′ pervoj mašiny **za**tormozil.PFV)

b) Context:
[A tam prjamo čerez nu v ètoj doroge (-) exala mašina]
[A car was driving there right on the road]

Target:
Mašina rezko tormozila
car sharply braked.IPFV
'The car was braking sharply.'
(USbi09FR_fs)
(cf. Mašina rezko **za**tormozila.PFV)

In example (12) both the aspect (imperfective) and the directionality (multidirectional) are non-standard.

(12)

Context:
[Byla malen′kaja sobaka]
[There was a small dog]

Target:
Ona begala za za mjačom
she ran.IPFV.MULTIDIR after after ball
'It was running after the ball.'
(USbi04FR_fs)
(cf. ona **pobežala.**PFV.UNIDIR za mjačom)

In example (12) the use of the imperfective multidirectional form of the verb is not contextually felicitous since, in the story presented to participants, the dog was not running after the ball back and forth, but it ran after the ball once.

To sum up, some studies on the verbal system of heritage Russian in the US reported on the lack of synthetic forms of verbs as well as on the restructuring of the aspectual system in the speech of HSs (Polinsky, 2006; Polinsky, 2008b). However, some other studies did not find that

HSs exclusively use the analytic forms of verbs and only one aspect (Isurin & Ivanova-Sullivan, 2008; Laleko, 2010). HSs presented in this thesis were found to use both synthetic and analytic forms of verbs and they generally maintained the aspectual distinctions in Russian (although the use of aspect was not always canonical).

4.3.4 Clause

This chapter is devoted to the phenomena in a clause such as complementizers and the possessive reflexive *svoj*.

4.3.4.1 Reorganization of complementizes

HSs of Russian in the US were found to use a complementizer *esli* (which means *whether* in Russian) instead of a clitic *li* for reported questions. Such use is explained by transfer from the majority English in which the complementizer *whether* is used for subordination (Dubinina & Polinsky, 2013; Laleko, 2010; Dubinina & Malamud, 2017).

Some HSs presented in this thesis used a complementizer *esli* instead of a clitic *li* for embedded questions, although not frequently. Rather such patterns were speaker-specific, i.e., the majority of the HSs did not produce such constructions while some HSs were found to use them, as shown in example (13).

(13)

a) Dva mužčin vyšli iz mašin, posmotreli **esli** mašiny izbilis′
two men got out of cars looked whether cars hit
'Two men got out of the cars and had a look whether the cars hit each other.'
(USbi60FR_fw)
(cf. Dvoe mužčin vyšli iz mašin i posmotreli, stolknulis′ **li** mašiny drug s drugom)

b) ja ne znaju **esli** ty polučiš′ moë (-) soobščenie
i not know whether you receive.FUT my message
'I don't know whether you receive my message.'
(USbi60FR_is)
(cf. ja ne znaju polučiš′ **li** ty moë soobščenie)

4.3.4.2 Possessive reflexive *svoj*

It has been shown that HSs of Russian in the US frequently use regular possessive pronouns (e.g., *ego, eë*) instead of the possessive reflexive *svoj (*Polinsky, 2006). In Standard Russian, the difference between the possessive reflexive and the regular possessive pronoun can be used to track a referent: (examples in (14) are from Polinsky, 2006, p. 241)

(14)

a) Ivan$_i$ pročital Petru$_j$ svoi$_{i/*j}$ stixi
Ivan.NOM read Peter.DAT self's poems.ACC
'Ivan read his$_i$ (=Ivan's) poems to Peter$_j$.'

b) Ivan$_i$ pročital Petru$_j$ ego$_{j/*i}$ stixi
Ivan.NOM read Peter.DAT his poems.ACC
'Ivan$_i$ read his$_j$ (=Peter's) poems to Peter$_j$.'

Polinsky (2006) conducted a study in which HSs were shown sentences like those above, and they were asked to tell to what the possessive reflexive and the regular possessive pronoun referred. Regular possessive pronouns like the one in b) were interpreted as either referring back to the subject or to the indirect object. These results were interpreted as the influence of English in which regular possessive pronouns are used.

Polinsky (2006) further points out that HSs use overt possessive pronouns more frequently in cases where no overt pronoun would be expected in Standard Russian.

As for the HSs presented in this thesis, they sometimes produced the regular possessive pronouns instead of the possessive reflexive, as shown in examples (15*)*:

(15)

a) Context:
[Bylo dve mašiny. Medlenno exali]
[There were two cars. They were driving slowly]

Target:
din mužčina poterjal è: (-) ego mjač (--) v seredine doroge
one man lost his ball in middle road
'A man lost his ball in the middle of the road.'
(USbi31MR_is)
(cf. odin mužčina poterjal (svoj) mjač na seredine dorogi)

b) i ja uvidel kak mužik è:m xodil s ego žena[22]
and i saw how man went with his wife
'And I saw how a man was walking with his wife.'
(USbi74MR_fs)
(cf. i ja uvidel kak mužčina šël s (so svoej) ženoj)

In Standard Russian in the two examples in (15) one would either use a possessive reflexive or no pronoun at all.

[22] In this example, the HS uses a word for a 'man' which is usually not used in formal situations in Standard Russian. Also, the motion verb used by the HS is multidirectional instead of unidirectional. Moreover, the case marking on "woman" is absent.

To sum up, HSs of Russian in the US were reported to frequently use a complementizer *esli* instead of a clitic *li* for reported questions. Furthermore, they were found to often use regular possessive pronouns instead of the possessive reflexive *svoj* and overt possessive pronouns in cases where no overt pronoun would be expected in Standard Russian. As far as HSs presented in this thesis are concerned, they were sometimes found to produce the abovedescribed complementizer, regular possessive pronouns, and overt pronouns, but such patterns were speaker-specific.

4.3.5 Outside the clause

This chapter describes the subject pronoun realization in coordination.

Polinsky (2006, p. 242) distinguishes three general strategies to track referents under coreference. A coreferential element is replaced by a null copy, a pronominal copy or a full noun. Polinsky (2006) found that HSs of Russian in the US did not use the anaphoric null copy (which would be expected in Standard Russian) to connect two clauses (see example (16) from Polinsky, 2006, p. 243):

(16)

a) My$_i$ videli ètot dom i my$_i$ ne ljubim tam
we saw this house and we NEG like there
'We saw this house and did not like it.'

In Standard Russian, one would not expect a repetition of the pronoun in the example above. A null copy would be used instead.

Polinsky (2006) further states that the absence of the null copy in the narrations of HSs of Russian cannot be explained by transfer from the ML since in English it is not required to use a pronominal copy for coreference. Polinsky (2006, p. 244) concludes that HSs of Russian only use two strategies for reference tracking (pronominal copy and full noun, but not a null copy) instead of the three available in Standard Russian. The absence of the null copy is explained by insecurity of HSs in their HL which results in producing more overt elements to be better understood.

Isurin and Ivanova-Sullivan (2008) also report that HSs of Russian in the US do not use null pronominalization in cases of co-ordination and subordination, and they explain the lack of the null copy by a potential transfer from the ML or, similarly to Polinsky (2006), by the desire to be better understood.

Other studies on HSs of Russian in the US also report on the tendency of HSs to have a weaker null pronominalization in cases of coordination and subordination (Laleko, 2010; Dubinina & Polinsky, 2013).

HSs presented in this thesis, contrary to the findings by Polinsky (2006) or Isurin and Ivanova-Sullivan (2008), frequently produced the null pronominalization in cases of co-ordination, as in example (17). Cases where the null pronominalization was absent were rather infrequent.

(17)

a) produkty vypali iz meška i NULL pokottilimt po vsej parovke
groceries fell out from bag and rolled over all parking lot
'Groceries fell out of the bag and rolled over all over the parking lot.'
(USbi50FR_iw)

b) oba voditelja vyšli iz mašiny i NULL načali osmatrivat′ čto proizošlo
both drivers Got out from car and started examine what happened
'Both drivers got out of the car and started examining what happened.'
(USbi17FR_fs)

Overall, HSs of Russian in the US were reported to not use a null pronominalization for reference tracking (Polinsky, 2006; Isurin & Ivanova-Sullivan, 2008). However, contrary to these findings, HSs presented in this thesis typically produced the null copy in cases of coordination.

4.3.6 Phonetics and Phonology

This chapter focuses on the phonetics and phonology of HSs with different MLs since studies solely devoted to HSs of Russian in the US are scarce.

Zemskaja (2001, pp. 77-84) summarizes the features of Russian phonetics and phonology spoken by four generations of speakers of Russian with different MLs. Speakers of the first generation were those who left a Russian-speaking country at any age (as adults or children), speakers of the second generation were the ones born in another country where Russian was a HL, speakers of the third and the fourth generation were grandchildren and great-grandchildren of the first-generation speakers (Zemskaja, 2001, p. 71).

Zemskaja (2001) found that if a consonant has both a palatalized and a non-palatalized version, first-generation immigrants and HSs usually do not confuse them because the use of one instead of another can lead to misunderstanding since palatalized and non-palatalized consonants build minimal pairs in Standard Russian (e.g., [tok] is *'current'* while [tʲok] *'flowed'*). However, consonants that cannot contribute to the differences in meaning are often influenced by the ML in the narrations of first-generation immigrants and HSs. For instance, the sound [tʃʲ], which is always palatalized in Standard Russian, was often found to be non-palatalized (particularly for speakers living in Italy and Germany). The sound [ʃ], which is non-palatalized in Standard Russian, was found to be sometimes palatalized by HSs (Zemskaja (2001, p. 80).

Zemskaja (2001, pp. 81-84; pp. 230-238) summarizes other phonetic features that distinguish first-generation immigrants and HSs from monolingual speakers of Russian as follows:

- The sound /l/ has a palatalized and a non-palatalized counterpart in Standard Russian. It was reported that some speakers did not maintain this distinction and produced one /l/ sound instead (especially the speakers residing in France, Italy, and Germany)
- The alveolar trill [r] is sometimes replaced by another sound particular to the ML (e.g., by a voiced uvular fricative or approximant [ʁ] if the country of residence is France)
- The palatal approximant [j] is sometimes not pronounced
- [t] and [d] non-palatalized sounds are dental plosives, but they are frequently produced as alveolar (ML English)
- Voiceless velar plosive [k] is sometimes pronounced with aspiration before vowels. (ML English)
- Sandhi: palatalization of consonants before the vowels [i] and [e] between a preposition and a noun (generally for HSs)
- The sound [ɐ] which is typical in the first pretonic syllable in Standard Russian is replaced by a sound close to [ɨ] (generally for HSs)
- Voiceless velar fricative [x] is replaced by the voiced velar fricative that does not exist in Standard Russian (ML English)
- Assimilative palatalization of the voiced dentoalveolar fricative [z] before palatalized dentoalveolar [d] (ML English)
- Loan words are often pronounced how they are pronounced in the ML and not in HL
- Lack of reduction of unstressed [o] in loan words
- Lack of consonant palatalization before the vowel [e]

Other studies on segmental phonetics of HSs of Russian show somewhat different results regarding the productions of HSs and monolingual speakers of Russian. Some studies did not find any difference between HSs and monolingual speakers of Russian (e.g., Nagy, 2015 on Voice Onset Time in heritage Russian in Canada; Asherov et al., 2016 on vowel reduction patterns in real words by HSs of Russian with the ML Hebrew). Other studies, however, reported significant differences between HSs and monolinguals (e.g., Nagy & Kochetov, 2013 on Voice Onset Time of HSs of Russian in Canada; Asherov et al., 2016 on vowel reduction patterns in nonce words by HSs of Russian with the ML Hebrew).

As for the HSs presented in this thesis, they showed some of the features of pronunciation listed by Zemskaja (2001). It should be noted that impressionistically it seems that adult HSs produced

sounds that were not Russian monolingual-like more frequently than adolescent HSs. For adolescent HSs, non-standard patterns were speaker-specific rather than characteristic of a speaker group, i.e., some HSs produced different non-standard sounds while others did not. As for the adult HSs, non-standard sounds seemed to be more widespread and were not restricted to some particular speakers. It is important to point out that non-standard sounds typically did not impede understanding of HSs.

The non-standard sounds found in the data are summarized below in Table 11. The sounds that occurred more often are located before those that only occurred occasionally.

Table 11 Examples of non-standard sounds by HSs

Phenomenon	Speakers' IDs
The alveolar trill [r] which is typical for Russian is replaced by the postalveolar approximant [ɹ̠], (rhotic) typical for American English	USbi02FR, USbi03MR, USbi04FR, USbi05FR, USbi06FR, USbi29FR, USbi74MR.
Palatalization a) Palatalization of consonants that do not have palatalized pairs in Standard Russian (e.g., [ʃ]). b) Non-palatalization of some consonants that do not have non-palatalized pairs in Standard Russian (e.g., [tʃʲ]). c) Non-palatalization of consonants that are expected to be palatalized. d) Palatalization of consonants that are not expected to be palatalized	 USbi04FR, USbi57MR, USbi74MR. USbi20MR, USbi31MR, USbi53MR, USbi57MR, USbi74MR, USbi85FR. USbi04FR, USbi05FR, USbi06FR, USbi31MR, USbi53MR, USbi74MR. USbi57MR.
Non-reduction of the unstressed syllables.	USbi06FR, USbi25FR, USbi53MR, USbi57MR, USbi84MR.
Voiceless velar fricative [x] is replaced by the voiced velar fricative that does not exist in Standard Russian.	USbi18FR, USbi29FR, USbi74MR, USbi84MR.
Voiceless stops [p], [k] are pronounced with aspiration before vowels.	USbi18FR, USbi29FR.
Reduction of some sounds in formal situations that is permissible in colloquial Russian	USbi02FR_fs, USbi74MR_fs.

Among other features that were only occasionally found in HSs' productions are:

- Non-standard stress placement
- Absence of final obstruent devoicing
- Substitution of one sound by another one

To sum up, some studies found that HSs of Russian differed from monolingual speakers regarding the pronunciation of some sounds (e.g., Zemskaja, 2001; Nagy & Kochetov, 2013). Some other studies, however, did not find any difference between the two aforementioned speaker groups (e.g., Nagy, 2015; Asherov et al., 2016 in real words). As for the HSs presented in this thesis, some of them (particularly the adults) showed non-standard sounds in their HL, but the speech of HSs was easily understandable.

Overall, although HSs presented in this thesis produced some unexpected patterns (according to the literature on monolingual Russian) in all aforementioned linguistic areas their HL did not undergo dramatic restructuring and simplification, i.e., HSs produced six cases and three genders, did not solely resort to the analytic forms of verbs, maintained aspectual distinctions, typically behaved in a monolingual-like manner regarding the use of the clitic *li* for reported questions, the possessive reflexive *svoj* and null pronouns, used all general strategies to track referents under coreference found in Standard Russian, and sounded monolingual-like most of the time.

Overall, the linguistic profile of HSs of this thesis is the following. Regarding exposure and language use, HSs showed a high involvement with Russian in their everyday life according to their self-reports. As for the speech rate, HSs showed an overall high fluency in Russian. Finally, concerning performance in Russian in different areas of grammar, HSs did not show a dramatic simplification or restructuring.

It has to be mentioned that not all previous studies on HSs of Russian looked at HSs with a profile similar to the one described in this thesis. Although there are studies that examined more proficient or fluent HSs of Russian (e.g., Laleko & Dubinina, 2018; Ionin et al., 2020; Gor, 2019) there are also studies on HSs with a low proficiency in Russian who can barely speak it or have a very limited or a non-existent input in Russian (e.g., Polinsky, 2006; 2008b; 2008c; Isurin & Sullivan, 2008). Thus, when relating the results of this thesis to other studies on heritage Russian, one needs to keep in mind that HSs of this thesis may considerably differ from other HSs in terms of their linguistic profile.

5 Corpus study: Global intonation patterns

In the previous chapters, I gave a general overview of the grammar of HSs. Also, additional factors that may influence the linguistic behavior of HSs were discussed in detail (i.e., age, gender, or different communicative situations). Next, I introduced the method, general data analysis, and participants in detail (i.e., their metalinguistic information, fluency, and performance in Russian).

In what follows I will present three corpus studies on global intonation patterns, word order choice, and expression of information status of HSs in the US and monolingual speakers. The study on global intonation patterns will open this chapter. In this thesis, global intonation patterns refer to the overall inventory of pitch accents and boundary tones, their types, and frequency.

This chapter will start by defining what intonation is, moving to the description of the autosegmental-metrical model of intonation, the model that is adopted in this thesis for both heritage and monolingual speakers of Russian. Furthermore, this chapter will give an overview of the existing theories of intonation in monolingual Russian to motivate the choice of the autosegmental-metrical approach. Next, the chapter will provide an overview of all necessary literature on intonation in monolingual and heritage Russian. Next, it will review how age, gender, and different language situations influence intonational patterns. After that, the chapter will present the research questions and hypotheses devoted to the choice of different pitch accents, final boundary tones, and pitch accent placement. The prosodic annotation of the data will be described in detail. Finally, the results of the study will be presented followed by the discussion.

5.1 Autosegmental-metrical theory of intonation

Intonation "refers to the use of suprasegmental phonetic features to convey 'postlexical' or sentence-level pragmatic meanings in a linguistically-structured way" (Ladd, 2008, p. 4). Suprasegmental phonetic features are F0 (fundamental frequency), intensity, and duration. Sentence-level means that intonation conveys meaning that applies to phrases or utterances as a whole, excluding lexical stress and tone. Linguistically structured refers to intonational features, but excludes paralinguistic features, such as emotions and attitudes (Ladd, 2008).

One of the current approaches to intonation is the Autosegmental-Metrical approach (further AM) which was developed from speech production and perception and was successfully applied for the prosodic analysis of many languages (Grice, 2022; Arvaniti, 2022). The term *Autosegmental-Metrical Theory* was coined by Ladd (1996). The theory itself was developed from an analysis of American English intonation by Pierrehumbert (1980), whose work was influenced by earlier studies in autosegmental phonology, such as Liberman (1975) and Bruce (1977) (Arvaniti, 2022, p. 25).

The AM theory of intonational phonology was motivated by questions about the suprasegmental structure of African tone languages. The term *autosegmental* refers to the way the phonological representation is organized. Earlier traditions, such as the British school (e.g., Crystal, 1969; O'Connor & Arnold, 1973) describe intonation in terms of a single, nonlinear representation, either as a set of holistic tunes or as a linear string of elements, each having a different set of features. However, within the AM framework, tunes may be represented at several linguistic levels, (tiers) both phonetic and phonological; each level "carries the specification for certain features" (Zellers, 2011, p. 35). This is important for cross-linguistic studies, as it allows one to show how two languages may differ at one level of representation while being similar at another.

According to the AM theory, intonation is analyzed as sequences of discrete intonational events. The pitch contour between such events is unspecified and can be seen as a transition from one event to the next. There are two main types of such events, namely *pitch accents (PAs)* and *edge tones.* Pitch accents are the prominence-lending pitch excursions associated with metrically strong syllables. All pitch accents can be further analyzed as sequences of primitive level tones, High (H) and Low (L), or a combination of two tones. In bitonal accents, one of two tones is central, i.e., it is linked to the stressed syllable and is marked with an asterisk (H* or L*). A pitch accent may also additionally contain a leading (presiding L+H*) or trailing (following H*+L) tone (Ladd, 2008).

Edge tones are any tones "that are associated with the periphery of a prosodic domain" (Ladd, 2008, p. 47). Edge tones can be of two types: phrase accents (notated as L-, H-) and boundary tones (notated as H%, L%). The phrase accent is a tone that appears "after the nuclear pitch accent and before the boundary tone" (Pierrehumbert, 1980, p. 84). Boundary tones are tones that are associated with the very end of an intonational phrase (IP)[23] (or the very beginning in some languages). According to Pierrehumbert (1980), each IP requires at least one pitch accent, both an initial and final boundary tone (further FBT), and a phrase accent. Every IP allows for a new choice of tune.

ToBI

The AM theory aims to explain details of instrumentally measured F0 in a phonological description. Since the early 1990s, a group of speech researchers developed the Tone and Break Indices (ToBI), a system of prosodic annotation (Ladd, 2008; Arvaniti, 2022, pp. 50-52). ToBI

[23] IPs can be "identified by pausing and phrase-final syllable lengthening as well by extra melodic elements of phrase accent and boundary tone present at the end" (Pierrehumbert & Hirschberg, 1990, pp. 227-228).

was originally developed to describe intonation in American English, but as intonation and prosodic organization differ from language to language and often from dialect to dialect within one language, ToBI was adapted for other languages, like German, Spanish, Dutch, Swedish, Japanese, etc. Thus, each ToBI system is language-specific or dialect-specific (Beckman et al., 2005; Jun, 2022).

A full ToBI transcription contains four tiers, reflecting how prosody consists of multiple components. These tiers are an orthographic tier, a tone tier, a break-index tier, and a miscellaneous tier (see Beckman & Hirschberg, 1994).

The Tonal tier marks two types of tones: pitch accents and tones associated with intonational boundaries (phrase accents and boundary tones). The orthographic tier is used to label orthographic words. The miscellaneous tier is used for any comments or remarks, for example, silence, audible breaths, etc (Beckman & Hirschberg, 1994). The Break-Index tier marks the transition from one segment to the next using numbers between 0 to 4. This tier has only partial relevance to intonation (see Beckman et al., 2005 for a detailed description).

Since HSs presented in this thesis reside in the US, it is important to specify the structure of the tonal tier in American English. According to MAE_ToBI (MAE stands for Mainstream American English), the tonal tier consists of five pitch accent types (H*, L*, L+H*, L*+H, H+!H*; two phrase accents (H-, L-); and two final boundary tones (H%, L%, and one marginal initial boundary tone at the beginning of some IPs (%H) (Beckman & Hirschberg, 1994).

5.2 Approaches to intonation in monolingual Russian

This chapter is set to give an overview of different approaches to intonation in monolingual Russian to motivate the approach to intonation chosen in this thesis.

5.2.1 System of "Intonational Constructions"

One of the most influential theories of intonation in monolingual Russian is the one by Bryzgunova (1963). According to this theory, intonation is analyzed in terms of seven intonational categories or so-called "intonational contours" or "intonational constructions" *(intonacionnye konstrukcii*, further IKs*)*. This model primarily had a didactic purpose to teach Russian intonation to L2 learners of Russian.

IKs are constructions that are marked by pitch, amplitude, intensity, and other suprasegmental features. IKs differ with respect to the level and position of pitch in a syllable which is important to distinguish different meanings of a sentence (e.g., affirmation, wh-question, exclamation). An IK has a *center* (stressed syllable on which the NPA falls) and a part/parts that is/are located right before or right after the *center* and can be composed of one or more syllables (Bryzgunova, 1980,

pp. 97-101). Bryzgunova (1980) distinguishes between seven IKs each of which has basic and additional modal meanings.

Bryzgunova's (1980) theory received criticism in the literature on Russian intonation. For instance, Zybatow & Mehlhorn (2000, p. 415) point out that Bryzgunova's "intonational constructions" only describe the local F0 contours, namely the NPA placement (i.e., the stressed syllable) and the syllables that immediately precede and follow it. They further remark that different focus types cannot be categorized only based on the local tonal movement. Besides, the sentences investigated by Bryzgunova (1980) were not put in context but examined in isolation. Furthermore, according to Odé (1989, p. 44) "the criterion of perceptual discreteness is not always met by Bryzgunova's inventory of contours; some of her intonational constructions were described as being only gradiently different."

5.2.2 Perceptual description of intonation

Another well-known approach to intonation in monolingual Russian is based on a series of perceptual studies developed by Odé (1989). Odé (1989) used the method of pitch contour stylization which was developed at the Institute of Perception Research (IPO) in Eindhoven ('t Hart & Cohen, 1973; 't Hart & Collier, 1975). This method implies the modification of the original F0 contour and its depiction by the smallest number of straight lines which connect the points in the F0 curve when pitch changes the direction. F0 stylizations were created based on the principle of perceptional equality between the original F0 curve and its stylization, i.e., the original F0 contour and the stylized one should not yield any perceptional differences.

Odé (1989) classified perceptually important pitch movements and identified relevant pitch accents that exist in Russian. For instance, perceptually relevant pitch tonic movements in Russian were found to be excursion, timing, slope, declination, inclination, and pitch reset (Odé, 1989, p. 101). Odé (1989) distinguishes between six rising and seven falling pitch accents taking the following phonetic features into consideration: excursion, timing, slope of prominence, leading pitch movements, postonic part, and lowest level (only for falling pitch accents).

The study by Odé (1989) extended the number of features that are relevant for Russian intonation, but the communicative function of pitch accents was deliberately left out. This was mentioned as one of the points of criticism of Odé's (1989) perceptual model of intonation (e.g., by Rathcke, 2006a). Paschen and Sappok (2012, p. 259) point out that it is difficult to apply this model to one's own data due to the great complexity of the procedure (in Odé's 1989 study the perceptive analysis was carried out by experienced phoneticians) and great perceptional subjectivity.

5.2.3 Autosegmental-metrical approach

The AM model of intonation has not received a lot of attention in research on monolingual Russian. Studies on Russian intonation that have been carried out following the AM framework present the results of some specific case studies (e.g., Igarashi, 2006 on intonation of questions; Rathcke, 2006a on differences between yes-no questions and declarative utterances; Zerbian et al., 2022 on contrastive adjectives in monolingual and bilingual speakers of Russian; Zuban et al., 2023 on yes-no questions in monolingual and bilingual speakers of Russian).

Rathcke (2009, p. 37) summarizes the existing work on Russian intonation in the AM framework specifying the frequent nuclear pitch accent (further NPA) types together with the boundary tones and their meaning.

Table 12 Frequent nuclear F0 contours, their AM analysis and semantic interpretation in Russian (compilation by Rathcke, 2009, p. 37)

Nuclear F0 contour	AM analysis (compilation)	Interpretation
Falling	H+L* L%	Declarative non-contrastive statement
	H* (probably H*+L) L%	Contrastive statement
Rising-falling	L*+H L%	Yes-no question
Rising	L*+H H%	Enumeration
Falling-rising	H+L* LH%	?Question, ?Request, ?Incompleteness

The summary in Table 12 can serve as a good starting point for the analysis of Russian intonation within the AM framework, but it still does not present a full description of Russian intonation and leaves some open questions for further clarification (e.g., the meaning of the H+L* LH% tune or the status of the phrase accents).

ToRI

The ToRI (Transcription of Russian Intonation) is a transcription system for the prosodic labeling of pitch accents and pitch phenomena at boundaries in modern standard spoken Russian. The development of ToRI was inspired by the Transcription of Dutch Intonation (ToDI). Symbols in ToRI resemble ones of ToDI or MAE_ToBI to enable a comparison with intonation systems in other languages. ToDI is partially based on ToBI but does not share all the conventions of ToBI (e.g., the Break-Indices are excluded from the analysis) (see Gussenhoven, 2005).

ToRI transcription symbols were coined by Odé (2008), based on her earlier experimental work in the framework of IPO (Odé, 1989, 2003). Odé (2008) explicitly states that her approach to intonation is not "in the tradition of the Autosegmental-Metrical model" (Odé, 2008, p. 436). ToRI comprises phonetic correlates of pitch accents, realization rules for pitch accents, and their

communicative functions. The ToRI system is freely accessible online and can be used as an interactive learning model.[24]

Odé (2008) proposes the following inventory of pitch accents in monolingual Russian: H*L, H*H, H*M, L*, HL* and L*H. H stands for high, L for – low, and M for – middle accent. Asterisks, leading, and trailing tones are used in the same way they are used in MAE_ToBI. The Break-Indices are not included in the ToRI. Furthermore, ToRI specifies perceptually relevant pitch movements without a pitch accent.

Edge tones are represented by boundary tones in ToRI; phrase accents are not recognized as a part of the edge tone system. There are three initial boundary tones (%H, %M, %L) and two final boundary tones (either L% or % which is not marked by pitch). Odé (2008) claims that final high boundary tones do not occur in Russian. This classification of boundary tones received some criticism in the literature. Paschen (2016) points out that Odé (1989, 2008) distinguishes between three perceptually relevant tone levels in Russian, namely high, middle and low. This distinction is maintained with respect to pitch accent types and initial boundary tones, but final boundary tones are described as either being low (L%) or not marked by pitch (%). The asymmetry between initial (%H, %M, %L) and final (L%, %) boundary tones is not explained by Odé (2008). Paschen (2016), for instance, assumes an equal number of initial and final boundary tones in Russian (three initial and three final boundary tones).

All in all, although ToRI resembles the ToBI-based system of prosodic annotation, it provides a phonetic description of Russian intonation based on the perception experiments by Odé (1989) and is only partially inspired by the autosegmental-metrical approaches to intonation (particularly by ToDI).

This thesis will follow the autosegmental-metrical approach to intonation for both heritage and monolingual speakers of Russian. First, the AM-model of intonation is one of the major models of intonational structure in current research. Second, other approaches to intonation in monolingual Russian presented in this chapter do not seem to be suitable for the current dataset and for this thesis (i.e., Bryzgunova's model aims at describing isolated contours to L2 learners of Russian while Odé's perceptual model is difficult to apply due to its great complexity). Third (and very importantly), the AM-model of intonation is not only applicable to the narrations of monolinguals but also to the narrations of HSs presented in this thesis.

Since there is no fully-fledged ToBI system for monolingual Russian, the method of prosodic annotation used in this thesis will be described in detail in chapter 5.8.

[24] https://www.fon.hum.uva.nl/tori/index.html

5.3 Intonation and sociolinguistic factors

Age and gender have been claimed to be among the most crucial factors that influence language variation. Furtermore, age and gender-related differences have been extensively reported on by studies on prosody in monolingual populations. Against this background, this chapter motivates the inclusion of the abovementioned sociolinguistic factors by focusing on the studies that show how age and gender influence the intonation patterns of monolingual speakers.

5.3.1 Age

Different generations were reported to differ regarding some intonational patterns. For instance, younger speakers (16-19 years old) of New Zealand English were found to produce more high rising terminals in statements than middle-aged speakers (30-45 years old). Further, younger speakers were found to produce earlier rises (i.e., rises that start on the nuclear syllable) compared to older speakers who predominantly produced more late rises (i.e., the rise aligns with the post-nuclear syllable) (Warren, 2005). Guy et al. (1986) report similar findings for the frequency of high rising terminals in Australian English. Guy et al. (1986) investigated Uptalk in Australia in a sample of 130 speakers from Horvath's corpus of recorded sociolinguistic interviews. The speakers belonged to four different age groups: younger teenagers (11-14 years), older teenagers (15-19 years), younger adults (20-39 years) and older adults (40+ years) (Guy et al., 1986, p. 34). The study revealed that teenagers of both groups produced high rising terminals more frequently than adult speakers of both groups.

In American English, high rising terminals are typically associated with young female speakers (Linneman, 2012; Ritchart and Arvaniti 2014).

Speech rate was also reported to be affected by age. Multiple studies report that young speakers speak faster than older speakers (e.g., Jacewicz et al., 2009; Jacewicz et al., 2010; Bóna, 2014).

Characteristics of monolingual Russian speech by teenagers revealed that there is a tendency for adolescent speakers to speak monotonously, i.e., using the H* or L* accents rather than rising or falling accents (Žarovskaja, 2018).

Another interesting finding about younger monolingual Russian speakers (16-30 years old) revealed that younger speakers differed from older speakers regarding the F0 peak alignment in rising accents. A typical nuclear rising pitch accent in yes-no questions, statements that express incompleteness or enumeration, and exclamatory utterances reported for Russian is the one in which the F0 peak is realized on the stressed syllable (Volskaja, 2013). Younger Russian speakers were found to produce rising accents in which the F0 peak was realized after the stressed syllable more frequently than older speakers (Volskaja, 2013; Volskaya & Kachkovskaia, 2016). This

pattern was reported to become a popular pattern among young monolingual speakers of Russian. According to a perceptual experiment that was carried out by Volskaja (2013, p. 89), secondary students (15-16 years of age) and university students (20-24 years of age) typically perceive phrases with an L*+H accent as those with neutral intonation whereas adult speakers (37-54 years of age) perceive such phrases as emotionally colored.

Furthermore, it was found that monolingual young speakers (11-15 years old) of Russian extend the use of rising nuclear pitch accents to contexts where they are not expected (e.g., to declarative statements in which a falling nuclear accent is expected in standard Russian) (Samolina, 2017).

5.3.2 Gender

Intonation of men and women was found to differ in a number of aspects. Female speakers were reported to use more varied intonation patterns (i.e., use more pitch movements, either rising or falling) (Henton, 1995; Schmid & Bradley, 2019; Orazbekova et al., 2015; Huang & Zhang, 2019, Grice & Miglio, 2014). Specifically, Schmid & Bradley (2019) found that American female speakers produced more L*+H and L+H* accents while male speakers produced more monotonal H* and L* accents (see Huang & Zhang, 2019 for similar findings). Also, male speakers were found to produce "a steady drop at the end of an utterance" (Schmid & Bradley, 2019, p. 2687). Furthermore, women were reported to have a higher pitch (e.g., Henton, 1989; Schmid & Bradley, 2019; Huang & Zhang, 2019) and a greater pitch range (Daly & Warren 2001; Ritchart & Arvaniti, 2014 on pitch range connected with Uptalk) than men. Moreover, female's pitch was found to be more dynamic than men's pitch ("dynamism" refers to the rate of change of pitch) (Daly & Warren, 2001; Huang & Zhang, 2019). Also, female speakers were reported to usually have more breathy voices than male speakers (e.g., Klatt & Klatt, 1990).

Furthermore, many studies report that male speakers have a faster speech rate compared to female speakers (e.g., Yuan et al., 2006; Stepanova, 2011; Kim, 2017; Jacewicz et al., 2010).

Moreover, women were reported to produce more rising tones than men (Lakoff, 1975 for English in the US, Guy et al., 1986 for Australian English; Ritchart & Arvaniti, 2014 for southern California English; Allan, 1990, p. 115; Warren, 2005; Britain & Newman, 1992 on English in New Zealand). In English, the last feature manifests itself in so called Uptalk (or High Rising Terminals). Uptalk refers to the use of a high boundary tone in declarative statements where a falling tone is usually expected (Guy et al., 1986 for Uptalk in Australia; James et al., 1989 for Uptalk in Canada; Ching, 1982 for Uptalk in the US).

Clopper & Smiljanic (2011) analyzed prosodic variation in two dialects of American English (Southern and Midland) in read speech and found differences not only between the two regional dialects but also between the gender of speakers. Participants were asked to read two different stories: the Rainbow passage (more formal reading, a pseudo-scientific text) and the Goldilocks passage (more informal reading, a fairytale). I will concentrate on the results of the study that revealed gender differences between the speakers. It was found that female speakers of both dialects produced more L-H% phrase-boundary tone combinations than male speakers (Clopper & Smiljanic, 2011, p. 242). Such a combination was reported to mark continuation between IPs (Clopper & Smiljanic, 2011, p. 243). Furthermore, female speakers produced fewer H* accents than male speakers. Lastly, female speakers produced more low rising L*+H accents than male speakers and they especially did so in the Rainbow passage (more formal reading).

Adolescent female speakers of British English were found to differ from adolescent male speakers in read productions of different sentence types (declaratives, declaratives-questions, yes-no questions, wh-questions and exclamatory sentences). It was found that female speakers generally produced a high boundary tone more frequently than male speakers in every sentence type (Jiang, 2011, p. 975). In a different study by Huang & Zhang (2019), it was found that male speakers of English clearly preferred an L% boundary tone at the end of declarative utterances in a Talk Show "TED Talk" while female speakers used L% and H% almost equally frequently.

In monolingual Russian, female and male speakers were found to differ from each other in a number of linguistic aspects, and these differences were almost predominantly found in informal colloquial speech (Yokoyama, 1999, p. 402 citing Zemskaja, 1973; Zemskaja et al., 1990, 1993). For instance, female speakers were found to use their pitch height to express positive and negative attitude: low pitch was found to correspond with the negative attitude while high pitch was found to express the positive attitude. Furthermore, female speakers were reported to use so called "expressive intonation" more often than male speakers.[25]

In exclamatory sentences such as "She is so nasty! (Ona takaja protivnaja!)" female speakers typically place a falling accent on the modifier "so" and a rising accent on the following adjective "nasty." Male speakers, however, usually place a rising accent on the modifier and a falling accent on the adjective (Yokoyama, 1999, pp. 405- 406). Further, female speakers were found to have a greater pitch variability (i.e., a greater pitch range) than male speakers (Yokoyama, 2003).

[25] Non-expressive intonation (or neutral) is associated with a sequence of rising (LH) and falling (HL) accents some of which are typically downstepped. Besides, the nuclear pitch accent (NPA) falls on the utterance-final word. Utterances with expressive intonation do not usually have a sequence of rising and falling accents, but rather one single accent that is either rising or falling. Crucially, the NPA can appear anywhere in an utterance (but tends to appear early in an utterance) and the material that follows the NPA is usually unaccented while the material that precedes the NPA can have optional rising accents (Yokoyama, 2001, pp. 13-16 on expressive intonation).

To sum up, studies on monolingual intonation found salient differences between male and female as well as adolescent and adult speakers. Therefore, this thesis will include the abovementioned sociolinguistic factors in the investigation of intonation patterns.

5.4 Intonation and different language situations

Intonation patterns were found to differ not only between speakers of different genders and ages but also between different speaking styles. Thus, the current chapter will summarize the studies that looked into the intonation of monolingual speakers who spoke in different language situations.

A connection between high pitch and formal speech has been suggested (e.g., Brown & Levinson, 1987; Ohala, 1984, 1994) with high pitch being associated with subdominance (Ohala's frequency code hypothesis) (Ohala, 1984, 1994; Gussenhoven 2004). In Japanese, for example, it was found that female speakers used high pitch to show politeness or formality (Loveday, 1981). However, this hypothesis does not seem to be universal. Formal speech in Korean was found to have lower measures of average F0 and pitch range (Winter & Grawunder, 2012). Similar tendencies for the average F0 and pitch range were found in German (Grawunder & Winter, 2010; Grawunder et al., 2014).

Fundamental frequency was found to be the most distinctive feature of formal and informal speaking styles in American English (Sityaev et al., 2007). Informal speech was characterized by a higher average F0, higher utterance-initial and utterance-final F0 values, greater F0 range, more instances of a finally-rising F0, and slightly slower articulation rate in comparison with formal speech. The majority of the utterances in both styles contained H* and L+H* accents. However, the informal speech contained more occurrences of H* accents than L+H* whilst in the formal speech they were distributed more equally.

The speech rate (measured as words per minute) was also found to differ depending on the speaking style in American English. Specifically, informal speech (conversations) had a faster speech rate than formal speech (public speaking) (Ray & Zahn, 1990).

Clopper and Smiljanic (2011) (more details in subchapter 5.3.2) found that a more formal read speech differed from a less formal read speech in a number of ways. Specifically, the frequency of the L-L% final combinations was higher in the formal reading than in the informal one while H-L% combinations were more frequent in the informal speech than in the formal one. Also, the number of H* accents was higher in the informal speech compared to the formal speech whereas the number of L*+H accents was lower in the informal speech than in the formal speech. The L*

accent was more frequent in the formal speech compared to the informal speech (Clopper & Smiljanic, 2011, pp. 242-243).

The number of pitch accents was also found to be affected by the formality of speech. Sityaev (1999) investigated the number of pitch accents per intonational group in three different speaking styles (academic, informational, and conversational) and spontaneous speech vs. read speech. The speech sample came from three native speakers of Southern British English. Academic speech is viewed as formal speech (e.g., a lecture), conversational speech represents informal speech (a talk with a friend), and informational speech is located in between the previous two (e.g., educational descriptive narrative about some research with non-specialists). It was found that in informal speech speakers tended to have one accent per intonational group more frequently than in formal speech. Further, intonation groups with three and four pitch accents were less frequent in informal speech compared to formal speech. The informational speech was much more similar to the conversational speech than to the academic speech. As for the number of pitch accents in spontaneous vs. read speech, it was found that the speakers produced fewer pitch accents in spontaneous speech than in read speech. Overall, speakers produced fewer pitch accents in conversational and informational speech than in academic speech.

Studies on monolingual Russian also report on prosodic differences regarding the speaking style. Volskaya and Kachkovskaia (2016) investigated intonation patterns of colloquial spontaneous Russian using the Corpus of Spontaneous Monolingual Speech (CoRuSS). The corpus contains speech of participants of three age groups (16-30, 31-45, 46-77) with 10 gender-balanced participants in each age group. Participants were asked to talk about any topic of their interest, e.g., about their family, education, traveling, etc. The spontaneous speech was compared to the read speech using the corpus CORPRES that comprised 30 hours of speech by eight monolingual speakers. The most prominent difference between spontaneous and read speech was found with respect to the falling contours. Specifically, the non-low and level contours were more frequent in spontaneous speech while the final (low) falling contours were more frequent for read speech. Kachkovskaia and Skrelin (2020) and Svetozarova and Kuosmanen (2003) report on similar results regarding the difference in spontaneous and read speech in monolingual Russian.

Comstock (2018, p. 268) reports that monolingual speakers of Russian differ in their intonational patterns depending on the interview style (see a detailed description of the differences in subchapter 5.6).

Zerbian et al. (2024) report that monolingual speakers of Russian show sensitivity to different registers by producing more high final boundary tones and shorter intonational phrases in formal

situations and by placing more PAs on the verbs in informal situations (see a detailed description of the differences in the subchapter 5.6).

Yokoyama (2003) examined the mean F0 in formal and informal speech of eight monolingual speakers of Russian. Formal speech comprised conference presentations, a university lecture, and a discussion after a presentation while informal speech included conversations at home and informal talks after the conference. The results of the study revealed that in formal Russian the mean F0 was lower than in informal Russian (Yokoyama, 2003, p. 13). Zorina (2018) points out that formal prepared speech (e.g., in presentations that were first written and then read out loud) is monotonous in monolingual Russian. Šatilov (2012, p. 249) investigated the formal speech of monolingual Russian scientists and found out that utterances often did not have a falling contour at the end of an IP, but the pitch stayed at the same level.

To sum up, the formality of speech (formal vs. informal narrations) was found to be an important factor influencing speakers' choice of a particular intonation pattern. Therefore, formality will be explicitly looked at in this thesis.

5.5 Intonation in heritage languages

HSs were often found to show more differences from monolingual speakers in areas such as morphology or syntax than in the production of speech sounds, leading to what was called a "phonetic advantage" (Polinsky, 2018, pp. 115-116; Chang, 2021, pp. 582-583; Rao & Polinsky, 2024, p.3). Such phonetic advantage may arise as a result of early exposure to a HL (Kan, 2021, p. 74). However, early exposure to a HL does not guarantee a monolingual-like production of segmental and suprasegmental aspects during the lifetime of HSs since speech sounds as well as stress or prosodic differences might be subject to variation and change (Polinsky, 2018, p. 116; Kan, 2021, p. 74).

Impressionistically, HSs are typically perceived somewhere between monolingual speakers and L2 learners forming a separate speaker group. The speech of HSs is often rated as more accented than that of monolingual speakers and less accented than that of L2 learners, but what exactly distinguishes HSs from the monolingual group remains unclear (see Flores & Rato 2016 on HSs of European Portuguese; Kupisch et al., 2014 on HSs of Italian, French and German; Polinsky, 2018 on HSs of Russian; Chang & Yao, 2016 on HSs of Mandarin). Studies on the production of segments by HSs report that HSs differ from monolinguals, but frequently outperform L2 learners (see Polinsky, 2018, pp. 126-128; Kan, 2021 for an overview).

In addition to studies showing differences in the segmental domain, studies on suprasegmental aspects such as stress, rhythm, and intonation report that HSs differ from both monolingually-

raised speakers and L2 learners. Sometimes HSs are found to pattern more closely with monolinguals; however, sometimes HSs are closer in their production of suprasegmental features to L2 speakers (for a detailed overview see Chang, 2021, pp. 593-597; Rao & Polinsky, 2024).

Cross-linguistically, intonation can differ along four dimensions: systemic, realisational, semantic, and frequency (Mennen, 2015 based on Ladd, 1996).

The systemic dimension is defined as an inventory and distribution of structural phonological elements (e.g., pitch accent, boundary tone, phrasal accent). The accents in Italian, for example, were reported to appear on the unstressed syllable, and this is different from other European languages (Ladd, 2008).

The realisational or phonetic dimension shows how systemic elements of intonation are phonetically implemented (e.g., alignment of pitch accents, their scaling, or slope). Ladd (2008) found, for example, that the alignment of nuclear and prenuclear peaks is later in Southern British English than in Standard English.

Differences or similarities in the semantic dimension can be observed by looking at the structural elements of tunes and the meaning they bear. Mennen (2015) claims that languages may differ in their use of focus or question intonation. Grabe (2004) reports that in Standard English the rising intonation is commonly used in questions while in Belfast English, e.g., the rising intonation is a marker of the statement.

The frequency dimension deals with the question of how the intonation primitives are disseminated and how often ("frequently") the language's inventory is used. For instance, Mennen et al. (2012) found that the rising intonation is used more often in read speech by female speakers of Northern Standard German, in comparison with those speaking Southern Standard British English.

Based on the differences between the four abovedescribed dimensions, Mennen (20215) develops a model that accounts for the difficulties that L2 speakers have in the production of L2 intonation. Later this model was extended to the context of L1 attrition (Mennen et al., 2022). The model is called the L2 Intonation Learning Theory (LILt). Although LILt was not created to explain the intonational patterns of HSs, it is nevertheless useful for the current thesis and can be extended to HSs as a bilingual speaker population.

Mennen (2015) points out that a number of studies show "non-native intonation" in bilinguals in each dimension of intonation described above. However, there are some dimensions that are more sensitive to dissimilarities than the others (e.g., the realisational dimension was found to be especially prone to dissimilarities between L2 speakers and monolinguals).

The LILt model allows one to detect in which dimensions the learners differ from monolingual speakers. Moreover, the LILt model also helps to understand the possible divergence between L2 learners and monolingual speakers by taking into account the level of proficiency, different age of onset, amount of exposure to L2, and other background information of L2 speakers.

Moving to the studies on the intonation of HSs, it has to be acknowledged that intonation of HLs received far less attention than other areas of HL grammar. Also, the majority of the studies focus on one particular phenomenon such as question intonation, Uptalk, or intonation of different information-structural categories (e.g., Dehé, 2018; Kim & Repiso-Puigdelliura, 2021; Kim, 2023; Kim, 2019; Gries & Miglio, 2014). However, it is less clear what global intonation features of HSs are. Thus, being one of the first studies on global intonational features of HSs of Russian, this thesis aims to shed more light on the possible reasons behind the perceived accent of HSs and why HSs are often seen as a group of speakers that fall between monolingual and L2 speakers.

Studies that investigate intonation in HLs frequently report on the influence of a ML on a HL of HSs. However, there is also evidence that the HL may influence the ML or the influence can be bidirectional.

Since one of the goals of this thesis is to investigate the intonation patterns of HSs the studies that examined heritage intonation will be summarized in detail. Special attention will be given to the studies that investigated intonation patterns of HSs in their HL. Studies that examined the intonation of HSs in their MLs will be only briefly summarized since they are not directly relevant to this thesis. Studies that dealt with intonation in heritage Russian will be outlined in chapter 5.6.

Studies that looked into the intonational patterns of HSs in their ML have shown that a HL can influence a ML. For instance, Van Rijswijk et al. (2017) investigated the prosody of different foci in the Dutch of HSs of Turkish. It was found that Dutch monolinguals demonstrated declination in sentences with broad focus whereas HSs had the same pitch level during the whole sentence which is typical for the intonational system of Turkish (Van Rijswijk et al., 2017, p. 65). Queen (2012) investigated the intonation patterns of different rising terminals produced by HSs of Turkish in their ML German. It was found that HSs used a substantial number of rising terminals in their German which are typical for Turkish.

Studies that examined intonation of HSs in their HL have shown that intonational patterns that are typical for a ML can be transferred into a HL. For instance, Colantoni et al. (2016) investigated intonation patterns of HSs of Mexican Spanish in the US. In Mexican Spanish, pre-nuclear rises in declarative utterances are usually marked by a rising accent in which the peak of the rise is typically aligned after the stressed syllable, and that especially holds for words with penultimate stress. In American English, on the other hand, pre-nuclear rises are typically realized with an H*

accent with the peak within the stressed syllable (Colantoni et al., 2016, p. 7). It was found that in a reading task HSs produced significantly more rising accents in which the rise was aligned within the stressed syllable (i.e., the American English pattern) than the first-generation immigrants (Colantoni et al., 2016, p. 12).

Bullock (2009) is another study that reported on the influence of the ML on the HL. The study reported that two HSs of French in the US placed high pitch accents to express focus, which is usually expressed through syntactic dislocation and phrasing in Standard French. Thus, HSs extended the functionality of H* accents to mark focus.

Among the studies that report on the cross-linguistic influence of a ML on a HL are the studies by Kim and Repiso-Puigdelliura (2021) and Kim (2023). Both studies examine the production of Uptalk in spontaneous speech by HSs of Spanish with the ML American English. Uptalk is well-attested in different varieties of English, and it is also reported for Spanish (Kim & Repiso-Puigdelliura, 2021, pp. 4-6). It was found that although HSs of Spanish were similar to monolingual speakers of Spanish in the frequency of Uptalk, the intonation contours of HSs were less dynamic compared to monolingual Spanish speakers (i.e., HSs produced Uptalk with less pitch movement) (Kim & Repiso-Puigdelliura, 2021, p. 10; p. 17). Further, regarding the steepness of the rise, Uptalk of HSs was produced with flatter rises compared to monolingual speakers of Spanish (Kim & Repiso-Puigdelliura, 2021, p. 19). The differences found between HSs and monolingual speakers of Spanish are discussed with reference to the influence of the ML American English on the HL Spanish.

Similarly to Kim and Repiso-Puigdelliura (2021), Kim (2023, p. 19) reports that HSs of Spanish produced Uptalk in their HL and ML with a frequency similar to both monolingual speakers of Spanish and American English. However, HSs were found to produce Uptalk with IP-final deaccenting (a typical feature in English that is absent in non-heritage Spanish) in their both languages (although they did so less often in their HL Spanish than in their ML English).

Kim (2023) examined the acoustic correlates of the Uptalk rise: pitch excursion and rise duration. It was found that HSs did not distinguish Uptalk in their ML and HL based on pitch excursion, but based on rise duration. Specifically, HSs produced shorter rises in their Spanish, and longer rises in their English. Further, HSs who had more language experience with English and less experience with Spanish produced longer rises whereas HSs with higher Spanish proficiency produced shorter rises (Kim, 2023, pp. 15-17).

The results of the study are interpreted with respect to the cross-linguistic influence from the ML American English that manifests itself in the systemic (i.e., in the emergence of IP-final deaccenting in Spanish, a feature that was previously not reported for Uptalk in non-contact

Spanish) and realizational domains of intonation (potential assimilation of pitch excursion in Spanish to that of English to an extent that the two languages are not distinguished in this respect; differences in rise duration conditioned by language experience) (Kim, 2023, pp. 18-19). The frequency dimension of intonation was found to be stable under language contact (e.g., the frequency of Uptalk in the ML and HL of HSs).

Previous studies have also shown that a bidirectional influence between a HL and a ML is possible (e.g., Dehé, 2018; Robles-Puente, 2014). Since this thesis focuses on the HL of HSs only the results that are relevant to the HLs will be summarized leaving the MLs out. Dehé (2018) investigated the intonation of yes-no questions (YNQs) in North American heritage Icelandic and compared it with Icelandic spoken in Iceland and with English spoken in Canada. A default intonational pattern of polar questions was reported to differ in North American English and in Icelandic. YNQs in North American English typically have a high boundary tone with a low rise (L* H-H%). In contrast, YNQs in Icelandic usually have a rising NPA followed by a low final boundary tone (L*+H L-L%) (Dehé, 2018, p. 222).

It was shown that HSs produced fewer low final boundary tones and rising (L*+H) NPAs in their Icelandic compared to monolingual speakers of Icelandic (Dehé, 2018, p. 246). HSs were reported to produce the intonation pattern of YNQs in their HL that was typical for Canadian English more frequently than the one typical for monolingual Icelandic. In particular, the high final boundary tone together with the low-rise (L*) was found in about 60% of the cases. These results were interpreted as a possible influence of the ML on the HL (Dehé, 2018, p. 247).

Robles-Puente (2014) investigated the rhythm and intonation of Mexican Spanish spoken in Los Angeles by speakers of different groups: two groups of HSs of Spanish (those who were born in Los Angeles "L.A. born bilinguals" and those who came there as children "Adult early bilinguals") and "Adult Late Bilinguals," i.e., those bilinguals who came to Los Angeles at the age of 15 and later. The data of monolingual speakers of Mexican Spanish and American English were also included in the study.

It was found that HSs produced pitch accent types typical for English in their Spanish. Specifically, in declarative utterances with broad focus, English monolingual speakers and adult early bilinguals frequently produced an H* followed by L% in their Spanish, a combination typical for English declaratives. Spanish monolingual speakers and L2 learners rarely produced H* L% combinations in their Spanish, but they frequently produced nuclear accents typical for monolingual Spanish (L+¡H*).[26] L.A.-born HSs produced fewer combinations of H* L% in their

[26] L+¡H* refers to a rising accent with an upstepped high target.

Spanish than monolingual English speakers and adult early bilinguals but more of such combinations than monolingual Spanish speakers and L2 learners. Frequent occurrences of the H* L% pattern in narrations of HSs have been interpreted as a possible transfer effect from English.

To sum up, the studies on intonation of HSs reviewed here report on the differences between HSs and monolinguals in all dimensions postulated by LILt (Mennen, 2015): systemic (Robles-Puente, 2014; Kim, 2023), realisational (Colantoni et al., 2016; Kim & Repiso-Puigdelliura, 2021; Kim, 2023), semantic (Bullock, 2009), and frequency (Robles-Puente, 2014; Dehé, 2018; Gries & Miglio, 2014).

5.6 Intonation in heritage Russian

Studies that deal with intonation of heritage Russian in general and heritage Russian in the US in particular are scarce. In what follows an overview of the existing studies on intonation of HSs of Russian will be given.

Some studies that focus on the intonation patterns of heritage Russian report that prosodic patterns typical for the ML may be transferred to the HL.

Andrews (1993) investigated the intonational contours of HSs of Russian residing in the US. Twelve speakers participated in the study, two of whom were born in the US to Russian-speaking families while the other 10 speakers were brought to the US at different ages (the range was from 6 to 12 years old). Participants were shown 4 pictures (one after another) of a city that changed over time. The task was to describe the pictures. Andrews (1993) found the following intonational patterns of Russian émigrés in the US that were not typical for monolingual speakers of Russian and that were interpreted as interference from English:

The first feature that is reported to be prominent in the narrations of Russian émigrés in the US is a high nuclear pitch accent typical for English. Both English and Russian have a low boundary tone in declarative statements. However, the NPA type differs in the two languages. In Russian, the NPA is expressed by a falling H+L* accent while in English the NPA is usually high H* (according to Pierrehumbert & Hirschberg, 1990 for English).[27] Andrews (1993, p. 167) found that participants often produced the falling boundary tone in declarative utterances that had a preceding high pitch accent in their Russian.

The next feature that is reported to be prominent in the narrations of Russian émigrés has to do with the intonation of yes-no questions (YNQs). In Standard Russian, YNQs are usually produced

[27] It should be noted that Andrews (1993) does not describe intonational contours in terms of the autosegmental-metrical framework. The description of Russian intonation is based on the framework by Bryzgunova (1980).

with a rising NPA followed by a low final boundary tone (for studies on YNQs in monolingual Russian see Rathcke, 2006b; Igarashi, 2008). Some participants were found to produce a high final boundary tone in their Russian productions instead of the expected low one (Andrews, 1993, p. 169).

Andrews (1993, p. 170) also found that Russian emigres almost did not produce late rises (L+H*) which are typical for syntactically unconnected utterances. Instead, participants mainly produced early rises (L*+H).

The intonation in syntactically connected utterances with the meaning of "incompleteness" or "continuation" was also found to be different in the narrations by Russian émigrés than the expected contours in Standard Russian. In Russian, in such instances a high rising NPA (L+H*) followed by a low boundary tone is expected while in English a falling NPA followed by a high boundary tone is expected (Andrews, 1993, p. 172). It was found that Russian émigrés produced the contour typical for English and almost never produced the contour typical for Russian.

In her book on speakers of Russian abroad, Zemskaja (2001) reports that HSs of Russian with the ML American English often produced rising intonation at the end of an IP instead of the falling intonation typical in Standard Russian.

Polinsky (2018) also suggests that HSs of Russian in the US produce rising final boundary tones more frequently than monolingual speakers of Russian. Polinsky (2018, pp. 118-121) reported her findings on the "heritage accent" in heritage Russian based on the unpublished matched-guise study. In this study, 15 monolingual speakers of Russian had to answer two questions regarding the short speech material that they heard. Monolingual speakers had to decide whether a person on the tape was born in Russia and whether this person lived in Russia. The raters had three options to answer, namely "yes," "no" or "I do not know." Four speaker groups were recorded: HSs of Russian who were born in the US (N = 7), highly advanced L2 learners of Russian with L1 American English (N = 5), first-generation Russian-speaking immigrants who left a Russian-speaking country before the age of 30 and who have lived in the US for a minimum of 10 years (N = 8), monolingual Russian speakers (N = 11). The short recordings chosen for the stimulus materials did not contain morphosyntactic errors, long breaks, or hesitations.

The results of the study revealed that monolingual speakers were clearly identified as speakers who were born and lived in Russia while the advanced L2 learners were clearly identified as speakers who were not born and who did not live in Russia. HSs were generally identified as speakers who did not live in Russia. As for their place of birth, the raters' response was less accurate compared to the previously described responses, i.e., 62.3% of the responders answered that HSs were not born in Russia while other 37.7% of the answers said that HSs were born in

Russia. As for the first-generation immigrants, they were clearly identified as speakers who were born in Russia, but who did not live in Russia anymore.

Polinsky (2018, p. 120-121) suggests that the first-generation immigrants, HSs, and L2 learners were correctly identified as those not living in Russia because they frequently produced intonation contours that ended on a rise instead of the fall that is expected in Standard Russian. However, this hypothesis has not been tested, and therefore it is yet to be clarified which specific prosodic cues contributed to the raters' perception of HSs, L2 learners, and first-generation immigrants as speakers who did not live in Russia.

It is important to point out that none of the three abovementioned researchers (Andrews, 1993; Zemskaja, 2001; Polinsky, 2018) provides any numerical evidence to support their observations.

Another recent study that reports on the influence of the ML on the HL is the one by Kachkovskaia et al. (2022) on different interrogative utterances produced by HSs of Russian with the ML Brazilian Portuguese. The study presents the results of a reading production task by 39 first-generation immigrants (mean age is 34), 15 HSs of Russian (mean age is 75), six monolingually-raised speakers of Russian, and two L2 speakers of Russian with an L1 Brazilian Portuguese (Kachkovskaia et al., 2022, p. 36). The interrogative utterances under discussion are contrastive (elliptical) questions, yes/no questions, and echo wh-questions. These three types of questions differ regarding their intonation patterns in monolingual Russian and Brazilian Portuguese (e.g., regarding the NPA type, placement, or the type of the FBT) (for a detailed description see Kachkovskaia et al., 2022, pp. 35-36). All the participants were asked to read short dialogues that targeted the production of different interrogatives. The reading productions were extracted from two corpora: RusIm-Bra1 (first-generation Russophone immigrants in Brazil) and BraPoRus (Brazilian Portuguese heritage Russian) (Smirnova Henriques et al., 2020; Smirnova Henriques et al., 2021 as referred by Kachkovskaia et al., 2022, p. 36).

The study showed that none of the 15 HSs produced all the target utterances similar to monolingual speakers of Russian. HSs were found to differ from monolingual speakers by producing the majority of interrogatives using the intonation patterns typical for Brazilian Portuguese and not for monolingual Russian. The intonation pattern of the contrastive elliptical questions of HSs did not match the one of monolingual speakers in around 70% of the cases. The intonation of yes-no and echo wh-questions by HSs differed from the intonation of monolingual speakers in around 85% of the cases (Kachkovskaia et al., 2022, pp. 38-39). The performance of HSs was attributed to the influence of their ML Brazilian Portuguese.

Research that is of particular relevance for this thesis is the doctoral dissertation by Comstock (2018) since she examines the intonation patterns in heritage and L2 Russian in different types of speech.

First, Comstock (2018) outlines the differences between monolingual Russian and English regarding their pitch accent inventory and frequency as well as the typical prosodic patterns.

As far as the pitch accent inventory and frequency are concerned, it has been claimed that single pitch accents (H* or L*) are more common in English while bitonal PAs (rising or falling) are more common in Russian (Comstock, 2018, p. 47). Previous studies typically do not report single PAs to be in an inventory of accents in Russian (Igarashi, 2004a, 2005a, 2005b; Yokoyama, 1992, 2001, 2003, 2013, all cited by Comstock, 2018, p. 26).

As for the rising PAs, they also occur in English, but less frequently than in Russian and only in specific contexts (e.g., in expressive contexts) while in Russian such accents are default and they do not usually have an expressive function (Comstock, 2018, p. 38 with the reference to studies on monolingual Russian). Furthermore, in Russian bitonal rising accents are typical at the beginning of a phrase (especially with the canonical word order)[28], but in English such accents are usually weakly produced or not produced at all (see also Jasinskaja, 2016 on monolingual Russian for a similar idea). Moreover, bitonal combinations of rising and falling accents (L+H H+L) are frequent in Russian but infrequent in English (Comstock, 2018, p. 47).

As for the falling PAs, the H+L* accent is a nuclear pitch accent in Russian but not in English (Comstock, 2018, p. 45).

Furthermore, the following patterns were found to be common in English: “hat pattern” and “high plateau.” Comstock (2018, pp. 29-30) refers to the “hat pattern” as a pattern that consists of rising pitch accents at the beginning and falling pitch accents at the end of an IP, but has a sequence of monotonal pitch accents in the middle. The “high plateau” is defined as a sequence of monotonal pitch accents (Comstock, 2018, p. 38). In Russian, on the other hand, a “peaked hat” pattern is used instead of a “hat pattern” and a “sawtooth pattern” instead of a “high plateau. The “peaked hat” is referred to as a sequence of a rising and a falling pitch accent without any monotonal accents in between (Comstock, 2018, p. 29). The “sawtooth pattern” consists of a sequence of reduced rising and falling pitch accents. Reduced pitch accents have a much smaller excursion size in comparison to full pitch accents (Comstock, 2018, p. 38; Odé, 2008, p. 440). The Russian patterns are characterized by a sharp rise or a sharp fall, unlike the English patterns for which pitch prolongation is typical (Comstock 2018, p. 38).

[28] Here it is not clear which word order is meant, but it can be assumed that the author refers to the SVO order since this word order is often referred to as canonical in Russian.

Also, in Russian, it is common to front constituents such as objects and mark them with the falling H+L* accent whereas in English such fronting is usually not acceptable (Comstock, 2018, p. 45). Finally, in Russian, the phrases (either intermediate or intonational) can be comprised of one word only, especially in colloquial speech, while in English these phrases are usually longer than one word (Comstock, 2018, p. 47).

Comstock (2018) investigated political speech in two different contexts (affiliative and antagonistic) produced by two journalists and two civil servants. The affiliative interviews were those that did not involve any controversy but rather included topics that helped an interviewer establish friendly relationships with an interviewee. In such interviews, an interviewer supported the political position and the actions of an interviewee. The antagonistic interviews were those that had an element of conflict. In such interviews, an interviewer's statement usually contradicted the political position of an interviewee, or an interviewer asked questions concerning some controversial events in which an interviewer was personally involved (Comstock, 2018, p. 53).

Two participants of the study belonged to the group of advanced near-native L2 learners (of either Russian or English) while two other participants were considered to be HSs (of either Russian or English). Comstock (2018) did not analyze both Russian and English productions of every participant but chose one of the languages per person. Thus, the productions in Russian spoken by two speakers (one is an L2 learner and one is a HS) and the productions in English spoken by two participants (one is an L2 learner and one is a HS) were analyzed. The productions of monolingual interviewers were also included in the analysis.

I will concentrate on the results regarding the productions by a HS of Russian. The HS was a journalist Julia Ioffe who was born in Moscow and immigrated to the US at the age of seven.

As for the production of the affiliative interview, the HS was found to significantly differ from the monolingual interviewer regarding the following patterns (Comstock, 2018, p. 240):

- The HS produced single accents (H* or L*) while the monolingual interviewer did not produce any
- The HS produced more one-word IPs than the monolingual interviewer
- The HS produced more high plateaus than the monolingual interviewer
- The HS produced more fronted constituents than the monolingual interviewer

The HS and the monolingual speaker of Russian were similar to each other regarding the following patterns (Comstock, 2018, p. 240):

- The number of nuclear H+L* accents
- The number of IP-initial rising accents
- The frequency of bitonal accents
- The number of bitonal L+H H+L combination

As for the antagonistic interview, the HS was found to significantly differ from the monolingual interviewer regarding the following patterns (Comstock, 2018, p. 264):

- The HS produced single accents (H* or L*) while the monolingual interviewer did not produce any
- The HS produced fewer nuclear H+L* accents than the monolingual interviewer
- The HS produced fewer IP-initial rising accents than the monolingual interviewer
- The HS produced fewer bitonal accents than the monolingual interviewer
- The HS produced fewer combinations of L+H H+L accents than the monolingual interviewer

The HS and the monolingual speaker of Russian were similar to each other regarding the following patterns: (Comstock, 2018, p. 264)

- The number of one-word IPs
- The number of high plateaus
- The number of fronted constituents

As for the monolingual interviewers, they were found to differ from each other depending on the interview. The following patterns were significantly more frequent in the speech of the interviewer of the antagonistic interview compared to the one of the affiliative interview (Comstock, 2018, p. 265):

- Single-word IPs
- The number of the nuclear H+L* accents
- The number of bitonal combination L+H H+L

Comstock (2018, p. 268) remarks that the affiliative interviews were rather informal (or "friendly") while the antagonistic interviews can be thought of as more formal. Comstock (2018, p. 267) further points out that, unlike monolingual speakers, the prosodic patterns of the HS almost did not differ in two different interviews. The only pattern that was found to be different was the

number of fronted constituents which was greater in the affiliative interview than in the antagonistic one. Furthermore, the results (although not all) of the HS are interpreted with reference to the language transfer from English.

Overall, the HS of Russian with the ML American English differed from the monolingual speakers in both more formal and more informal interview regarding different prosodic phenomena. Moreover, the intonational patterns of the HS were almost similar in the two interviews, unlike the monolingual speakers whose intonational patterns differed from each other in more formal and informal interviews. It is worth mentioning that although Comstock (2018) gave a detailed analysis of the different prosodic phenomena in heritage Russian she only investigated one single HS and thus it is possible that the reported findings are speaker-specific.

Some studies that deal with intonation in heritage Russian cannot directly relate the linguistic behavior of HSs to the influence of the ML. For instance, a study by Zuban et al. (2023) investigated the intonation of yes-no questions (YNQs) produced by HSs of Russian residing in the US (N = 20) and Germany (N = 20) as well as by monolingual speakers of Russian (N = 20). Russian shows particularly insightful phonological differences compared to English and German regarding pitch accent placement, type, and final boundary tone in YNQs.

In non-contrastive SVO or SV utterances, it is the verb that receives the nuclear prominence while other constituents are expected to be deaccented (Svetozarova, 1998). Also, the main accent is usually rising (bitonal L*+H or L+H*, Rathcke, 2006a; Meyer & Mleinek, 2006, p. 1619). Furthermore, the rising accent on the verb in Russian YNQs is followed by a low boundary tone at the end of the question if the nuclear accent is not realized on the utterance-final syllable.

In German and English, unlike Russian, the NPA was reported to be low (L*) followed by a high boundary tone. In non-contrastive SVO utterances the NPA is expected to fall on the object (Grice et al., 2005 for German; Hedberg et al., 2014 for English). YNQs in heritage Russian in the US and in Germany therefore are a suitable phenomenon to test the influence of the MLs. Zuban et al. (2023) explored (1) how YNQs are produced by HSs and monolingual speakers of Russian regarding pitch accent placement (on subject, verb, and object), pitch accent type (monotonal vs. bitonal) and the choice of final boundary tone (L% vs. H%).

The data for the study were elicited in a production task where participants were asked to produce ten YNQs with different syntactic structures (SV or SVO). All questions were about a fictional car accident that participants had watched before the recording of the experimental sentences. The overall dataset was comprised of 600 YNQs. Every YNQ was analyzed for the presence of a PA, PA type and FBT. The presence of PA was detected auditorily, and PA type and FBT were identified by examining the local F0 trajectories and changes.

The results of the study revealed that, on the one hand, HSs were similar to monolinguals regarding some intonational features of YNQs (e.g., all speaker groups generally produced a rising NPA and placed the main prominence on the verb). On the other hand, HSs of both groups differed from monolinguals regarding the accentuation of subject and object constituents with HSs accentuating them significantly more frequently than monolingual speakers. Furthermore, HSs of both groups produced a high-starred accent (H*, L+H*) on the subjects significantly more frequently than monolingual speakers. Further, HSs in the US were found to differ from monolingual speakers and HSs in Germany regarding the phonetic implementation of PAs (i.e., upstepped accents on the verb and the alignment of rising accents in intransitive sentences) and FBTs.

As for FBTs, all speaker groups generally produced low FBTs typical for Standard monolingual Russian. However, HSs in Germany and monolingual speakers, unlike HSs in the US, also sometimes produced high FBTs, but mainly due to phonetic pressure, i.e., when there was less segmental material available for the realization of a low FBT following a rising nuclear pitch accent.

The findings by Zuban et al. (2023) could not be easily attributed to the transfer from the MLs. Some of the findings (e.g., frequent accentuation by HSs) are discussed with reference to the general effect of bilingualism while some other findings (e.g., upstepped accents on the verb by HSs in the US) are discussed as a potential group strategy to cope with tonal crowding).

Finally, a study by Zerbian et al. (2024) looked at global intonational patterns of HSs of Russian in the US (N = 53) and monolingual speakers of Russian (N = 40) using the RUEG corpus.[29] The following intonational patterns were examined: overall distribution of different pitch accents (PAs), size of IPs, PA placement on the content words and on the verbs as well as the type of the final boundary tones. The results showed an overall similar distribution of PAs of different types across HSs and monolinguals. Furthermore, the two speaker groups demonstrated a similar preference for high and low boundary tones. HSs and monolinguals showed similar sensitivity to different formalities by producing H% in formal situations more frequently than in informal ones and by placing more PAs on the verbs in informal situations than in formal ones.

As for the PA placement, HSs produced more PAs on content words and verbs than monolingual speakers. As for the IP size, it was found that monolingual speakers produced significantly shorter IPs in formal situations while the IP size did not differ according to formality in HSs' narrations. Finally, HSs and monolinguals differed from each other in informal situations

[29] The study by Zerbian et al. (2024) was developed later than the current thesis, and although some of the overall research questions are similar in Zerbian et al. (2024) and this thesis, they are not identical.

with the former producing shorter IPs than the latter. In formal situations, the two speaker groups were similar to each other.

Overall, the study by Zerbian et al. (2024) contributes to the role of communicative situations in intonation providing mixed results with respect to register differentiation across HSs and monolinguals. On the one hand, HSs were found to be sensitive to the differences between formal and informal registers. On the other hand, in the case of IP size, HSs did not show any effect of formality, contrary to monolingual speakers whose IPs were shorter in formal situations. Zerbian et al. (2024) state that IP length might not be a feature that differs according to register but rather relates to processing costs (see Zerbian et al., 2024 for detailed discussion). Furthermore, the results of the study could not be easily explained by transfer from the ML.

The increased number of PAs and shorter IPs may contribute to the perceived accent of HSs that was reported in different studies (Flores & Rato 2016; Kupisch et al., 2014; Polinsky, 2018; Chang & Yao, 2016).

To sum up, on the one hand, several studies on intonation in heritage Russian report on the influence of the ML on the HL (e.g., Andrews, 1993; Comstock, 2018). On the other hand, some studies cannot easily attribute the linguistic behavior of HSs to transfer from the ML but discuss the results with reference to the general effect of bilingualism (e.g., Zuban et al., 2023; Zerbian et al., 2022).

5.7 Research questions and hypotheses

Taking the aforementioned previous studies on monolingual and heritage intonation into account, the current thesis aims to answer the following research questions (RQs):[30]

RQ1:

With respect to the pitch accent types, is the preference for four different pitch accent types similar between HSs and monolingual speakers? The pitch accent types under discussion are H*, L*, rising, and falling accents.

Hypothesis 1:

If HSs show traces of cross-linguistic influence, they will produce more monotonal accents (H* and L*) and fewer bitonal pitch accents (rising and falling) than monolingual speakers (Comstock, 2018; Andrews, 1993).

[30] In some cases, due to the scarcity of previous literature, it was not possible to formulate the exact hypotheses.

RQ2:

With respect to the final boundary tone, is the preference for high and low boundary tones similar between HSs and monolingual speakers?

Hypothesis 2.1:

The two speaker groups will differ in their preference for different FBTs with HSs producing H% more frequently than monolingual speakers (Zemskaja, 2001; Polinsky, 2018).

Hypothesis 2.2:

The two speaker groups will not differ in their preference for high and low FBTs (Zerbian et al., 2024).

RQ3:

With respect to the pitch accent placement, is the placement of pitch accents similar between HSs and monolingual speakers?

Hypothesis 3:

HSs will generally produce more pitch accents on different words than monolingual speakers (Zuban et al., 2023; Zerbian et al., 2024).

RQ4:

Do other factors such as formality, age, and gender influence the PA type, FBT, and PA placement in narrations of HSs and monolinguals?

Hypothesis 4.1_formality:

As for monolingual speakers, their intonational patterns are expected to be influenced by formality. As for the PA type, monoltonal (H* and L*) and falling accents might be more frequent in formal situations (Zorina, 2018; Comstock, 2018). As for the FBTs, H% will be more frequent in formal situations compared to informal ones (Zerbian et al., 2024; Šatilov, 2012).

As for the PA placement, since Zerbian et al. (2024) did not show an effect of formality regarding the PA placement on content words I predict that PA placement will also not be influenced by formality in this thesis.

Hypothesis 4.2_formality:

For HSs, the results of previous studies are mixed (Comstock, 2018; Zerbian et al., 2024). Thus, HSs may show an effect of formality similar to the one by monolingual speakers regarding some

patterns (i.e., FBTs or the number of pitch accents, as shown in Zerbian et al., 2024) while some other patterns may not be affected by formality similar to monolingual speakers (e.g., PA types).

Hypothesis 4.3_age:

Since younger and older monolingual speakers of Russian were reported to differ regarding some prosodic patterns it is expected that adolescent monolinguals will differ from adult monolinguals by producing more monotonal PAs and fewer bitonal PAs. Besides, adolescents may produce more H% FBTs than adults (Žarovskaja, 2018). As for the PA placement, it is difficult to formulate the exact predictions due to the absence of previous research on the topic, but it is possible that there will be some differences between different age groups.

Hypothesis 4.4_age:

If there are traces of transfer from the ML, both adolescent and adult HSs will frequently produce monotonal PAs. In this case, adolescent HSs will be closer to adolescent monolingual speakers since the latter are expected to produce monotonal accents more frequently than adult monolingual speakers. Adult HSs are then predicted to differ from adult monolingual speakers.

As for the FBTs, adolescent HSs may differ from adult HSs by producing more H% (Guy et al., 1986; Warren, 2005). In this case, adolescent HSs might pattern with adolescent monolingual speakers since the latter are expected to produce H% more frequently than adult monolingual speakers. Adult HSs are predicted to pattern with adult monolingual speakers by producing H% less frequently than adolescent speakers of both speaker groups.

As for the PA placement, if monolingual speakers of different age groups differ from each other, HSs may pattern with adolescent or/and adult monolingual speakers. Although, it is difficult to formulate an exact prediction due to the lack of previous research.

Hypothesis 4.5_gender:

I am not aware of studies on the respective phenomena in monolingual Russian. However, since some studies report on the prosodic differences between female and male speakers (e.g., Yokoyama,1999), it is possible that monolingual speakers of different genders will differ from each other.

As for the PA type, monolingual female speakers, similarly to monolingual female speakers of English, will generally produce more rising and falling accents and fewer H* accents than male speakers (e.g., Henton, 1995; Schmid & Bradley, 2019; Huang & Zhang, 2019).

As for the FBT, monolingual female speakers, similarly to monolingual female speakers of English, may produce H% more frequently than male speakers (Ritchart & Arvaniti, 2014; Jiang, 2011; Schmid & Bradley, 2019).

As for the PA placement, female and male speakers may differ from each other, but the exact predictions are less clear due to the lack of previous research on the topic.

Hypothesis 4.6_gender:

As for the pitch accent type, if there are some transfer effects from the ML female HSs are expected to produce more rising and falling accents and fewer H* accents than male speakers (e.g., Henton, 1995; Schmid & Bradley, 2019; Huang & Zhang, 2019). Thus, female HSs may be more similar to female monolingual speakers, and male HSs may be more similar to male monolingual speakers.

As for the FBTs, if there are some transfer effects from the ML, female HSs are expected to generally produce more H% than male HSs (Ritchart & Arvaniti, 2014; Jiang, 2011; Schmid & Bradley, 2019). It is possible that female HSs will pattern with female monolingual speakers by producing H% more frequently than male heritage and monolingual speakers.

As for the PA placement, both female and male HSs are expected to place more PAs than female monolingual and male monolingual speakers due to a general effect of bilingualism (e.g., since HSs use their HL less frequently than their ML and only in some particular situations). Thus, one of the gender groups could be similar to monolinguals (e.g., females) while another gender group might differ from the monolingual group (e.g., males) (Ordin & Mennen, 2017).

5.8 Prosodic annotation

Data that are used in this thesis were manually annotated for prosody by two annotators (I together with the student assistant IY). I annotated the data of 36 speakers (16 adolescent HSs, 12 adolescent, and eight adult monolingual speakers) while the student assistant of the Stuttgart project annotated the data of 44 speakers (four adolescent and 20 adult HSs, eight adolescent and 12 adult monolingual speakers). I additionally checked all the data that were annotated by the student assistant and formed part of this thesis. The student assistant of the project and I cross-checked the prosodic annotations of 32 speakers. Praat was used for the prosodic annotation of the audio files (Boersma, 2014).

Prosodic layers were based on the diplomatic layer of the RUEG corpus. First, diplomatic tokens were automatically aligned with the speech signal using WebMAUS (Kisler et al., 2017). Second, the boundaries of diplomatic tokens were manually corrected for full alignment with the speech signal.

Prosodic layers included the following four layers:

- Boundaries of intonational phrases (further IPs)
- Word syllabification
- Pitch accent placement and type
- Final boundary tone

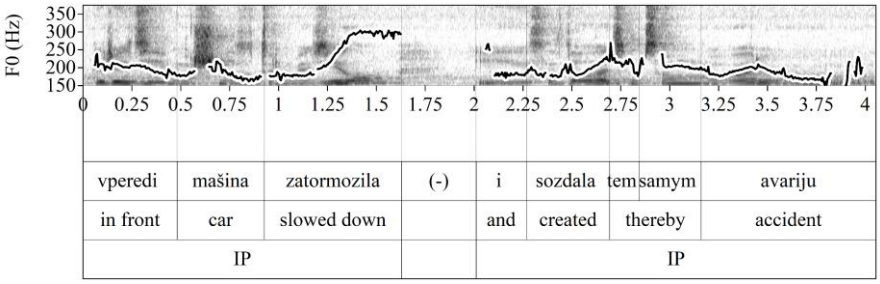
5.8.1 IP-boundaries

Boundaries of IPs were annotated based on the guidelines by Himmelmann et al. (2018) who showed that IPs can be reliably identified by speakers of familiar and unfamiliar languages. The authors found the following cues to be universal for IPs and roughly similarly reliably identifiable for speakers of familiar as well as unfamiliar languages (Himmelmann et al., 2018, p. 32):

- Melodic coherence
- Pauses
- Unit-final lengthening
- Increased unit-initial speaking rate

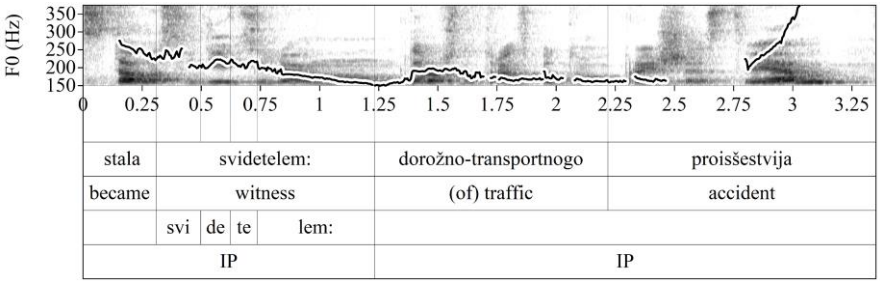
Melodic coherence is related to pitch movement. A pitch jump is usually an indicator of the beginning of a new IP (Himmelmann et al., 2018, p. 7). As for pauses, they can occur IP externally as well as IP internally depending on the pitch movement after the pause. If the pitch after the pause is continuous compared to the material before the pause, the speech segment that precedes and follows the pause is considered to be one IP. If pitch is accompanied by pitch jumps after the pause (up or down), two speech phrases belong to two different IPs (Himmelmann et al., 2018, supplement, p. 2). Figure 4 and Figure 5 exemplify the annotation of IPs according to the following cues: pitch jump and unit-final lengthening. The figures are from two adult monolingual speakers in the formal situation.

Figure 4 Boundaries of intonational phrases: Pitch jump



(RUmo30FR_fs)

Figure 5 Boundaries of intonational phrases: Unit-final lengthening



(RUmo03FR_fs)

In Figure 4, there is a pitch jump after a short pause, therefore the segment after the pause belongs to a different IP. In Figure 5, the word *svidetelem: 'witness'* is pronounced over a long period of time, therefore the next word belongs to a different IP.

5.8.2 Pitch accent placement and type

Annotation of L2 or heritage prosody is a challenging task. There are ToBI language-specific annotation systems, but these systems aim at describing the standard prosody by monolingual speakers and thus might not be suitable for the annotation of L2 or heritage prosody (e.g., L2 or HSs might not be fully proficient in the intonation of their L2 or HL and describing their intonation in categories typical for adult monolingual speakers would imply that one automatically assumes their L2 or HL to be on the level of a monolingual speaker). ToBI was not developed to describe languages "whose phonological system is not known" (Santiago & Delais-Roussarie, 2015, p. 248).

A further methodological problem is that ToBI is intended as a phonological labeling system (not a phonetic one) based on a specific analysis of intonation. It is important to point out that ToBI is not an International Phonetic Alphabet for prosodic annotation, as intonation differs from language to language and often from dialect to dialect within one language (Ladd, 2022; Jun, 2022; Beckman & Hirschberg, 1994).

Not all transcription systems that adopt the AM approach share all the conventions of ToBI. For instance, in ToDI, in contrast to MAE ToBI, a pitch accent does not have leading tones (H*, L*, H*+L, L*+H, H*+!H), IPs without any final boundary tones are allowed, and the system only covers the "To" part of ToBI leaving the "Bi" part out, i.e., different degrees of boundary strength are not dealt with (no break indices) (Gussenhoven, 2005).

Moreover, not all ToBI-like transcription systems share the assumptions of the AM framework. For instance, in Russian ToRI, the transcription symbols resemble the ones in ToBI to enable a comparison with intonation systems in other languages, but ToRI aims at the phonetic description of tonal events. Further, ToRI does not recognize phrase accents (T-) as a part of the phrasal tone system, and beyond the low and high pitch targets the middle target (M) is recognized as part of the inventory system (Odé, 2008). If a researcher wants to label intonation by a HS of Russian in Russian, what system should be used?

Current studies on L2 intonation often apply ToBI labels to transcribe intonation phonetically (Alvord, 2006; Zięba-Plebankiewicz, 2007; Yang, 2011; Puri, 2013; Thornberry, 2014). For instance, Rao (2016) investigated the statement and question intonation of HSs of Mexican Spanish residing in the US. He took the ToBI system developed for monolingual speakers of Mexican Spanish as a basis and annotated heritage intonation phonetically, i.e., "nuclear pitch accents were transcribed based on the alignment of F0 peaks and/or valleys in relation to the stressed syllable offset and onset, respectively, in addition to the extent of F0 excursions through the stressed syllable and F0 levels in the stressed syllable as compared to the rest of the utterance" (Rao, 2016, p. 62). Dehé (2018, p. 234) used a similar approach to investigate intonation of yes-no questions produced by HSs of Icelandic living in the US. She used the AM-based annotation system developed for monolingual speakers of Icelandic as a basis and annotated the heritage intonation phonetically.

In this thesis, the following approach was taken for annotation of both monolingual and heritage intonation. The productions were manually annotated for pitch accent placement, type, and final boundary tone following the AM framework (e.g., Ladd, 2008). The layer for pitch accents was based on the syllables layer. Syllabification of Russian data was performed manually following the guidelines of Knjazev (2006).

A combined phonetic and auditory approach to labeling the intonation of monolingual and HSs was applied. That is, the presence of pitch accent was detected auditorily and further examined with respect to local F0 trajectories and changes (high and low turning points).

The reason why the same method was applied to the annotation of monolingual intonation, as well as heritage intonation, is that there is no full description of Russian intonation within the AM

framework yet (see detailed information on AM approaches to Russian intonation in chapter 5.2.3).

Six types of pitch accents (L*, H*, L*+H, L+H*, H+L*, and H*+L) and two phrase-final boundary tones (L%, H%) emerged as relevant in these data. Pitch accent types were annotated according to the following principles:

H*: an accent that has a high tonal target in the accented syllable and does not have a sharp low tonal target within the accented syllable.

L*: an accent that has a low tonal target in the accented syllable and does not have a sharp high tonal target within the accented syllable.

L*+H: a rising accent with a low tonal target in the accented syllable which is followed by a sharp rise to a high pitch (F0 peak is located after the stressed syllable).

L+H*: a rising accent with a high tonal target in the accented syllable which is preceded by a sharp rise from a low target (F0 peak is located on the stressed syllable).

H+L*: a falling accent that begins at a high pitch level and falls to a low target in the accented syllable.

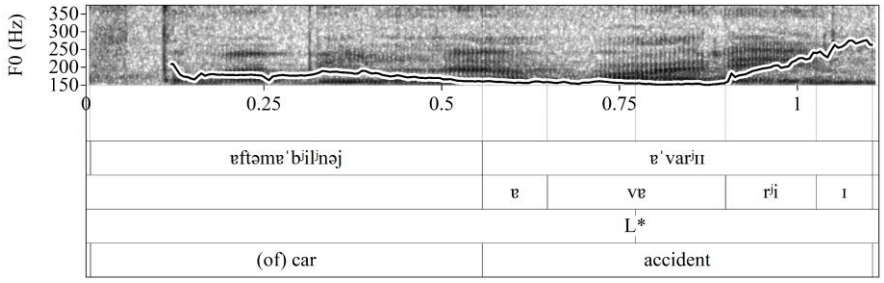
H*+L: a falling accent with a high target located in the accented syllable, followed by the falling pitch.

Note that, acoustically, one of the main differences between the L*+H and L+H* accents lies in the location of the F0 peak being either within the accented syllable (L+H*) or after the accented syllable (L*+H). When one of the described accents appeared at the end of a phrase, i.e., without any postnuclear syllables following, the shape of the contour was investigated. The L*+H label was assigned when the pitch contour had the shape of a local valley (or concave) at the accented syllable while the L+H* label was assigned when the pitch contour had the shape of a local peak (or convex).

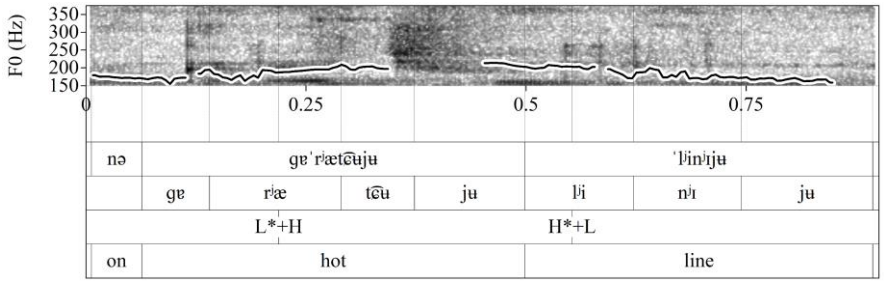
One of the main differences between the H+L* and H*+L accents lies in the location of the F0 peak, being either early (i.e., peak precedes the accented vowel, H+L*) or mid (i.e., the peak is located in the accented vowel, H*+L).

All H tones could be additionally upstepped (pitch range expansion compared to a preceding high tone, indicated by ^) or downstepped (pitch range compression compared to a preceding high tone, indicated by !). Figure 6 exemplifies the pitch accents described above.

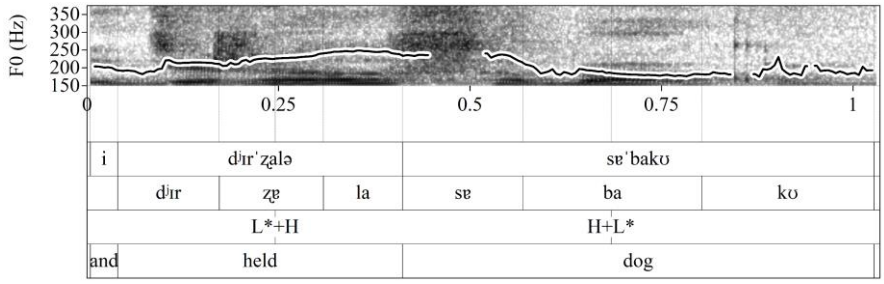
Figure 6 Different pitch accent types: Example of annotation



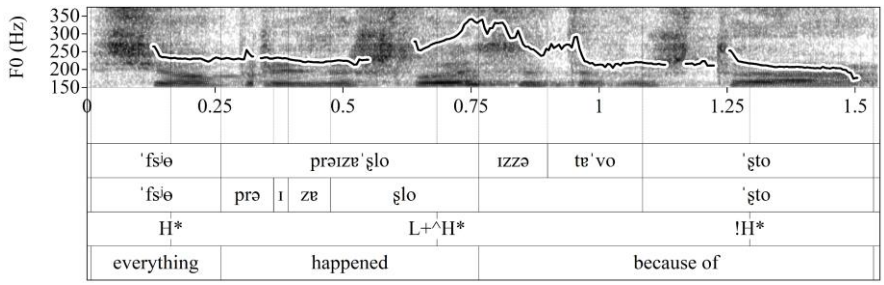
(RUmo13FR_fs)



(RUmo14FR_fs)



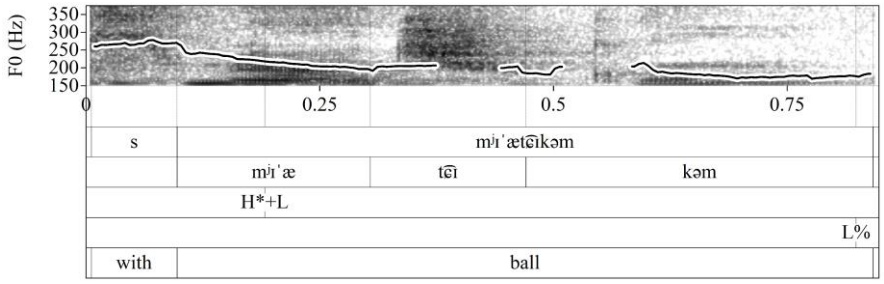
(RUmo14FR_is)



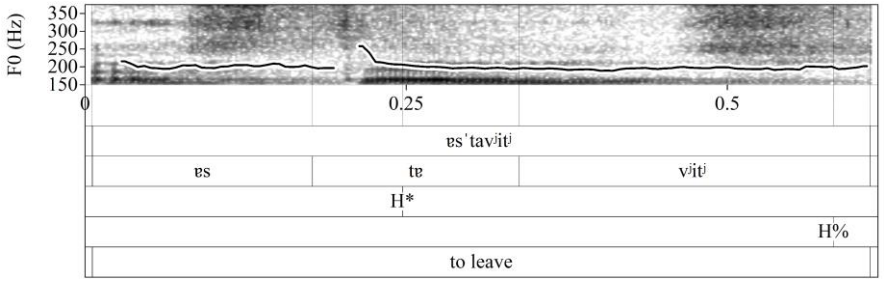
(RUmo14FR_is)

Concerning the annotation of boundary tones, an L% was annotated when pitch fell to a point low in the speaker's range at the end of an IP, and an H% was annotated when pitch rose to a point high in the speaker's range at the end of an IP. The H% was compared to the high tone of the preceding pitch accent and could be further marked for an upstep or a downstep. If there was no visible contour, the decision about the high or low boundary tone was made perceptually. Figure 7 exemplifies the boundary tones described above.

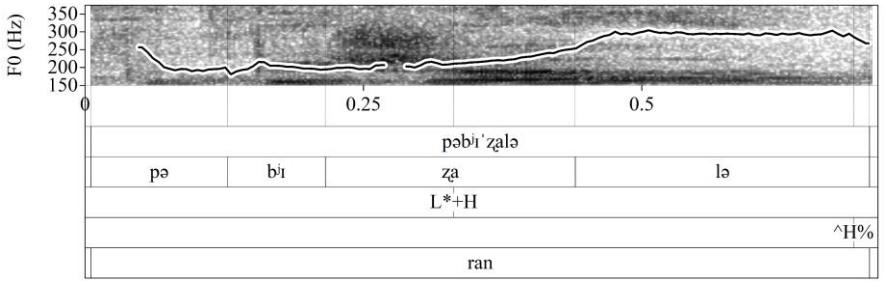
Figure 7 Final boundary tones: Example of annotation



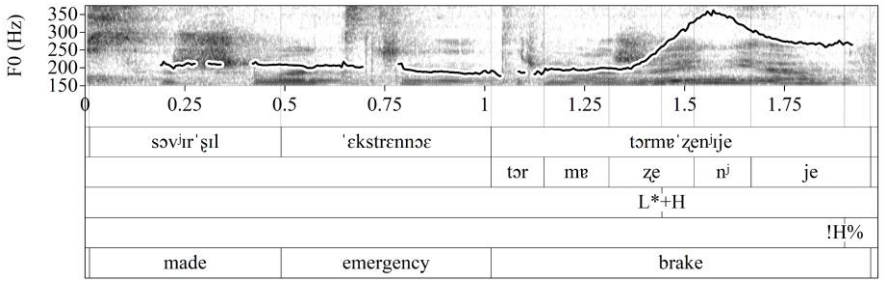
(RUmo14FR_is)



(RUmo53FR_fs)



(RUmo14FR_fs)



(RUmo29FR_fs)

5.8.3 Simplification of the data

After the full annotation 16 pitch accent types were generated (since every H tone could be upstepped or downstepped). The number of pitch accents for the final analysis was reduced due to the following reasons. First, the upstepped and downstepped accents were conflated into one respective category (e.g., ^H* and !H* formed a category of H* accents). The uppstepped and downstepped accents were considered to be the allotones of the non-upstepped and non-downstepped tones since their appearance always depended on the preceding high tonal target. As a result, the number of pitch accents was reduced to six.

Further simplification of the pitch accents was motivated by the differences between monolingual English and Russian in terms of the inventory and frequency of some pitch accents

as well as some methodological and theoretical considerations. First, a distinction between monotonal (i.e., H* and L*) and bitonal (i.e., L*+H, L+H*, H+L*, H*+L) pitch accents had to be made since monotonal accents are predicted to be very infrequent in monolingual Russian or are not predicted to form part of the PA inventory at all (see Rathcke, 2009). On the contrary, monolingual American English has monotonal H*and L* in its phonological inventory (e.g., Beckman & Hirschberg, 1994).

Second, a further subcategorization was made based on the previous literature. Since monolingual Russian was claimed to make frequent use of rising pitch accents compared to monolingual American English where rising accents are more context-specific (e.g., Jasinskaja, 2016 for Russian), rising accents were singled out as a separate category (i.e., L*+H and L+H*). It has to be noted that a recent study by Zuban et al. (2023) showed the importance of distinguishing the rising accents in monolingual and heritage Russian based on the alignment of a starred tone. However, in this thesis, such subcategorization will not be made since this thesis deals with semi-spontaneous data (contrary to Zuban et al., 2023), and if a possible distinction between L*+H and L+H* arose, it would not be feasible to check whether it was due to the amount of the material that follows the accent. Such subcategorization can be made in further research.

Third, PAs H+L* and H*+L were joined into one category based on their falling contour. Additionally, there is no consensus in the literature on monolingual Russian about the status of H+L* vs. H*+L PAs, i.e., it is unclear whether these accents are phonologically contrastive. While Odé (2008) reports that monolingual Russian has distinct H*+L and H+L* Rathcke (2009) only reports on the existence of the H+L* and the status of the H*+L accent is unclear (it is marked with a question mark). Thus, again, as in the case of the rising accents, any differences that appear between H*+L and H+L* could not be further elaborated on due to the semi-spontaneous data.

Fourth, the monotonal PAs were split into H* and L* since they were claimed to mark different referents in English. Specifically, H* was reported to be a typical accent for discourse-*new* referents while L* was reported to be a usual accent for discourse-*given* referents (Pierrehumbert & Hirschberg, 1990, pp. 289 - 302). Since participants were asked to describe a fictional car accident to people who did not know anything about it, such narrations would have a substantial amount of *new* and *given* referents. Differences in the use of H* and L* can possibly shed light on the narrative structure of HSs. For instance, taking possible transfer effects from the ML into account, if HSs use many L* accents, it can be the case that there are many occurrences of *given* referents.

To sum up, four pitch accent types (H*, L*, rising, and falling) were left for further general descriptive analysis and statistical modeling.

As for the final boundary tones, similar to the PA types, the upstepped and downstepped variants of the high boundary tone were added to one category, leaving two boundary tones (high and low) for further analyses.

5.9 Results

This chapter will present the results of global intonation patterns produced by HSs and monolingual speakers of Russian. Specifically, the chapter will focus on three phenomena:

- Choice of different pitch accents (H*, L*, rising, and falling accents)
- Choice of a final boundary tone (L% or H%)
- Pitch accent placement

For each phenomenon the database will be presented, followed by the statistical modeling and the interpretation of the results.

5.9.1 Pitch accent type

The overall number of different pitch accents by heritage and monolingual speakers is presented in Table 13.

Table 13 Overall number of pitch accents of different types

Speaker Group	H*	Rising	Falling	L*	Overall
HSs	2980 (50%)	1742 (29%)	881 (15%)	353 (6%)	5956 (100%)
Monolinguals	1926 (43%)	1642 (37%)	670 (15%)	227 (5%)	4465 (100%)

First, Table 13 shows that HSs and monolinguals may differ from each other regarding the number of H* and rising accents. Second, the high number of H* accents is noteworthy for monolingual speakers since according to some scholars such as Yokoyama (2001) or Odé (2008) monotonal accents or H* accents do not form part of the inventory of PAs in monolingual Russian. Jasinskaja (2016), on the other hand, assumes that monotonal H* accents do exist in Russian (e.g., Jasinskaja, 2016 reports on H* accents in prenuclear positions or on verbs of SVO utterances with broad focus). The results of the current thesis support the existence of H* PAs in monolingual Russian. A high number of H* accents can be the result of the phonetic approach to pitch accent annotation or the fact that this thesis deals with unprepared semi-spontaneous speech. For instance, in monolingual German, spontaneous speech was found to have more PAs and fewer PA variations than read speech to mark information status (De Ruiter, 2015).

The PA type was modeled as a function of speaker group, formality, age group, and gender. The following pitch accent types were modeled as separate dependent variables via the glmer function: H*, rising accents (L*+H and L+H* and their upstepped and downstepped variants),

falling accents (H*+L, H+L* and their upstepped and downstepped variants), and L*. All the independent variables that were included in the experimental design were taken into account as fixed effects: *Speaker group* (HSs/monolinguals), *formality* (formal/informal), *age group* (adolescents/adults), *gender* (male/female). The *speakers* were taken into account as a random effect. The model included the interactions of *speaker group* with every other fixed effect. The motivation was to see if the group itself had an influence on the selection of a particular pitch accent or it rather influenced the selection together with one or more fixed effects. Random slopes were excluded from the models on pitch accent type since they either did not improve them (in the case of H*, rising accents, and L* accents) or prevented the model from converging (in the case of falling accents).

The models are, however, not minimal, since some of the abovementioned fixed effects play little to no role in the selection of some pitch accent types.

The fixed effects were contrast-coded as either -0.5 or 0.5. This is essential to allow analysis of their interactions. The dependent variable is binomial - either it is a specific pitch accent (e.g., H*) that is coded in this model as 1 or it is not and is coded in the mode as 0. For post hoc tests of interactions (pairwise Tukey test), the emmeans package (Russell, 2020) was used. For this analysis, all speech material that carried a pitch accent was selected, i.e., not only content and function words but also filled pauses. Table 14 shows the printed attributes of contrasts which will be helpful in interpreting the results of all the subsequent models.

Table 14 Attributes of contrasts for the pitch accent types according to the generalized binominal linear mixed-effect models

Fixed effects	Levels of fixed effects	Attributes of contrasts
Speaker group (country)	Monolinguals (ru) HSs (us)	0.5 -0.5
Formality	Formal Informal	0.5 -0.5
Age group	Adolescents Adults	0.5 -0.5
Gender	Female Male	0.5 -0.5

The estimates of the models are categorized as follows to allow an easier comparison of the strength of the fixed effects throughout this thesis.[31]

0.00 - 0.25 mild 0.25 - 0.50 moderate 0.50-0.75 strong > 0.75 very strong

[31] In linear mixed-effect models, fixed effects were coded throughout the thesis in the same way (all used a comparable scale, either 0-1 or -0.5-0.5) to be able to see the relative impact of multiple predictors directly in the coefficients. This is similar to a linear transformation of the predictors involving centering and standardizing them (Winter 2020, chapter 5.6). I defined the scale for the strength of fixed effects.

5.9.1.1 H*

The results of the model regarding the most frequently occurring pitch accent type H* are shown in Table 15.

Formula: pa_model.Hstar.full = glmer (Hstar ~ country * (formality + agegroup + gender) + (1|speaker), data=PAs, family = binomial).

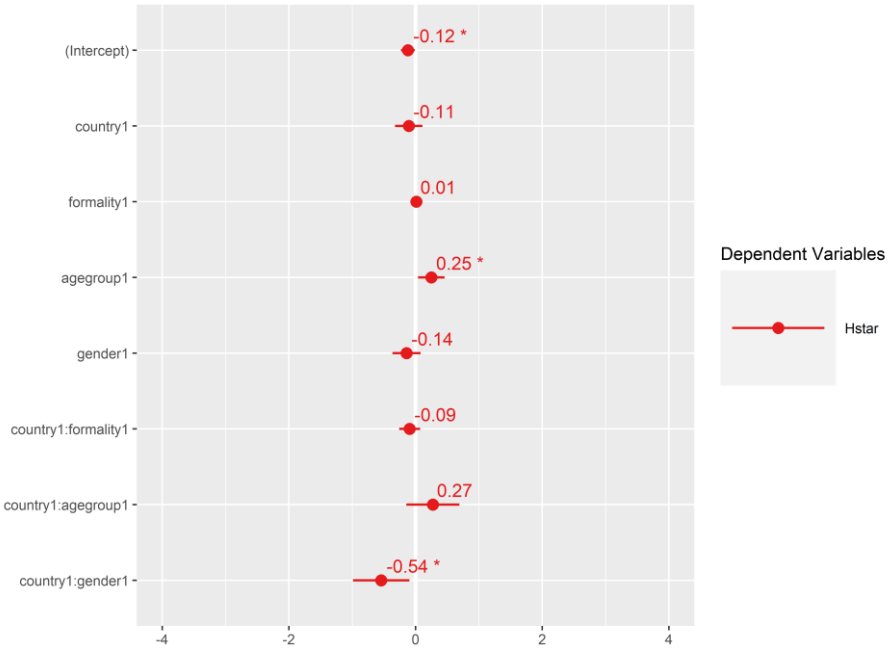
Table 15 Pitch accent H: Outcome of the generalized binominal linear mixed-effect model*

	Estimate	Std. Error	z value	Pr(>|z|)
(Intercept)	-0.12236	0.05560	-2.201	0.0277*
country1	-0.10798	0.11125	-0.971	0.3317
formality1	0.01068	0.04206	0.254	0.7995
agegroup1	0.24749	0.10656	2.323	0.0202*
gender1	-0.14261	0.11330	-1.259	0.2082
country1:formality1	-0.09401	0.08413	-1.117	0.2638
country1:agegroup1	0.27256	0.21342	1.277	0.2016
country1:gender1	-0.54337	0.22693	-2.394	0.0166*

The results of the model reveal one main effect and one interaction (see Table 15). First, there was a moderate main effect of age group: adolescent speakers of both groups produced relatively more H* accents (0.25) than adult speakers of both groups. Second, there was a significant two-way interaction between country and gender (see Figure 8 below for the estimates of all main effects and their interactions).

It should be noted that there was no main effect of country, formality, or gender on their own.

Figure 8 The estimates of all main effects and their 95% confidence intervals: H accent*



For the interaction of country and gender, Tukey multiple comparison test was run. The results of Tukey's adjustment are presented in Table 16:

Formula: pa_model.Hstar.full.emmmode <- emmeans(pa_model.Hstar.full, list(pairwise ~ country:gender), adjust = "tukey").

Table 16 Pitch accent H: Tukey multiple comparison test (country: gender)*

	estimate	SE	df	z. ratio	p.value
ru f - us f	-0.3797	0.129	Inf	-2.935	0.0175
ru f - ru m	-0.4143	0.164	Inf	-2.522	0.0565
ru f - us m	-0.2506	0.151	Inf	-1.658	0.3462
us f - ru m	-0.0346	0.166	Inf	-0.208	0.9968
us f - us m	0.1291	0.156	Inf	0.826	0.8424
ru m - us m	0.1637	0.184	Inf	0.891	0.8097

Tukey's adjustment revealed significant differences between monolingual and HSs: monolingual female speakers produced significantly fewer H* accents than female HSs (see Figure 9).

Figure 9 Pitch accent H: Interaction of country and gender*

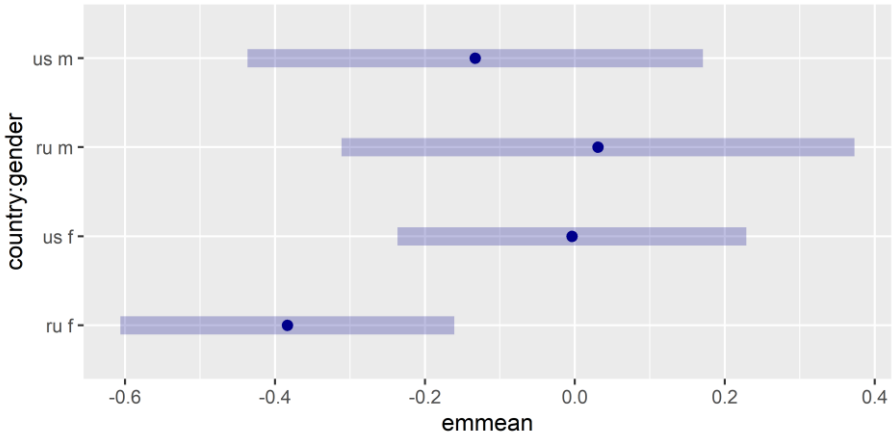


Figure 9 displays the estimates and their 95% confidence intervals. The same holds for all subsequent figures.

The main results of the choice of an H* accent can be summarized as follows. First, adolescent speakers of both groups produced more H* accents than adult speakers of both groups. Second, female HSs produced more H* accents than monolingual female speakers.

5.9.1.2 Rising accents

The results of the model regarding rising accents are shown in Table 17.

Formula: pa_model.Rising.full = glmer (Rising ~ country * (formality + agegroup + gender) + (1|speaker), data=PAs, family = binomial).

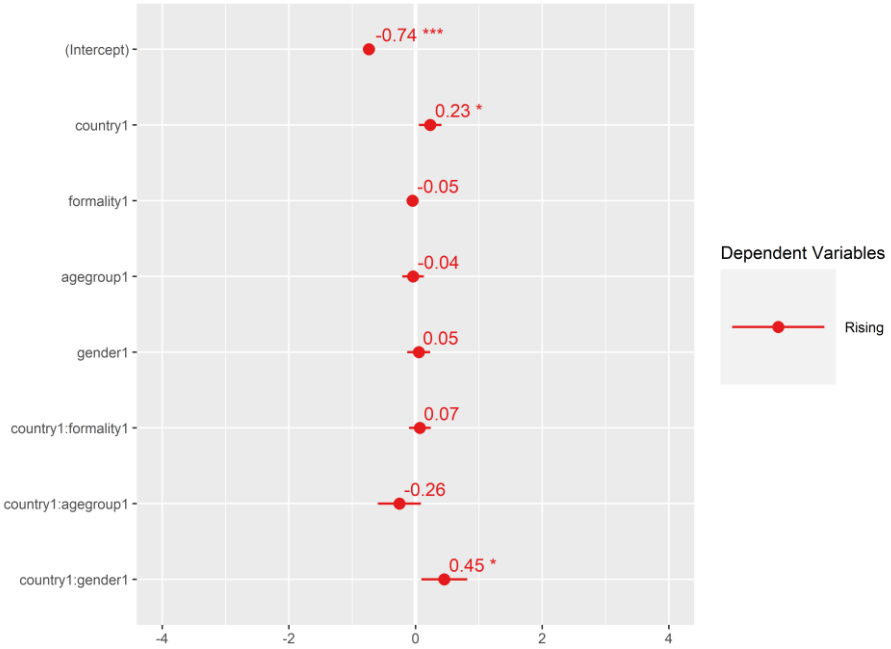
Table 17 Rising pitch accents: Outcome of the generalized binominal linear mixed-effect model

	Estimate	Std. Error	z value	Pr(>|z|)
(Intercept)	-0.73914	0.04545	-16.261	<2e-16***
country1	0.22978	0.09078	2.531	0.0114*
formality1	-0.04888	0.04370	-1.119	0.2633
agegroup1	-0.03970	0.08686	-0.457	0.6476
gender1	0.04971	0.09264	0.537	0.5915
country1:formality1	0.06717	0.08739	0.769	0.4421
country1:agegroup1	-0.25538	0.17364	-1.471	0.1414
country1:gender1	0.45225	0.18513	2.443	0.0146*

The results of the model revealed one main effect and one interaction. First, there was a mild main effect of country: monolingual speakers produced more rising accents (0.23) compared to HSs. Second, there was a significant two-way interaction between country and gender (see Figure 10 below for the estimates of all main effects and their interactions).

It should be noted that there was no main effect of formality, age group, or gender on their own.

Figure 10 The estimates of all main effects and their 95% confidence intervals: Rising accents



For the interaction of country and gender, Tukey multiple comparison test was run. The results of Tukey's adjustment are presented in Table 18:

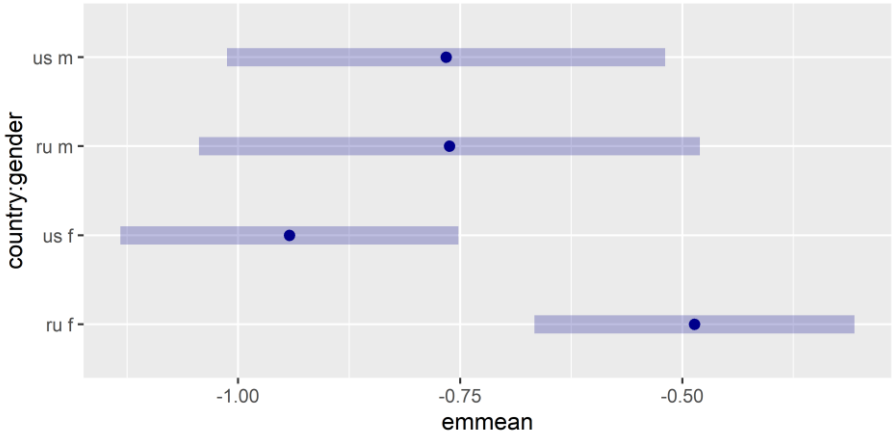
Formula: pa_model.Rising.full.emmode <- emmeans(pa_model.Rising.full, list(pairwise ~ country:gender), adjust = "tukey").

Table 18 Rising pitch accents: Tukey multiple comparison test (country: gender)

	estimate	SE	df	z. ratio	p.value
ru f - us f	0.45590	0.105	Inf	4.336	0.0001
ru f - ru m	0.27583	0.134	Inf	2.052	0.1692
ru f - us m	0.27949	0.123	Inf	2.280	0.1026
us f - ru m	-0.18007	0.136	Inf	-1.319	0.5505
us f - us m	-0.17641	0.127	Inf	-1.385	0.5088
ru m - us m	0.00365	0.150	Inf	0.024	1. 0000

Tukey's adjustment revealed significant differences between monolingual and HSs. Specifically, monolingual female speakers produced significantly more rising accents than female HSs (see Figure 11).

Figure 11 Rising pitch accents: Interaction of country and gender



The main results of the preference for the rising accents can be summarized as follows. It was found that monolingual speakers produced more rising accents than HSs. However, Tukey's adjustment revealed that the major influence behind this effect is coming from monolingual female speakers, i.e., monolingual female speakers produced more rising accents than female HSs.

5.9.1.3 Falling accents

The results of the model regarding falling accents are shown in Table 19.

Formula: pa_model.Falling.full = glmer (Falling ~ country * (formality + agegroup + gender) + (1|speaker), data=PAs, family = binomial).

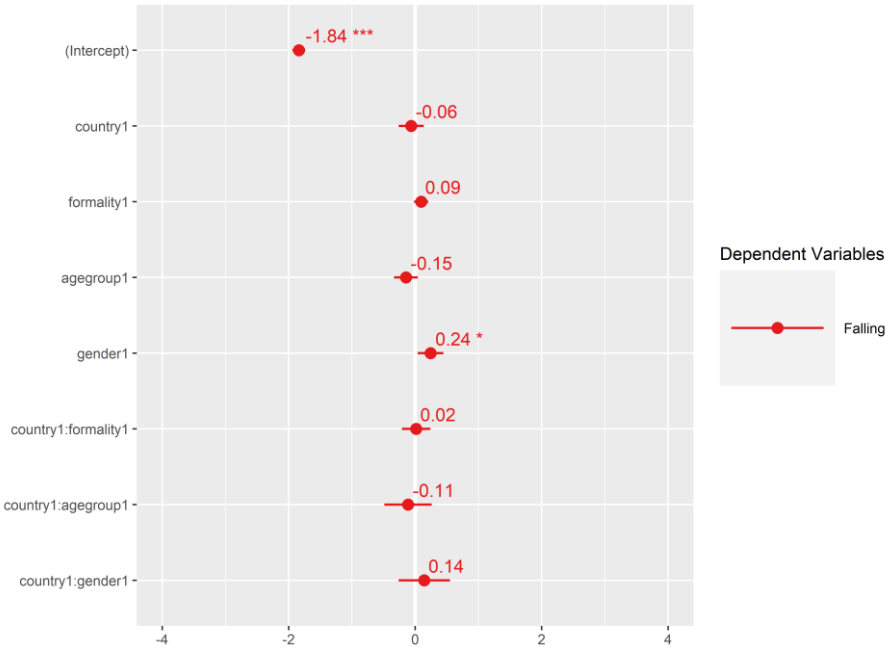
Table 19 Falling pitch accents: Outcome of the generalized binominal linear mixed-effect model

	Estimate	Std. Error	z value	Pr(>|z|)
(Intercept)	-1.83999	0.05147	-35.751	<2e-16***
country1	-0.06305	0.10173	-0.620	0.5354
formality1	0.09355	0.05726	1.634	0.1023
agegroup1	-0.14519	0.09575	-1.516	0.1294
gender1	0.24436	0.10363	2.358	0.0184*
country1:formality1	0.01624	0.11449	0.142	0.8872
country1:agegroup1	-0.11191	0.19138	-0.585	0.5587
country1:gender1	0.14457	0.20726	0.698	0.4855

The results of the model revealed one main effect. There was a mild effect of gender: female speakers of both groups produced more falling accents (0.24) than male speakers of both groups (see Figure 12 below for the estimates of all main effects and their interactions).

It should be noted that there was no main effect of country, formality, or age group on their own.

Figure 12 The estimates of all main effects and their 95% confidence intervals: Falling accents



The main result of the preference for falling accents can be summarized as follows: female speakers of both groups produced more falling accents than male speakers.

5.9.1.4 L*

The results of the model regarding L* accents are shown in Table 20.

Formula: pa_model.Lstar.full = glmer (Lstar ~ country * (formality + agegroup + gender) + (1|speaker), data=PAs, family = binomial).

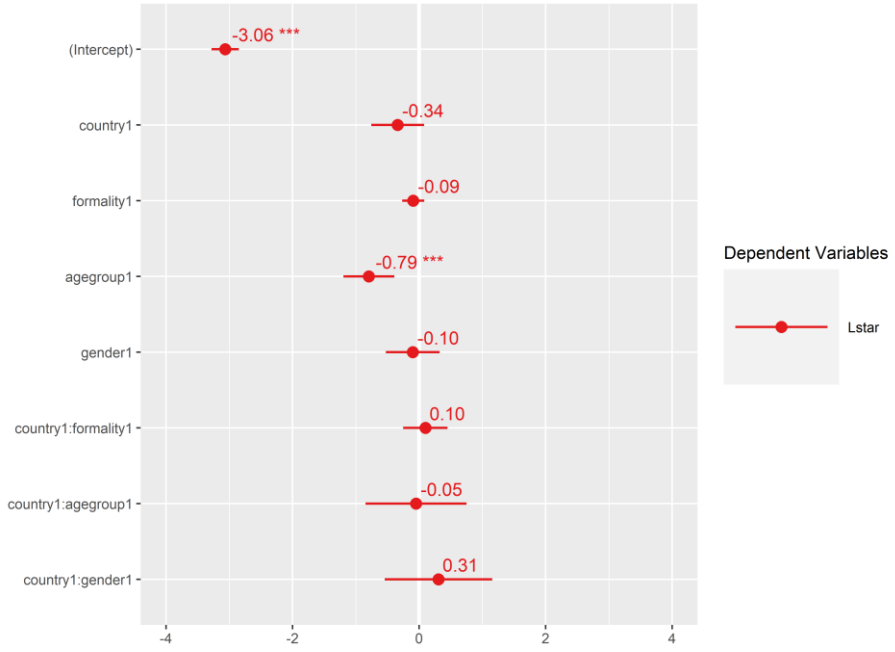
Table 20 Pitch accent L: Outcome of the generalized binominal linear mixed-effect model*

	Estimate	Std. Error	z value	Pr(>|z|)
(Intercept)	-3.06497	0.10951	-27.989	<2e-16***
country1	-0.33998	0.21277	-1.598	0.110079
formality1	-0.09334	0.08942	-1.044	0.296516
agegroup1	-0.79434	0.20557	-3.864	0.000111***
gender1	-0.10050	0.21670	-0.464	0.642809
country1:formality1	0.09858	0.17882	0.551	0.581464
country1:agegroup1	-0.04941	0.40726	-0.121	0.903443
country1:gender1	0.30587	0.43365	0.705	0.480601

The results of the model revealed one main effect. There was a very strong effect of age group: adolescent speakers of both groups produced fewer L* accents (-0.79) than adult speakers of both speaker groups (see Figure 13 below for the estimates of all main effects and their interactions).

It should be noted that there was no main effect of country, formality, or gender on their own.

Figure 13 The estimates of all main effects and their 95% confidence intervals: L accent*



The main result of the preference for the L* accent can be summarized as follows: adolescent speakers of both groups produced fewer L* accents than adult speakers of both speaker groups.

Overall, gender and age group played an important role for the choice of a specific pitch accent type. First, adolescent speakers of both groups produced more H* accents and fewer L* accents

than adult speakers of both groups. Second, female HSs produced more H* accents and fewer rising accents than monolingual female speakers. Further, female speakers of both groups produced more falling accents than male speakers of both groups.

5.9.2 Final boundary tone

The overall number of high and low final boundary tones produced by the two speaker groups is presented in Table 21

Table 21 Overall number of final boundary tones

Speaker Group	H%	L%	Overall
HSs	1756 (48%)	1904 (52%)	3660
Monolinguals	1304 (48,6%)	1382 (51,4%)	2686

The final boundary tone was modeled as a function of speaker group, formality, age group, and gender. Since there are only two final boundary tones in the data, either H% or L%, only one of them was modeled as a dependent variable via the glmer function. H% was chosen as a dependent variable (the upstepped and downstepped variants of the H% were included in the category H%). All the independent variables that were included in the experiment design were taken into account as fixed effects: *Speaker group* (HSs/monolinguals), *formality* (formal/informal), *age group* (adolescents/adults), *gender* (male/female). The *speakers* were taken into account as a random effect. The model included the interactions of *speaker group* with every other fixed effect. The motivation was to see if the group itself had an influence on the selection of a particular boundary tone or it rather influenced the selection together with one or more fixed effects. Random slopes were not included in the model since they did not improve it. This model is, however, not minimal, since some of the abovementioned fixed effects play little to no role in the selection of some boundary tones.

The fixed effects were contrast-coded as either -0.5 or 0.5. This is essential to allow analysis of their interactions. The dependent variable is binomial - either it is an H% that is coded in this model as 1 or it is not and is coded in the mode as 0. A final boundary tone could only appear at the end of an IP, therefore the total number of FBTs equals the total number of IPs in the data. For post hoc tests of interactions (pairwise Tukey test), the emmeans package (Russell, 2020) was used.

The results of the model regarding the choice of the high final boundary tone over the low FBT are shown in Table 22.

```
Formula: pa_model.HighFBT.full = glmer(HighFBT ~ country * (formality + agegroup +
         gender) + (1|speaker), data=FBTs, family = binomial).
```

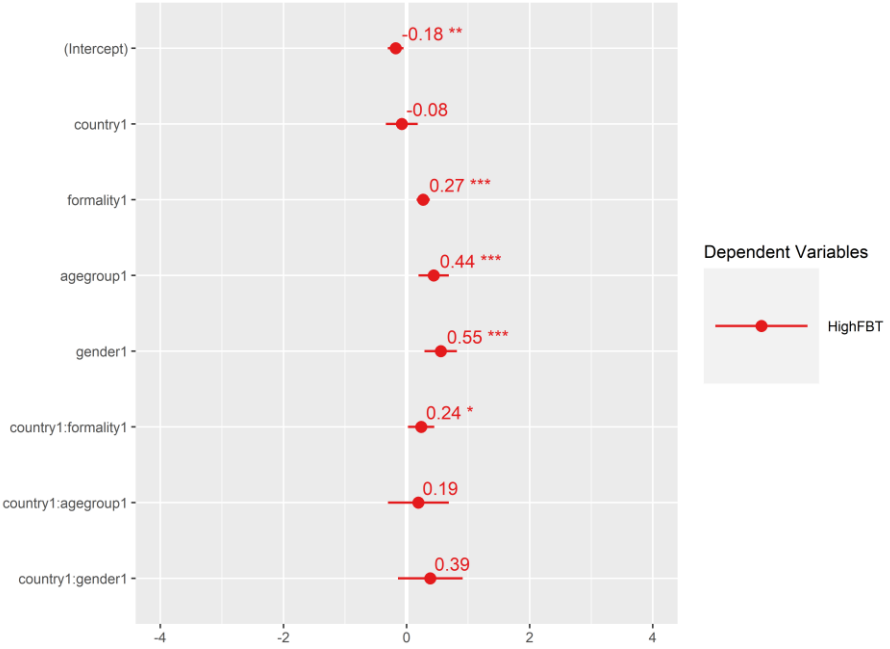
Table 22 High final boundary tone: Outcome of the generalized binominal linear mixed-effect model

	Estimate	Std. Error	z value	Pr(>|z|)
(Intercept)	-0.17768	0.06574	-2.703	0.006874**
country1	-0.07761	0.13147	-0.590	0.554980
formality1	0.26947	0.05458	4.937	7.92e-07***
agegroup1	0.43927	0.12595	3.488	0.000487***
gender1	0.55425	0.13397	4.137	3.52e-05***
country1:formality1	0.23706	0.10914	2.172	0.029854*
country1:agegroup1	0.19192	0.25177	0.762	0.445880
country1:gender1	0.38537	0.26784	1.439	0.150216

The results of the model revealed three main effects and one interaction. First, there was a moderate main effect of formality: speakers of both groups produced more H% boundary tones (0. 27) in formal situations than in informal ones. Second, there was a moderate main effect of age group: adolescent speakers of both groups produced more H% boundary tones (0.44) than adult speakers of both groups. Third, there was a strong main effect of gender: female speakers of both groups produced H% more frequently (0.55) than male speakers of both groups. Fourth, there was a significant two-way interaction between country and formality (see Figure 14) below for the estimates of all main effects and their interactions).

It should be noted that there was no main effect of country on its own.

Figure 14 The estimates of all main effects and their 95% confidence intervals: High final boundary tone



For the interaction of country and formality, Tukey multiple comparison test was run. The results of Tukey's adjustment are presented in Table 23:

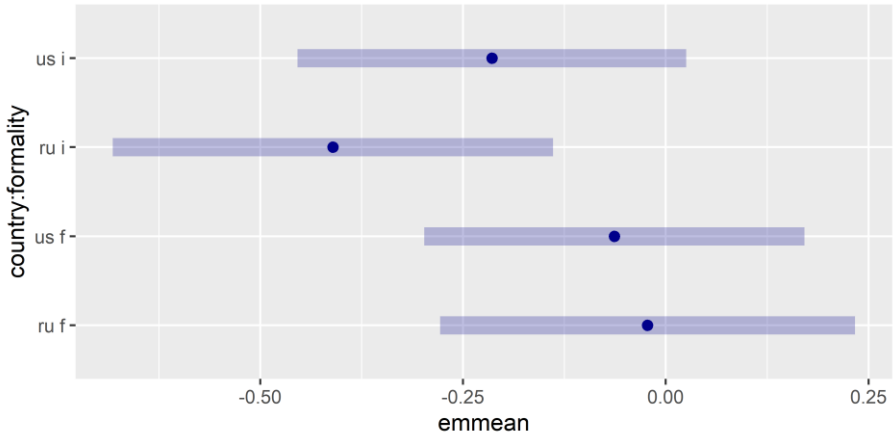
Formula: pa_model.HighFBT.full.emmode <- emmeans(pa_model.HighFBT.full, list(pairwise ~ country:formality), adjust = "tukey").

Table 23 High final boundary tones: Tukey multiple comparison test (country: formality)

	estimate	SE	df	z.ratio	p.value
ru f - us f	0.0409	0.1393	Inf	0.294	0.9912
ru f - ru i	0.3880	0.0840	Inf	4.620	<.0001
ru f - us i	0.1919	0.1407	Inf	1.363	0.5225
us f - ru i	0.3471	0.1439	Inf	2.411	0.0750
us f - us i	0.1509	0.0697	Inf	2.165	0.1331
ru i - us i	-0.1961	0.1454	Inf	-1.349	0.5313

Tukey's adjustment revealed significant differences between formalities in the monolingual group. Specifically, monolingual speakers produced significantly more high boundary tones in formal situations compared to informal ones (see Figure 15).

Figure 15 High final boundary tones: Interaction of country and formality



The main results of the high final boundary tones can be summarized as follows. It was found that adolescent speakers of both groups produced more H% than adult speakers. Moreover, female speakers of both groups produced more H% than male speakers. The model also showed that both speaker groups produced more H% in formal situations than in informal ones. However, Tukey's adjustment revealed that the major influence behind this effect is coming from monolingual speakers and not from HSs. Specifically, monolingual speakers produced more high boundary tones in formal situations than in informal ones.

5.9.3 Pitch accent placement

The overall number of words and pitch accents produced by the two speaker groups is pesented in Table 24.[32]

Table 24 Overall number of words and pitch accents

Speaker Group	Number of words	Number of pitch accents
HSs	8950	5823
Monolinguals	7332	4406

The presence of a pitch accent was modeled as a function of speaker group, formality, age group, and gender. All the independent variables that were included in the experiment design were taken into account as fixed effects: *Speaker group* (HSs/monolinguals), *formality* (formal/informal), *age group* (adolescents/adults), *gender* (male/female). The *speakers* were taken into account as a random effect. The model included the interactions of *speaker group* with every other fixed effect. The motivation was to see if the group itself had an influence on the pitch accent placement or it rather influenced the selection together with one or more fixed effect. Random slopes were excluded from the model since they prevented the model from converging.

This model is, however, not minimal since some of the abovementioned fixed effects play little to no role in pitch accent placement.

The fixed effects were contrast-coded as either -0.5 or 0.5. This is essential to allow analysis of their interactions. The dependent variable is binomial - either there is a pitch accent on a word and it is coded as 1 in the model or there is no pitch accent on a word and it is coded as 0. For post hoc tests of interactions (pairwise Tukey test), the emmeans package (Russell, 2020) was used.

The assumption for the investigation of pitch accent placement is that every word produced by participants could either have a pitch accent or not.

Although function words are often described as phonologically reduced and as less likely to be accented than content words (see Cutler 1993; Jurafsky et al., 2001; Selkirk 1995; Sweet 1890, all cited by Bögel, 2021; Pan & Hirschberg, 2000 referring to Hirschberg, 1993) it was found that speech style can affect the accentuation of content and function words. For instance, Yuan et al. (2005) found that in read speech in English, content words are more likely to receive an accent than content words in spontaneous speech. On the contrary, function words are more likely to be unaccented in read speech than in spontaneous speech.

[32] Note that the absolute numbers in Table 13 and Table 24 differ since they are based on slightly different data sets. Table 13 includes all speech material that carried a pitch accent (i.e., content and function words as well as filled pauses) while Table 24 does not contain filled pauses.

Several studies showed that function words such as pronouns can be stressed in spontaneous speech (Zerbian, & Böttcher, 2019 on mono- and bilingual German; Böttcher & Zerbian, 2020; Böttcher, 2021 on mono- and bilingual English). Also, a recent study by Andreeva & Dimitrova (2022c, p.) reports that bilingual speakers accent more function words than monolingual speakers. Furthermore, in monolingual Russian some function words such as personal pronouns are claimed to be typically accented (Volskaya & Kachkovskaia, 2016, p. 919).

Taking the previous aforedescribed studies into account, it cannot be assumed that function words will not carry a pitch accent in spontaneous data of the current thesis. Therefore, function words were included in the analysis of the pitch accent placement.

Filled pauses (e.g., am, um, uh, etc), on the other hand, were excluded from the analysis since filled pauses were found to show flat intonational contours, low pitch and to be pronounced with a vowel close to schwa (Verkhodanova & Shapranov, 2016; Clark & Fox Tree, 2002; Belz & Reichel, 2015; Shriberg, 2001; Niebuhr & Fischer, 2019). Thus, it would not be generally expected that a filled pause would be accented.

The results of the model regarding PA placement are shown in Table 25.

Formula: pa_model.PA_binary.full = glmer (PA_binary ~ country * (formality + agegroup + gender) + (1|speaker), data=PA, family = binomial).

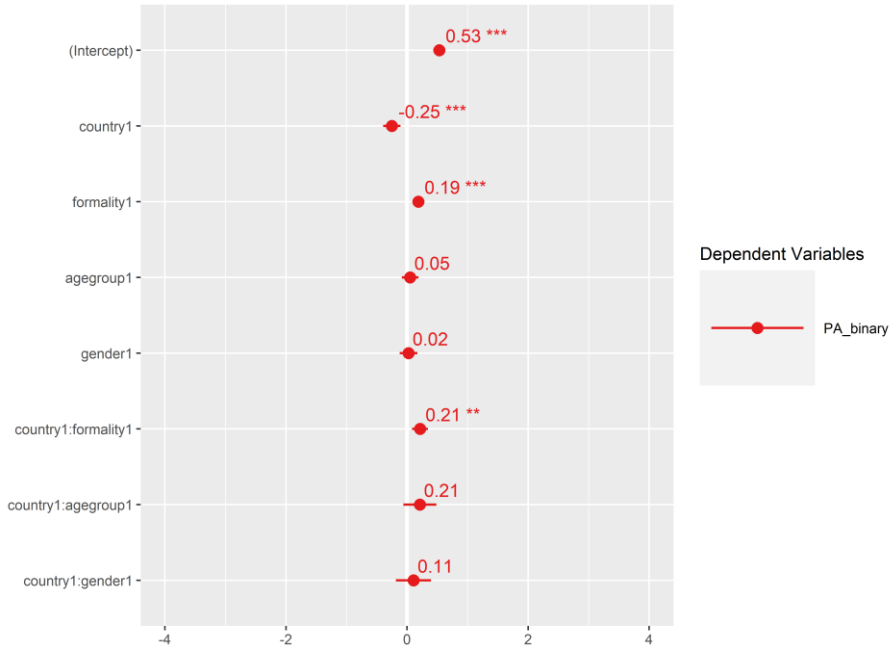
Table 25 Pitch accent placement: Outcome of the generalized binominal linear mixed-effect model

	Estimate	Std. Error	z value	Pr(>|z|)
(Intercept)	0.53303	0.03637	14.655	<2e-16***
country1	-0.25303	0.07269	-3.481	0.00050***
formality1	0.18507	0.03359	5.510	3.58e-08***
agegroup1	0.05105	0.06983	0.731	0.46470
gender1	0.02413	0.07426	0.325	0.74529
country1:formality1	0.21412	0.06718	3.187	0.00144**
country1:agegroup1	0.21163	0.13963	1.516	0.12962
country1:gender1	0.10548	0.14851	0.710	0.47753

The results of the model revealed two main effects and one interaction. First, there was a moderate main effect of country: monolingual speakers produced fewer pitch accents than HSs (-0.25). Second, there was a mild main effect of formality: speakers of both groups produced more pitch accents in formal situations compared to informal ones (0.19). Third, there was a significant two-way interaction between country and formality (see Figure 16) below for the estimates of all main effects and their interactions).

It should be noted that there was no main effect of age group or gender on their own.

Figure 16 The estimates of all main effects and their 95% confidence intervals: Pitch accent placement



For the interaction of country and formality, Tukey multiple comparison test was run. The results of Tukey's adjustment are presented in Table 26

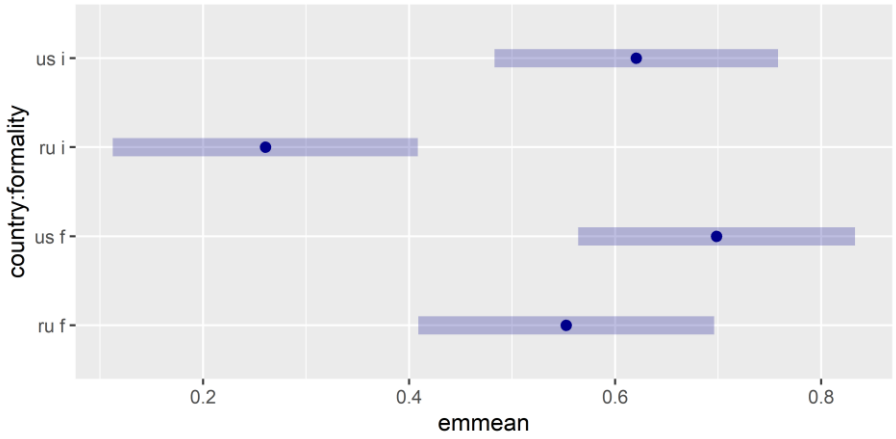
Formula: pa_model.PA_binary.full.emmode <- emmeans(pa_model.PA_binary.full, list(pairwise ~ country:formality), adjust = "tukey").

Table 26 Pitch accent placement: Tukey multiple comparison test (country: formality)

	estimate	SE	df	z.ratio	p.value
ru f - us f	-0.146	0.0789	Inf	-1.849	0.2504
ru f - ru i	0.292	0.0495	Inf	5.905	<.0001
ru f - us i	-0.068	0.0798	Inf	-0.851	0.8297
us f - ru i	0.438	0.0803	Inf	5.454	<.0001
us f - us i	0.078	0.0454	Inf	1.717	0.3149
ru i - us i	-0.360	0.0812	Inf	-4.435	0.0001

Tukey's adjustment revealed the following significant results. First, monolingual speakers produced more pitch accents in formal situations than in informal situations. Second, monolingual speakers produced fewer pitch accents in informal situations than HSs. Third, HSs produced more PAs in formal situations than monolingual speakers in informal ones (see Figure 17).

Figure 17 Pitch accent placement: Interaction of country and formality



The main results of the pitch accent placement can be summarized as follows. It was found that HSs produced more PAs than monolinguals. However, Tukey's adjustment revealed that the major influence behind this effect comes from informal situations, i.e., HSs produced more pitch accents than monolinguals in informal situations. Also, it was found that speakers of both groups produced more PAs in formal situations than in informal ones. However, Tukey's adjustment revealed that the major influence behind this effect comes from the monolingual group and not HSs. Specifically, monolingual speakers produced more accents in formal situations compared to informal ones.

The results of the abovedescribed six models can be summarized as follows. Overall, gender and age on their own were found to be important for the choice of some pitch accent types. First, female speakers of both groups produced more falling accents than male speakers of both groups. Second, adolescent speakers of both groups produced more H* accents and fewer L* accents than adult speakers of both groups. Third, there was an effect of gender together with speaker group regarding the choice of H* and rising accents. Specifically, female HSs differed from monolingual female speakers by producing more H* and fewer rising accents. Male HSs and monolingual speakers were similar to each other regarding the distribution of H* and rising pitch accents.

Gender and age on their own were also found to be important for the choice of final boundary tones. First, female speakers of both groups produced more H% than male speakers of both groups. Second, adolescent speakers of both groups produced more H% than adult speakers of both groups. Apart from the effects of gender and age, there was an effect of formality, but it was only found in the monolingual group. Specifically, monolingual speakers produced more high boundary tones in formal situations than in informal ones.

As for the pitch accent placement, there was an effect of speaker group together with formality. Specifically, monolingual speakers produced fewer pitch accents than HSs, but they only did so

in informal situations (in formal situations the two speaker groups behaved similar to each other). Formality was further found to have an effect on the pitch accent placement, but only for monolingual speakers. Specifically, monolingual speakers produced more pitch accents in formal situations than in informal ones.

5.10 Summary of the results and discussion

This chapter aimed to investigate global intonation patterns (choice of different pitch accents, final boundary tones, and pitch accent placement) of HSs of Russian in the US and monolingual speakers of Russian in a corpus of semi-spontaneous narrations. Other factors such as formality, gender, and age were looked at to see whether they influence the intonation patterns under investigation. In what follows I will address different research questions in detail. Further, the differences between the speaker groups will be categorized along the four dimensions of intonation postulated by the L2 Intonation Learning Theory (Mennen, 2015).

The first research question focused on whether HSs and monolingual speakers have a similar preference for four different pitch accents, namely H*, L*, rising, and falling.

The data refute Hypothesis 1, which stated that HSs would produce more monotonal accents (H* or L*) and fewer bitonal (rising and falling) accents than monolingual speakers. Although the results showed that HSs produced more H* accents and fewer rising accents than monolingual speakers the differences between the two speaker groups were only apparent in female speakers, but not in male speakers. As for the L* and falling accents, although there were effects of age and gender, these effects were similar for HSs and monolinguals (i.e., adolescent HSs and monolinguals produced fewer L* accents than adult HSs and monolinguals and female speakers of both speaker groups produced more falling accents than male speakers of both speaker groups).

The results pertaining to the pitch accent types will be discussed with reference to LILt (Mennen, 2015). HSs were found to have an inventory of pitch accents (i.e., H*, L*, L*+H, L+H*, H+L*, H*+L) similar to one of monolingual speakers of Russian. These results can point toward the absence of differences between the two speaker groups regarding the systemic dimension of intonation. It has to be acknowledged that since the labels used in this thesis to annotate intonation are phonetic and not phonological there still might be differences between HSs and monolinguals in the systemic dimension of intonation.

Differences in frequencies of H* and rising accents between female HSs and monolingual female speakers found in this study can be attributed to the differences between the two speaker groups in the frequency dimension. The difference between female HSs and monolinguals can be possibly attributed to transfer from the ML since H* accents were reported to be frequent in

English, but infrequent (if any) in Russian. As for rising accents, although they were reported to appear in English, their occurrence was only typical for some specific contexts. In Standard Russian, rising accents were reported to be frequent (Comstock, 2018). Taking the abovementioned findings on the preference for H* and rising accents into account as well as the differences between Standard English and Russian, it is plausible that the differences between female HSs and monolinguals can be attributed to the influence of the ML. As for the male HSs and monolingual speakers, the absence of differences between them will be discussed in detail in the section on the pitch accent types and gender effects.

The assumptions of the LILt regarding some extralinguistic factors such as the age of arrival to the L2 (AOA) or the amount of L2 experience can be applied to the current study. Mennen (2015) considers the principle "the earlier, the better" as appropriate for L2 intonation. She claims that the age of arrival plays an important role in predicting performance in L2 intonation with an early AOA being a predictor for the successful acquisition of L2 intonaiton. Several studies on intonation supported this hypothesis (e.g., Chen & Fon, 2008; Huang & Jun, 2011). Based on the results of the current study, it is possible to say that HSs acquired Russian intonation since their inventory of pitch accents and boundary tones was similar to the one of monolingual speakers. In this case, a fairly early (mainly from birth) age of HL acquisition contributed to the successful acquisition of general intonational patterns of Russian.

This thesis also examined whether the different pitch accents under discussion (i.e., H*, L*, rising and falling) are influenced by different factors such as formality, age, or gender. I will address the results of the different pitch accent types regarding formality, age, and gender in turn.

The data refute Hypothesis 4.1 which stated that the pitch accent type of monolingual speakers might be influenced by formality. One possible reason for the absence of the effect of formality could be related to the differences in speaker populations and the data used in this thesis and in the study by Comstock (2018) or Zorina (2018). Comstock (2018) investigated productions of monolingual reporters, i.e., those people who were professionally trained to speak publically. Monolingual participants of this study were not professionally trained in public speaking, rather they were either adolescent speakers who still attended schools or adult speakers with no journalistic training. When Zorina (2018) describes formal speech as being monotonous and very similar to formal written speech, she refers to the scripted scientific speech that is read out loud. Such speech is similar to formal written Russian in terms of the level of formality. This study did not look at such type of speech and although a police report is a formal situation, it is not as formal as the one described by Zorina (2018). Further, contrary to Zorina (2018) a police report was not prepared by participants beforehand and was produced spontaneously.

The data refute Hypothesis 4.2 which states that pitch accent types will not be affected by formality in a way similar to monolingual speakers. The results of the thesis showed that HSs' preference for various pitch accents did not differ depending on formality. The results of this thesis show that pitch accent type is not sensitive to formality, and this result is true for both HSs and monolinguals.

As far as age is concerned, the data generally refute Hypothesis 4.3 according to which adolescent monolingual speakers were expected to produce more H* and L* accents and fewer rising and falling accents than monolingual adult speakers. Although adolescent monolingual speakers indeed produced H* accents more frequently than adult monolingual speakers, they were also found to produce fewer L* accents than the latter group. Monolingual speakers of the two age groups did not differ from each other regarding their preference for rising and falling accents, contrary to the predictions.

As for the HSs, the data refute Hypothesis 4.4 according to which adolescent HSs were expected to be more similar to adolescent monolingual speakers while adult HSs were expected to differ from adult monolingual speakers (if potentially some transfer effects from English are at play). It was found that adolescent speakers of both speaker groups produced more H* accents and fewer L* accents than adult speakers of both groups. Thus, the results show that for some pitch accents adolescent speakers of both speaker groups are similar to each other, and the same holds for adult speakers of both speaker groups. The results of the models did not show any effect of age on the preference of the bitonal accents. Besides, there was no interaction of age and country, i.e., age on its own was a strong predictor of the choice of H* and L* accents.

The results of the H* accent in adolescent speakers of Russian provide confirmation of previous reports on the differences between younger and older monolingual speakers of Russian (Žarovskaja, 2018). Results of the L* accents provide evidence of further differences between adolescent and adult monolingual speakers that were not explicitly reported until now. Based on these results, it may be important to distinguish between different monotonal accents when talking about differences between younger and older monolingual speakers. The exact reason behind these findings is less clear, but perhaps an increase in H* accents among adolescent monolingual speakers has to do with an increasing influence of English, i.e., adolescent speakers may be exposed to the English-speaking culture (TV shows, music) more than adult monolingual speakers. I have currently noticed some changes in pronunciation of the Russian young pop singers. Specifically, palatalization that is widespread in monolingual Russian is often absent in the speech of many young Russian singers, and such absence gives an impression of the influence of some other languages, presumably English since this is the most common language of pop

culture. Thus, some ongoing changes may also happen on the level of intonation regarding the H* and L* accents.

Interestingly, HSs of different age groups patterned with monolingual speakers of different age groups regarding the choice of H* and L* accents. The exact reason behind these findings is less clear and further investigation is needed to see which constituents received H* and L* accents. It is possible that the differences in the preference for H* and L* are related to the differences in discourse organization between the two speaker groups (information status of a referent, information structure of a constituent, and its syntactic position). Further, the differences between adolescent and adult speakers may generally point towards innovations in language that are reported to be reached at the adolescent age (Nagy, 2017, p. 35 referring to D'Arcy, 2013, p. 490). These innovations might reflect a process of vernacular reorganization, i.e., when children and adolescents produce some patterns differently from their caregivers (e.g., with an increased frequency) (Smith & Holmes-Elliott, 2022).

The results of the HSs can be possibly attributed to transfer from the ML since it was claimed that monotonal accents are common in English (Comstock, 2018). In this case, it is a transfer that manifests itself in the younger population of speakers. However, younger speakers produced fewer L* accents than adult speakers. Thus, if transfer is taken as an explanation one needs to restrict it to the younger age group and only H* accents. I assume that a more plausible explanation is connected to the differences in the discourse organization between adolescent and adult speakers rather than the effect of bilingualism.

The results of this thesis showed an effect of gender on its own and an effect of gender together with bilingualism. The results regarding the preference for different pitch accents and gender differences refute Hypothesis 4.5 which stated that female monolingual speakers would generally produce more bitonal accents and fewer monotonal H* accents than male speakers. The only instance in which female speakers differed from male speakers was the preference for falling accents. Specifically, female speakers produced more falling accents than male speakers. The exact reason behind this result is unclear and further research is required to shed light on the preference for the falling accents in the female population. One needs to look at the contexts in which falling accents were used by female and male speakers.

The results further refute Hypothesis 4.6 according to which female HSs were expected to produce more rising and falling accents and fewer H* accents than male HSs. The only instance in which female HSs differed from male HSs was the preference for falling accents. Specifically, female HSs, similar to female monolingual speakers, produced more falling accents than male HSs. The exact reason behind this result needs to be addressed in further research.

Furthermore, the results generally refute Hypothesis 4.6 which stated that female HSs may be more similar to female monolingual speakers while male HSs may be more similar to male monolingual speakers. Contrary to the predictions, female HSs produced more H* accents and fewer rising accents than monolingual female speakers. Male HSs and male monolingual speakers did not differ from each other regarding their preference for different pitch accent types. The difference between female HSs and female monolingual speakers has already been explained by the possible transfer from the ML. However, the absence of differences between male HSs and male monolingual speakers was not yet discussed. The picture that arises from the data is quite complex.

One can be led to think that since male HSs and male monolinguals did not differ from each other, the preference for H* and rising accents in the narrations of male HSs was similar to the pattern reported for Standard monolingual Russian. However, that was not the case. Male HSs did not significantly differ from female HSs. It was rather the group of male monolingual speakers that differed from female monolingual speakers and patterned with male or female HSs. Although there were no significant differences found between male and female monolingual speakers regarding their preference for H* and rising accents, Table 16 and Table 18 as well as Figure 9 and Figure 11 show that male monolinguals differ from female monolingual speakers. The difference between male and female speakers was found to be at the edge of significance for H* accents ($p = 0.0565$). Such results give new insights into gender differences regarding the production of particular PAs in monolingual Russian that have not been reported before. It is possible that male monolingual speakers follow the general tendency that was reported for male speakers in other languages (e.g., in English) according to which male speakers are expected to produce fewer rising and falling accents, but more H* accents (e.g., Henton 1995; Schmid & Bradley, 2019; Huan & Zhang, 2019; Clopper & Smiljanic, 2011 for the difference between female and male speakers of English in their use of H* accents). Such results can be further attributed to the social and cultural differences between monolingual male and female speakers (e.g., female speakers were reported to produce rising tones since they are relatively more emotional, friendlier, or more polite than male speakers) (Huan & Zhang, 2019, p. 70 referring to Jiang, 2012).

Some studies report that young female speakers are the driving force of linguistic change (Tagliamonte, 2016, p. 43; Nagy, 2017, p. 35 referring to Bayley, 2013, p. 14; Labov, 1990, p. 205). The abovedescribed results of this thesis show that female monolingual speakers are representatives of features that were reported for Standard Russian. Male monolingual speakers, on the other hand, were found to differ from what was reported for Standard Russian either

reflecting some general social differences that always existed in Standard Russian or possibly initiating some linguistic changes in monolingual Russian (that would go against previous observations of women being the driving force of linguistic change).

The second research question focused on whether the choice of the final boundary tones is similar between HSs and monolingual speakers. There were two competing hypotheses. The data refute Hypothesis 2.1 which stated that HSs would produce H% more frequently than monolingual speakers. The results of the thesis did not show any effect of country on the choice of the final boundary tone, i.e., HSs and monolinguals did not differ from each other regarding their preference for high and low FBTs. This result shows the relevance of the statistical analysis of the data since the observations or impressions that one has may not be confirmed once the data are analyzed. Alternatively, the difference between this thesis and Zemskaja (2001) and Polinsky (2018) may be due to the participants' pool. It is not clear what kind of HSs are investigated by Zemskaja (2001) and Polinsky's (2018) in terms of their fluency or proficiency. An overall high fluency (measured by speech rate), performance, and high involvement with the HL possibly contributed to the absence of differences between HSs and monolinguals regarding the FBTs.

The data confirm Hypothesis 2.2 which predicted the two speaker groups would be similar to each other in their preference for high and low FBTs. The results of this study are unsurprisingly in line with the study by Zerbian et al. (2024) which did not find any differences between HSs of Russian and monolingual speakers in the use of high and low final boundary tones. Participants of the study by Zerbian et al. (2024) and this thesis partially overlap in the sense that Zerbian et al. (2024) and I examined the same monolingual speakers of Russian while the former examined more HSs than the latter.

Finally, as for the inventory of different FBTs, it was similar between HSs and monolinguals. Therefore, the two speaker groups seem to be similar to each other in the systemic dimension of intonation. However, as in the case of the pitch accent inventory, one cannot exclude the possibility that the two groups may differ from each other in this dimension of intonation since prosodic annotations were not phonological, but phonetic.

This thesis also examined whether different FBTs (i.e., H% and L%) are influenced by different factors such as formality, age, or gender. I will address the results of the FBTs regarding formality, age, and gender in turn. The data confirm Hypothesis 4.1 which stated that monolinguals would frequently produce H% in formal situations (Šatilov, 2012). Indeed, monolingual speakers were found to produce H% more often in formal situations compared to informal ones. The increased use of H% might indeed be directly due to the formal communicative situation, expressing politeness and/or floor holding.

Furthermore, the more frequent production of H% in formal situations by monolingual speakers might be explained by the differences in the sentence structure in the formal and informal situations. Although an IP did not necessarily appear at the end of a clause, but could also appear clause-internally, some IPs did mark the end of a main or embedded clause. In the latter case, in a sequence of two clauses A+B, an L% is expected on A only in the case of two main clauses. In all other cases, a high FBT is expected on A to make the sentential connection with the following clause (i.e., when two embedded clauses follow each other or a main clause is preceded or followed by an embedded clause). It is possible that monolingual speakers produced more instances of A+B clauses both of which were main in informal situations, and consequently produced more L% in those situations. On the contrary, in formal situations, they might have produced more instances of A+B clauses both of which were embedded or one of which was main and another one was an embedded clause. This could indeed be the case since Martynova et al. (2024) found that monolingual speakers in the RUEG corpus produced more embedded clauses in formal situations compared to informal ones.

The data refute Hypothesis 4.2 which expected the FBTs of HSs to be influenced by formality similarly to monolingual speakers. Contrary to the findings by Zerbian et al. (2024) on a quite similar speaker pool, HSs of this thesis did not show an effect of formality on their preference for low and high boundary tones. On the one hand, these results are surprising since Zerbian et al. (2024) used a data set similar to the one used in this thesis (i.e., the data collected using the Language Situations method, Wiese, 2020). On the other hand, the results of this thesis can be explained with reference to the number of tested participants. I examined 40 monolingual and 40 HSs of Russian in the US while Zerbian et al. (2024) examined a greater data sample with 40 monolinguals (the same as in this thesis) and 53 HSs of Russian in the US (40 HSs that formed the data set in this thesis and 13 other HSs). Although HSs of this thesis do not show the statistical difference in the use of H% in formal and informal situations, they show a tendency that is similar to monolingual speakers, namely more H% in formal situations than in informal ones. It is likely that this tendency turned out to be statistically significant when a greater number of HSs were looked at (as in Zerbian et al., 2024). Therefore, HSs of this thesis (at least some) were aware of the difference between formal and informal situations, but they did not show this difference as clearly as monolingual speakers.

Another explanation of the discrepancy between Zerbian et al. (2024) and the results of this thesis possibly lies in the differences between the investigated and significant factors. Specifically, gender and age were found to influence the FBTs in this thesis while the aforementioned factors were not included in the Zerbian et al. (2024). A follow-up analysis of inter- and intra-individual

variation would show which HSs demonstrate an effect of formality on the distribution of FBTs and which HSs do not demonstrate this effect. Also, it would show how HSs behave in the two tested situations (e.g., Schadrova et al., 2021 on the importance of such analysis).

As for age, the results of the thesis confirm Hypotheses 4.3 and 4.4 which expected adolescent speakers of both groups to produce H% more frequently than adult speakers of both groups. Indeed, there was no effect of speaker group on the choice of the FBTs, but a general effect of age, i.e., both HSs and monolingual adolescent speakers produced H% more frequently than heritage and monolingual adult speakers.

On the one hand, such results can be possibly attributed to the influence of English on HSs. Adolescent HSs may transfer H% from English since high rising boundary tones have been reported to be a feature of young English speakers (e.g., Trask, 2010, p. 17 cited in Mata et al., 2016). On the other hand, since there was no effect of country on the choice of the FBTs, but an effect of age on its own, transfer might not be an explanation of the results.

The increase of the high FBTs in monolingual Russian can be an indicator of an ongoing language change that is initiated by adolescent speakers. The results of the thesis are then in line with the studies by Volskaja (2013); Volskaya and Kachkovskaia (2016); Samolina (2017); Zuban et al. (2023) reporting that the intonation patterns of younger monolingual speakers of Russian differ from those predicted in the literature (alignment differences; extended use of rising NPAs; more frequent use of H% in yes-no questions).

The results of this thesis are further in line with the general claims about adolescent speakers who were identified as a major social group for linguistic variation and change (Kerswill, 1996; Tagliamonte, 2016). Thus, it is possible that high FBTs are in general a feature of younger speakers independently of the language and bilingualism (as reported by Nagy, 2017, p. 35, referring to D'Arcy, 2013, p. 490). By increasing the frequeny of H% adolescent speakers may show so called vernacular reorganization of language in order to sound different from their caregivers (Smith & Holmes-Elliott, 2022).

As for gender, the data support Hypothesis 4.5 which stated that female speakers of both groups would generally produce H% more frequently than male speakers of both groups. The results of the thesis indeed showed that female speakers of both groups produced more H% than male speakers of both groups. On the one hand, the results of female HSs could be attributed to the potential transfer from English (e.g., Ching 1982 for Uptalk in the US, Ritchart & Arvaniti, 2014 on southern California English). On the other hand, since there was no effect of country on the preference of high boundary tones, but only an effect of gender it is possible that female HSs knew about the preference of the high FBTs by females in their HL.

These results are important for monolingual female speakers since previous studies do not report on the gender difference regarding the choice of the FBTs. These results go in line with previous research on gender differences in languages other than Russian (Lakoff, 1975; Ching, 1982; Clopper & Smiljanic, 2011; Simonet, 2008, 2011; Van Rijswijk et al., 2017; Ordin & Mennen, 2017; Sheikhbahaie, 2020). It is reported that female adolescent speakers are a driving force of linguistic change (Tagliamonte, 2016; Nagy, 2017), and the results of this thesis show that monolingual female speakers may indeed initiate internal language change.

The general results about the increase of the H% in female speakers can be explained with reference to the Frequency Code in a sense that female speakers try to use high-rises to be generally polite, friendly, and non-aggressive (Gussenhoven, 2004, p. 82). One open question for further research is the nature of the H%, i.e., where the high FBTs occur (e.g., at the end of questions or statements).

The third research question focused on whether the pitch accent placement is similar between HSs and monolingual speakers. The data partially confirm Hypothesis 3, which stated that HSs would generally produce more PAs on different words than monolingual speakers. It was found that HSs produced significantly more pitch accents than monolingual speakers, but the difference between the two speaker groups was only apparent in one particular situation, namely informal. In formal situations, HSs and monolinguals were similar regarding the PA placement. It is important to point out that the two speaker groups were similar to each other in formal situations not because HSs produced fewer pitch accents on different constituents, but because monolingual speakers produced significantly more accents in formal situations compared to informal ones (see a detailed discussion of pitch accents' placement and formality below). The differences in accentuation between HSs and monolinguals lie in the frequency dimension of intonation according to the LILt (Mennen 2015), but the observed differences cannot be easily attributed to transfer from the ML.

Bilingual speakers, especially, L2 learners are often reported to produce more PAs on different constituents than monolingual speakers (all citations are for L2 speakers: Avesani et al., 2015; Andreeva & Dimitrova, 2022a, 2022b, 2022c; Rasier & Hiligsmann, 2007, p. 47). For HSs of Russian, Zuban et al. (2023), and Zerbian et al. (2024) report that HSs also produce more accents on different syntactic constituents than monolingual speakers.

Rasier and Hiligsmann (2007, p. 47) state that the frequent accentuation of L2 speakers stems from the accentuation of different referents. Specifically, it is claimed that it seems to be difficult for L2 learners to distinguish between *new* and *given* information, and thus they tend to highlight every word in an utterance. It is possible that HSs of this thesis, as another group of bilingual

speakers, also placed more accents on the different referents (*given, new, unused,* and *bridging*) than monolingual speakers. Further research is necessary to determine whether a referent status influences the HSs' accentuation pattern.

Frequent accentuation by HSs may be related to the accentuation of some particular words such as verbs, adverbs, or prepositions. I examined all the words that received a PA, namely content and function words together. Zerbian et al. (2024) examined the pitch accent placement on content words and verbs separately by two speaker groups similar to the ones in this thesis. Zerbian et al. (2024) found that HSs of Russian produced more PAs than monolinguals in both conditions. It seems that HSs generally produce more PAs on different words independently of their part of speech (although not all parts of speech were examined separately in previous research).

The frequent accentuation by HSs in this thesis can be explained as a general feature of bilingual speakers possibly caused by linguistic insecurity of HSs in their HL (since Russian is usually not a dominant language of HSs) or their attempts to clearly pronounce each word to be better understood (see Goble, 2016 for linguistic insecurity of HSs of Spanish of third generation in the US; see Zuban et al., 2023; Zerbian et al., 2022 for similar ideas on the general effect of bilingualism).

Another explanation of the results might be connected to what was reported for L2 learners as another group of bilinguals. The amount of exposure to L2 and the frequency of L2 use have often been reported to play a role in L2 speech production with monolingual-like performance usually linked to greater exposure to the L2 and its higher frequency of use (e.g., Mora & Valls-Ferrer, 2012 on fluency of L2 learners of English with L1 Spanish; Segalowitz & Freed, 2004 on fluency of L2 learners of Spanish with L1 English; Saito, 2015 on prosody and speech rate by L2 learners of English with L1 Japanese; Trofimovich & Baker, 2006 on duration of stressed and unstressed syllables by L2 learners of English with L1 Korean). It is possible that the amount of exposure to Russian as well as frequency of use contributed to more frequent accentuaiton by HSs in informal situations, but it is difficult to draw a direct parallel between these factors from the meta data since HSs reported that they were exposed to Russian since birth and they also sometimes used different media in Russian. Additionally, 17 HSs out of 40 were exposed to Russian in settings other than home (hobbies or Sunday schools). Of course, the amount of exposure to Russian may decrease with age (i.e., for adult HSs) since older HSs do not live with their parents anymore and presumably hear Russian less frequently than younger HSs.

As for the frequency of use, adolescent HSs speak Russian with their caregivers every day since they share a household together. Adult HSs presumably speak Russian less frequently than adolescent HSs, but they still use Russian for communication with their parents. Taking the

metadata of HSs into account, it is thus difficult to directly relate the amount of exposure and frequency of use by HSs to the more frequent accentuation.

Another explanation (and a more plausible one) relates to the way HSs retold the story of a car accident. Although various studies report that code-switching is quite widespread in speech of bilinguals (e.g., Poplack, 1980; Heredia & Altarriba, 2001; Bhatt & Bolonyai, 2011; Bullock & Toribio, 2009; Van Hell et al., 2015), instances of code-switching in the narrations of HSs of this thesis are quite rare, i.e., HSs were trying to retell the story exclusively in Russian. The reason behind this strategy probably lies in the type of the task and in the assumptions HSs made about the hearers. In the formal situation, HSs may have assumed that a typical Russian-speaking policeman would not understand English, and in the informal situation, HSs may have assumed the same, i.e., a Russian-speaking friend would not necessarily understand English if this friend did not live in an English-speaking country. I suppose that this was not necessarily a typical way for HSs of communicating in Russian with their parents, because HSs typically address their mothers and fathers in two languages rather than only exclusively in Russian (see Table 6, section Metadata, Participants). Since HSs of this thesis mainly retold the complete story in Russian that could lead to the more frequent accentuation of different words as participants did not want to insert English words and were searching for the Russian words.

This thesis also examined whether PA placement is influenced by different factors such as formality, age, or gender. The results of the study refute Hypothesis 4.1, which stated that pitch accent placement by monolinguals would not be influenced by formality. The results of the thesis showed that monolingual speakers produced more pitch accents in formal situations than in informal ones. The results of monolingual speakers show that formality influences their accentuation pattern supporting previous studies that report on the differences in intonation patterns of monolingual Russian speakers depending on different types of speech (Volskaya & Kachkovskaia, 2016; Yokoyama, 2003; Comstock, 2018). The results of the thesis generally refute the results by Zerbian et al. (2024) who did not find an effect of formality on the PA placement on content words by monolingual speakers.

The discrepancy in the results between Zerbian et al. (2024) and the results of this thesis seems to be connected with the inclusion of function words. It is possible that monolingual speakers included different types of function words in their formal and informal narrations, and those in the formal situation were more prone to be accented (e.g., due to the greater length). This idea needs further qualitative analysis in a different study.

Another possibility is that monolingual speakers felt more nervous or less secure while talking to a policeman than while talking to a friend since the information about the accident had to be as

accurate as possible in the former case. Furthermore, a police report might have been more detailed and required a more careful choice of words and formulations than a story presented to a friend. Thus, monolinguals might have needed more time to remember all the details from the video and put the words into "appropriate phrases" (e.g., grammatically correct). That could lead to slower speech, shorter IPs, and more frequent accentuation. That could indeed be the case. The analysis of the speech rate in this thesis showed that monolingual speakers were significantly slower in formal situations (107 words/minute) compared to informal ones (131 words/minute) (see Table 7 and chapter 4.2.3). Moreover, Zerbian et al. (2024) showed for the same monolingual speakers that were investigated in this thesis that their mean length of IPs was significantly shorter in formal situations (2,6 words per IP) compared to informal ones (3 words per IP).

The results of the thesis refute Hypothesis 4.2, which stated that formality would influence PA placement in the narrations of HSs. The results of the thesis showed that HSs did not show any difference regarding the placement of PAs in different situations. HSs were also found to be similar regarding the speech rate and the mean IP length in formal and informal situations. Specifically, the results of this thesis showed that HSs performed statistically similarly by producing 110 words per minute in formal situations and 118 words per minute in informal situations (see Table 7 and chapter 4.2.3). As for the IP length, Zerbian et al. (2024) showed that the mean length of IPs was statistically similar in both situations for a data sample of HSs in the US largely similar to that of this thesis (2.4 words per IP in the formal and 2.5 words per IP in the informal).

The abovedescribed results are in line with the studies that report on the lack of register differentiation in the narrations of HSs (Schroeder et al., in press; Wiese et al., 2022; Alexiadou et al., 2022; Comstock, 2018).

Furthermore, the results of the thesis showed that HSs were similar to monolingual speakers in the formal, but not in the informal situations, regarding PA placement. This result seems to be surprising since HSs are typically not expected to pattern with monolinguals in formal situations. However, when one looks at the PA placement in the narrations of both speaker groups, it is clear that the difference between the speaker groups is driven by monolingual speakers and not by HSs. HSs showed a similar accentuation pattern in both formal and informal situations while monolingual speakers placed a lot fewer accents in informal situations compared to formal situations. Thus, it is not the case that HSs used a different accentuation strategy depending on formality, but it is the case that monolingual speakers did.

As for the PA placement and age, the results refute Hypothesis 4.3 according to which monolingual speakers of different ages were expected to differ from each other. The results of the

thesis partially confirm Hypothesis 4.4, which stated that HSs might pattern with adolescent or/and adult monolingual speakers. Indeed, adult and adolescent HSs patterned with adult and adolescent monolinguals in formal situations. However, both adult and adolescent HSs differed from adult and adolescent monolinguals in informal situations. Additionally, age on its own was not a predictor that influenced the accent placement within a speaker group, i.e., both adolescent and adult HSs as well as monolingual adolescent and adult speakers had similar accentuation strategies.

As for the PA placement and gender, the results of the thesis refute Hypothesis 4.5 according to which monolingual female and male speakers were predicted to differ from each other. The results of the thesis refute Hypothesis 4.6, according to which HSs of one of the gender groups could be similar to monolinguals (e.g., females) while another gender group might differ from the monolingual group. The results showed that both female and male HSs were similar to male and female monolinguals in formal situations while both female and male HSs differed from male and female monolinguals in informal situations. Additionally, gender on its own was not a predictor that influenced the accent placement within gender group, i.e., both female and male HSs as well as female and male monolinguals had similar accentuation strategies.

5.11 Conclusion of this chapter

Summing up the results of global intonation patterns in heritage and monolingual Russian, HSs showed an inventory of pitch accents and boundary tones similar to monolingual speakers. However, the two speaker groups differed from each other in their preference for some pitch accent types. Specifically, female HSs produced significantly more H* and significantly fewer rising accents than monolingual female speakers. Interestingly, male monolingual speakers patterned with male HSs rather than with female monolinguals. Age was found to play a role on its own with adolescent speakers of both groups producing significantly more H* and significantly fewer L* accents than adult speakers of both groups. Formality was not found to influence the preference for different pitch accent types between the two speaker groups.

As for the final boundary tone, HSs and monolinguals were generally similar to each other. Formality was found to influence the preference for H% and L%, but only for monolingual speakers. Specifically, monolinguals produced significantly more high boundary tones in formal situations than in informal situations. Gender and age were found to have an effect on their own with female and adolescent speakers producing H% more frequently than male and adult speakers.

As far as the placement of accents is concerned, HSs placed more pitch accents on different words than monolingual speakers in informal situations. In formal situations, both speaker groups did not differ from each other. These results, however, are not indicative of register awareness by HSs since HSs behaved similarly in both formal and informal situations. Formality was found to play a role for the PA placement for monolingual speakers. Specifically, they produced significantly more PAs in formal situations than in informal situations. Factors such as age and gender did not influence the accentuation pattern in any of the speaker groups.

Overall, the results of global intonation patterns showed that HSs and monolinguals were similar to each other regarding some of the investigated phenomena (e.g., inventory of PAs and FBTs, preference for specific FBTs). The two speaker groups were also found to differ from each other regarding some other intonation patterns, but this difference was always modulated by other factors such as gender and formality (e.g., PA placement, H*, and rising accents). It might be the case that prosodic differences between HSs and monolinguals reported in this thesis contribute to the perceived overall accent that was found for HSs in perception studies (Flores & Rato 2016; Kupisch et al., 2014; Polinsky, 2018; Chang & Yao, 2016). These perception studies found that the speech of HSs is often rated as more accented than that of monolingual speakers, but the sources of the accent remained unclear.

Furthermore, the results showed that formality was an important factor for some intonation patterns but only for monolingual speakers (i.e., FBTs and PA placement). Formality was not

found to have an effect on intonation of HSs. These findings point to register-leveling processes in the narrations of HSs.

Finally, the results showed a general effect of age and gender on the production of different intonation patterns in both speaker groups (i.e., in preference for H* and L* accents and high FBTs by adolescent speakers; in preference for H% by female speakers). Thus, the results of the thesis showed further evidence for the importance of age and gender for the investigation of intonation.

The results of this thesis not only contribute to the knowledge of heritage intonation but also to monolingual Russian intonation since some of the intonation phenomena investigated here were not investigated in the previous literature on monolingual Russian in detail (e.g., PA placement or FBTs) or some factors such as gender were not included into the previous analyses. This thesis showed that there might be a process of internal language change that is initiated by younger speakers of Russian (preference for H% and H*, and infrequent use of L*) or by female (frequent H%) or male speakers (frequent H* and fewer rising accents).

It has to be acknowledged that the data presented in this thesis allowed for a quantitative exploration and comparison of overall intonational patterns between HSs and monolinguals. However, further qualitative analyses of the data could shed more light on the possible reasons behind the reported results. For instance, the contexts in which a particular PA or a FBT occurs could be examined. Further, due to the semi-spontaneous nature of the narrations the data could not be controlled for different factors, such as a number of segments or for a syntactic structure of the utterances.

6 Corpus study: Word order choice

This chapter will focus on word order choice by HSs of Russian in the US and monolingual speakers of Russian. It will start with an overview of the literature on word order in monolingual and heritage Russian in the US leaving the effects of information structure and intonation out since they will be discussed in detail in the next chapter 7.2. The chapter will present the detailed research questions and hypotheses devoted to the word order choice by the two speaker groups. After the research questions and the hypotheses, this chapter will describe the data annotation for word order and clause type. Finally, the results of the study will be presented followed by the discussion.

6.1 Word order in monolingual Russian: Frequency of different patterns

Some languages have a fixed position of syntactic constituents while other languages allow a considerable variation of word order. English, apart from a residual V2 position, is a strict SVO language in both main and embedded clauses with few reordering options (Eppler, 1999; De Vogelaer, 2007; Kempen & Harbusch, 2019; Sailor, 2020; Anderssen & Bentzen, 2018):

Russian is viewed to have a basic SVO order in pragmatically neutral contexts (i.e., in broad focus context). However, Russian allows for a remarkable word order variation that is typically governed by information structure/status (Švedova et al., 1980; Kallestinova, 2007; Slioussar, 2007, 2011; Bailyn, 2012; Brehmer & Usanova, 2015; Krylova & Khavronina, 1986; Kovtunova, 2002; Sirotinina, 2003).

Regarding the use of different word orders, it was reported that monolingual speakers of Russian produced SVO, OVS, and SOV orders in the controlled oral elicitation task while VOS, VSO, and OSV orders were dispreferred and almost not attested (Kallestinova, 2007, pp. 50-51). Other authors also reported that different word orders were not distributed equally in the narrations of monolingual Russian speakers. For instance, Lobanova (2011, p. 131) investigated 300 written sentences taken from a novel and a newspaper and reported the following word order distribution in Standard Russian: SVO (88%), OVS (6%), OSV (4%), SOV (1.5%) and VOS (0.5%). According to Bivon (1971) as cited in Bailyn (2012, p. 249), in a written corpus of Russian 79% of word orders were SVO followed by OVS (11%), OSV (4%), VOS (2%), VSO (1%), SOV (1%). In a more recent corpus study by Berdicevskis and Piperski (2020, p. 30) the distribution of different word orders in Russian is the following (the database is 8,575 clauses with only nominal subjects and objects): SVO (85%), OVS (9%), VOS (2,7%), OSV (1.7%), SOV (1.2%), VSO (0.5%).

Word order in Russian is expected to be varied in both main and embedded clauses (Bailyn, 2012, p. 84). However, the word order in embedded clauses might be less varied than in main clauses due to the differences between the two clause types regarding their discourse structure (Bailyn, 2012, p. 84). Although the exact differences in discourse structure are not specified by Bailyn (2012) there are some embedded clauses in which the order of some constituents is structurally and pragmatically predetermined. For example, subject or object relativizers typically appear before all other constituents of an embedded relative clause in Standard Russian. Moreover, relative clauses with nominal constituents with the case-marked relative pronoun subject and object relative clauses have only one frequent and pragmatically neutral word order i.e., VO for subject and VS for object relative clauses. Subject and object relatives can have an OV and SV order respectively, but these orders require a very specific context (for detailed discussion see Polinsky, 2011, pp. 310-311; Levy, Fedorenko, & Gibson 2013).

Zuban et al. (2021) showed that monolingual speakers of Russian produced fewer different varied word order combinations in embedded clauses (five word order combinations) compared to main clauses (six word order combinations). Moreover, the frequency of the basic SVO order was higher in embedded clauses (61.8%) compared to main clauses (55.6%).

Furthermore, there has been an association between different word orders and communicative situations reported for monolingual Russian. According to Adamec (1966, p. 47; p. 43) and Sirotinina (2003), SVO and OVS word orders are generally more typical for formal situations while SOV and OSV orders are more frequent in informal situations. Slioussar (2007, p. 190), citing the results of Sirotinina (1962-1963), further points out that SOV order is particularly frequent in informal spoken situations. Thus, SOV order is affected by both formality and mode in monolingual Russian. VSO order is typical for the beginning of fairy tales and anecdotes and this order has "a narrative epic or folksy flavor" (Slioussar, 2007, p. 18). Verb-initial word orders are generally reported to introduce a narrative by "informing about the existence or emergence of a certain state of affairs" (Brehmer & Usanova, 2015, p. 163).

Among the factors that can influence word order variation in Russian are the grammatical weight of constituents, animacy of referents, object type (noun or pronoun), definiteness, and specificity (for more detailed information see Laleko & Dubinia, 2018; Luchkina & Cole, 2016; Lobanova, 2011), but these factors will not be considered in this thesis.

6.2 Word order in heritage languages

In the area of syntax, HSs were found to differ from monolinguals with respect to the relationships at a distance, e.g., antecedent-gap dependencies in relative clauses, the binding of

anaphors, or agreement phenomena (Polinsky & Scontras, 2019, p. 7; Polinsky, 2011 on relative clauses in heritage Russian, Kim et al., 2009 on anaphoric dependencies in heritage Korean in the US).

Word order in HLs was reported to be a phenomenon that is susceptible to change and transfer from the ML (Polinsky, 2018, p. 273). Moreover, languages that allow word order variation show less varied order patterns in HLs and the increased use of basic word orders (for a detailed review of the studies on word order in HLs see Polinsky, 2018, p. 273; Montrul, 2015, p. 82; Lohndal, 2021). I will review some recent studies on word order in HLs in more detail since word order in HSs is one of the topics investigated in this thesis. A detailed overview of studies on word order in heritage Russian is given in chapters 6.3 and 7.4).

A study by Brehmer and Sopata (2021) investigated word order in complex verb phrases (i.e., auxiliary and infinitive complements) in heritage Polish in Germany and found traces of the cross-linguistic influence of the ML on the HL of HSs in their adulthood. In monolingual Polish, the usual word order in complex verb phrases is the one in which an infinitive complement immediately follows the auxiliary (e.g., He wants to catch a bird). However, another word order in which an infinitive complement does not immediately follow the auxiliary (so-called discontinuous) is also possible and is preferred when an object is expressed by a light element such as a clitic pronoun (e.g., He wants it to catch) or when different word order is required by information structure. A discontinuous word order is also possible with full NPs, but such placement should be licensed by information structural requirements. Monolingual German has a fixed word order in complex verb phrases that does not depend on information structure or on the type of object (full NP or pronoun), i.e., it is always discontinuous (e.g., Er will den Vogel fangen) (Brehmer & Sopata, 2021, chapter 2.3).

Brehmer and Sopata (2021) tested the production as well as acceptability of complex verb phrases by simultaneous and early sequential HSs of different age groups with the HL Polish and the ML German. The semi-spontaneous oral narratives were elicited through a variety of different pictures that had to be described as a story. Children were exposed to the pictures from the Multilingual Assessment Instrument for Narratives (MAIN) developed by Gagarina et al. (2012), adolescents saw the pictures from the comic series “Father and Son” by Erich Ohser while adults’ productions were elicited with the series “Father and Son” and extra questions asking about a typical day of a participant (Brehmer & Sopata, 2021, chapter 3.2.). Overall the data were comprised of simultaneous and early sequential HSs of five age groups each (from small children to young adults) and monolingual speakers of Polish of two age groups (children and young adults) (Brehmer & Sopata, 2021, chapter 3.1.). In addition to the production task, participants were asked

to evaluate the utterances with discontinuous order of infinitive complements regarding their acceptability.

The results of the study revealed that both simultaneous and early sequential HSs in general behaved differently from monolingual speakers in both the production and acceptability judgment task by producing and accepting the discontinuous complex verb phrases more often than monolingual speakers of Polish. Thus, HSs often followed the German pattern in their HL Polish. In the production task, simultaneous and early sequential HSs of almost all age groups (except for simultaneous adolescent HSs between the ages 10-17 and small children from the group of early sequential HSs between the ages 3-6;11) differed from monolinguals by producing more discontinuous complex verb phrases with full NPs (Brehmer & Sopata, 2021, chapter 5.1)

In the acceptability task, both simultaneous and early sequential HSs generally behaved similarly to monolingual speakers, except for adults who significantly differed from monolingual speakers by accepting more discontinuous complex verb phrases with full NPs. Brehmer & Sopata (2021, chapter 5.2) state that the differences between HSs and monolingual speakers are more visible in production than in judgment data.

Another finding of Brehmer and Sopata (2021, chapter 5.3) is related to the type of object produced and evaluated by HSs and monolinguals. Overall, HSs were found to differ less from monolinguals in contexts with pronominal objects than with full NPs. These results and the other results are interpreted as cross-linguistic influence from German since in German complex verb phrases require discontinuous word order irrespective of the object type (full NP or pronoun), and this is in general a pattern that is shown by HSs in their HL Polish. Although HSs converge with monolinguals at some phases of their life, by the time of their adulthood both simultaneous and sequential HSs have a grammar that differs from monolingual speakers of Polish (Brehmer & Sopata, 2021, chapter 6).

A study by Hao and Chondrogianni (2021) on non-SVO word orders in heritage Chinese also reports on the cross-linguistic influence of the ML on the HL of HSs. Hao and Chondrogianni (2021) investigated the comprehension and production of SOV and OSV orders by 5- to 9-year-old HSs of Mandarin Chinese with the ML British English. Both Mandarin Chinese and English have an SVO order as the basic one. Word order permutations in Chinese are governed by pragmatic reasons. For instance, SOV and OSV orders mark focus on the object, but SOV order is typically associated with active voice and can have a morphosyntactic cue *ba* while OSV is usually associated with passive voice and can have a morphosyntactic cue *be*. Furthermore, in SOV active utterances the agent comes before the patient while in passive OSV utterances the agent comes after the patient (Hao & Chondrogianni, 2021, chapter 1; chapter 2.1).

In the comprehension task, participants saw two pictures on a computer screen and heard a sentence that described one of the pictures. Participants had to select a picture according to the description they had heard. In the production task, participants saw two pictures on a computer screen (the pictures were different from the ones in the comprehension task), and they were asked to cooperate with the elicitor to describe the pictures. The elicitor described the first picture and asked the participant to describe another picture (Hao & Chondrogianni, 2021, chapter 4.2.2). Both comprehension and production tasks targeted three word orders: SOV with the morphosyntactic cue *ba* (BA condition), OSV with the morphosyntactic cue *bei* (BEI condition), and OSV without any morphosyntactic cue (simple OSV).

The results of the study showed that HSs differed from the age-matched monolinguals in both comprehension and production of different word orders. In the comprehension task, HSs were similar to monolingual speakers in the BA condition but performed less accurately than monolinguals in the BEI condition and in the condition with the simple OSV order (Hao & Chondrogianni, 2021, chapter 5.1).

In the production task, the picture description was evaluated relative to the first sentence produced by the elicitor. Sometimes a participant had to produce a word order similar to the one just produced by the elicitor (e.g., BA-BA) while sometimes a participant had to produce a word order different from the one produced by the elicitor (e.g., BA-BEI). The results showed that generally, HSs produced more BA word orders than monolingual speakers when they heard the first sentence in BEI or simple OSV condition. Further, both HSs and monolinguals had an option to produce an SVO order instead of one of the non-SVO orders in the experiment since SVO is the basic word order in Chinese. It was found that HSs produced significantly more utterances with the basic SVO order than monolingual speakers (Hao & Chondrogianni, 2021, chapter 5.2).

The results of the study are interpreted as the cross-linguistic influence of English. First, the more frequent use of SVO orders by HSs may stem from the basic SVO in English. Second, HSs produced SVO more frequently after the BEI and simple OSV utterances compared to the BA prime. These results are interpreted as cross-linguistic influence from English that affects word orders that require thematic role reversal (i.e., in BEI and simple OSV). HSs performed better in the BA (with SOV order in active voice) condition presumably due to the fact that in this condition NP1 is the agent and NP2 is the patient in both Mandarin Chinese and English. The OSV utterances, however, differ in Chinese and English regarding the order of the agent and patient (Hao & Chondrogianni, 2021, chapter 6.3).

Some studies on word order do not attribute the differences between HSs and monolinguals to the direct influence of a ML (e.g., Larsson & Johannessen, 2015; Zuban et al., 2021). A study by

Larsson & Johannessen (2015) examined word order in embedded clauses (embedded declaratives, questions, and relative clauses) by HSs of Norwegian and Swedish with the ML American English. Monolingual Norwegian and Swedish are both V2 languages in main clauses. In embedded clauses, the finite verb is placed after the subject and sentence adverbs with the exception of *that*-clauses which show variation with respect to the position of the finite verb (Larsson & Johannessen, 2015, pp. 244-245).

Larsson & Johannessen (2015) investigated the word order patterns "adverb-verb" (typical for monolingual Norwegian and Swedish) and "verb-adverb" in embedded clauses produced by HSs of Norwegian and Swedish in the US. The data of HSs come from the informal interviews between HSs recorded at different points in time. For the analysis of the data by HSs of Norwegian the Corpus of American Norwegian Speech was used (number of HSs is 11). The analysis of the data by HSs of Swedish is rather qualitative than quantitative since the Swedish data were not fully transcribed.

The results of the corpus study showed that HSs of Norwegian produced an order that is not typical for monolingual Norwegian (i.e., "verb-adverb" in embedded clauses) half the time. Besides, in cases where monolingual Norwegian can have both "adverb-verb" and "verb-adverb" order (e.g., in that-clauses) the heritage Norwegian nearly exclusively has a "verb-adverb" order (Larsson & Johannessen, 2015, pp. 249-251). As for the heritage Swedish, it seems that the order "verb–adverb" is more frequent in embedded clauses than the order "adverb-verb" (although these are impressionistic results). The results of the study are interpreted as a language change in the grammar of HSs that is most likely caused by incomplete acquisition (for a detailed discussion see Larsson & Johannessen, 2015, pp. 251-260).

To sum up, HSs were often found to differ from monolinguals regarding their word order patterns. Sometimes these differences could be attributed to the influence of the ML while sometimes the influence of the ML did not seem to be at play.

6.3 Word order in heritage Russian: Frequency of different patterns

Numerous studies on word order in heritage Russian in the US report on the substantial increase of the SVO order use and the reduction of word order flexibility in the narrations of HSs (e.g., Polinsky, 1995, 2006; Kagan & Dillon, 2006). However, some studies report that HSs do produce non-SVO orders with a lower frequency as compared to monolingual speakers (e.g., Laleko & Dubinina, 2018; Kisselev, 2019). Furthermore, there is evidence that the reduction of word order flexibility and the increase of SVO order in HSs may be modulated by other factors such as clause

type (Zuban et al., 2021). Finally, a recent study by Martynova et al. (in press) found that HSs in the US were similar in their preference for OV/VO orders.

This chapter will summarize different studies on word order in heritage Russian in the US starting with those that report on the considerable differences in the word order system of HSs moving to those that find less divergence between the word orders produced by HSs and monolinguals.

Polinsky (1995, p. 108) suggests that HSs of Russian in the US seem to have a rigid basic SVO order with transitive verbs. Polinsky (2006, p. 237) states that HSs of Russian in the US clearly limit their word order repertoire by mainly producing SVO order with both nominal and pronominal arguments. The pronominal argument is usually placed between a subject and a verb in Standard Russian (SOV). HSs were reported to use both SOV and SVO orders with pronouns. Polinsky (2006, p. 237) further suggests that HSs retained the VS order in presentational and existential contexts, particularly under negation and an adverbial before the verb. 21 HSs of Russian with different ages of arrival to the US (three to 11 years of age) from different post-Soviet countries formed the database of Polinsky's (2006) study. Despite the observation that heritage Russian in the US is characterized by predominant use of SVO, Polinsky (2006) points out that more research on the word order in heritage Russian in the US is needed to find out which order/orders is/ are preferred by HSs.

The observations by Polinsky (1995, 2006) give the first impressions about the word order of HSs of Russian in the US, but, unfortunately, these observations are not based on any numerical analysis of the word order patterns.

HSs of Russian in the US were found to change their word order by using less inverted orders. Isurin & Ivanova-Sullivan (2008) found that HSs differed from both monolinguals and L2 learners regarding the production of VS word order. Participants of the study were seven Russian HSs who were either born in the US or came there until the age of ten, 11 L2 advanced English-speaking learners of Russian who majored in Russian at University, and five monolingual Russian speakers from St. Petersburg (Isurin & Ivanova-Sullivan, 2008, p. 73). The task of participants was to describe a series of pictures from the book *A Boy, a Dog, a Frog, and a Friend* by Mayer and Mayer (1978). Participants had been shown only one picture at a time and they were asked to tell what they saw (Isurin & Ivanova-Sullivan, 2008, p. 74). This methodology aimed at analyzing unprepared speech contrary to the previous studies in which the Frog's story was used to elicit connected speech and thus participants were shown all pictures at once and they were asked to retell the complete story (e.g., in Polinsky, 2008c). Participants were given a background questionnaire before they completed the elicitation task. The findings of the study relate to the

following linguistic domains: aspect, case, and word order. Here I will concentrate on the results of the word order.

Isurin and Ivanova-Sullivan (2008, p. 84) consider the VS order to be a marker of language proficiency because VS is a frequent order in narratives in Standard Russian. It was found that HSs produced fewer VS orders (2.1% of all word order combinations) than monolingual Russian speakers (6%). However, HSs produced more VS orders than L2 learners of Russian (1%), another group of bilinguals that HSs were compared to. Further, Isurin and Ivanova-Sullivan (2008, p. 97) suggested that the use of VS by HSs might depend on the age of arrival to the US. However, it is pointed out that this suggestion should be checked on a greater data set.

Kagan and Dillon (2006) present one more study that investigated inverted word orders (among other things) of HSs of Russian. The oral productions[33] of 18 HSs of Russian in the US were examined. HSs were found to use fewer inverted VS orders than monolingual speakers. There were only 5 instances of a VS order in the narrations of 18 HSs compared to 11 instances of VS orders found in the narrations of only one monolingual speaker (there was only one monolingual speaker of Russian in the study) (Kagan & Dillon, 2006, p. 90). It was further reported that the VS orders produced by HSs always appeared at the beginning of a narration and those VS were typical fixed constructions one usually uses at the beginning of a story or a fairytale (i.e., *žili-byli* which stands for 'ones upon a time there were…'). Kagan and Dillon (2006) conclude that HSs predominantly used non-inverted S-V orders.

Some studies on word order in heritage Russian report that the word order of HSs is not "frozen," and HSs also produce non-SVO orders (e.g., Laleko & Dubinina, 2018; Kisselev, 2019; Ivashchyk, 2019).

Laleko and Dubinina (2018) investigated word order patterns in the narrations of 21 HSs (6 M, mean age: 19.4) of Russian in the US and 19 monolingual speakers of Russian (8 M, mean age: 23.2).[34] Out of 21 HSs three were born in the US and 18 HSs came to the US from the former Soviet countries before the beginning of schooling (kindergarten or primary school). The mean age of 18 HSs at which they started learning English is 5.3 years old (Laleko & Dubinina, 2018, p. 200). HSs' language proficiency was measured by the speech rate (number of words per minute) as this method shows how fast speakers can access their lexicon which can be correlated with grammatical knowledge (Polinsky & Kagan, 2007). HSs showed speech rates comparable to those of monolinguals (HSs' mean rate: 89 words/minute, monolinguals' mean rate: 95 words/minute).

[33] HSs were asked to describe the Frog story by Mayer (1969).

[34] Laleko & Dubinina (2018) also investigated the contextual appropriateness of the different word orders produced by HSs of Russian, and the results of this investigation will be presented in detail in chapter 7.4.

Based on the speech rate, it was claimed that HSs have at least an intermediate knowledge of Russian (Laleko & Dubinina, 2018, p. 201). The production data were elicited using the story "Frog, Where Are You" (Mayer 1969), and participants were asked to have a look at the series of pictures depicting the story and then tell the story imagining they were telling it to a child who was about to go to sleep.

Laleko and Dubinina (2018) focused on the following phenomena: basic word order (i.e., SVO), inversion (i.e., reordering of the subject and verb resulting in the VS order), and dislocation (subject and verb are not reversed, but another constituent moves to the left from its basic position, e.g., XP SV). Previous studies found that HSs of Russian used word orders involving inversion less frequently compared to monolingual speakers of Russian (Isurin & Ivanova-Sullivan, 2008; Ivanova-Sullivan, 2014), but VS order was also reported to be relatively well preserved by HSs in some contexts (Polinsky, 2006, p. 237).

Laleko and Dubinina (2018, p. 202) found that both HSs and monolinguals preferred the canonical word order that was defined by the authors as (S) (Modifier) V (DO) (IO) (Modifier). HSs were found to use 71.15% of the canonical word order and monolinguals had 64.91% of the (S)V(O) pattern. Both HSs and monolinguals were further found to produce non-canonical word order patterns (non-canonical patterns were defined as those in which at least one constituent was placed differently from the basic SVO order). The second most frequent word order for both groups was found to be the one with dislocation followed by inversion which was attested least often (Laleko & Dubinina 2018, p. 203). However, the number of non-canonical word orders was found to be significantly smaller in the heritage group compared to monolinguals. Laleko and Dubinina (2018, p. 202) conclude that these results give support to the reduction of word order flexibility by HSs of Russian. Thus, the general word order pattern was shown to be similar for both HSs and monolinguals with HSs having fewer occurrences of non-canonical orders.

Another study that examined the frequency of different word orders by HSs of Russian is the study by Kisselev (2019).[35] Kisselev (2019) examined the word order patterns in written productions of HSs (abbreviated as HL in Kisselev, 2019) and L2 learners of Russian in the US. L2 learners consisted of two groups of speakers and had a different proficiency level in Russian. One group of L2 learners had circa 250-400 hours of Russian (FL3) while other groups of L2 learners had more than 400 hours of Russian instruction (FL4). For HSs, the language proficiency level was not measured explicitly. HSs in this study were either born in an English-speaking country or came there before the beginning of school education. A group of 17 monolingual

[35] Kisselev (2019) also examined the pragmatic felicitousness of the different word orders produced by HSs and L2 learners of Russian, and the results of this investigation will be presented in detail in chapter 7.4.

speakers of Russian was included in the study (abbreviated as NS in Kisselev, 2019). Participants were asked to write a text answering the following question: "What is a friend?" The text did not aim at producing a specific style. The author defines such text as an "essay with elements of narration" (Kisselev, 2019, p. 159). Declarative indicative clauses with an explicitly expressed subject in nominative case were included in the analysis. Each clause was annotated for word order and contextual appropriateness.

It was found that L2 learners of both groups produced more SV(O) and fewer OVS orders than monolingual speakers. As for the HSs, it was found that they produced more SV orders than monolinguals (but not more SVO orders). Additionally, HSs produced fewer OVS orders than monolinguals (Kisselev, 2019, p. 161). Besides, HSs produced more SOV orders than both L2 learners and monolinguals. One remark is necessary here. Although Kisselev (2019) writes that "the HL learners can also be said to prefer the SV word order to a greater extent than the NSs," it is not entirely clear why the author distinguishes between SV and SVO orders for HSs, but not for L2 learners for whom these two word orders are added together. Consider the numbers of the SVO and SV orders reported by Kisselev in Table 27 (2019, p. 160):

Table 27 Raw and prorated frequencies of WO patterns in the HL, FL3, FL4, and NS sub-corpora (from Kisselev, 2019, p. 160)

WO patterns	HL	FL3	FL4	NS
N of S_{nom} clauses	592	622	636	385
SVO	210 (35%)	267 (43%)	294 (46%)	161 (42%)
SV	252 (43%)	269 (43%)	237 (37%)	134 (35%)

It is said that L2 learners produced more SV(O) orders than monolinguals (86% and 83% vs. 77%). HSs are reported to produce more SV than monolinguals (which is also evident from the table above). However, if SV and SVO orders are added together (just like for L2 learners) their distribution is almost the same for HSs and monolinguals (78% for HSs and 77% for monolinguals).

Kisselev (2019, p. 161) reported the results of the pairwise chi-square test which revealed significant differences in word order patterns between speakers of every group except for the FL4 and monolingual speakers. It is further reported that both L2 speaker groups as well as HSs produced fewer VS clauses than monolingual speakers. Kisselev (2019) concluded that L2 learners as well as HSs relied more heavily on the canonical word orders. It is worth mentioning that the author does not only mean SV(O) order to be canonical, but all other word orders that do not involve the restructuring of S and V (i.e., SOV, OSV). Some other authors would not view all these word orders as being canonical (e.g., Laleko & Dubinina viewed orders such as SOV and OSV as orders involving object dislocation relative to the canonical SVO order). Both L2 learners

and HSs were found to be statistically different from monolingual speakers producing fewer VS orders and more SV orders. Further, HSs were not found to differ from any of the L2 speaker groups (Kisselev, 2019, p. 162). As for the combinations of different word orders produced by HSs and L2 learners, although both groups were found to produce various word order combinations, none of the speaker groups produced all six grammatically possible combinations (HSs produced four word orders, namely SVO, OVS, SOV, and OSV while L2 learners produced five word order combinations). Although monolingual speakers had just a few instances of verb-first word orders these word orders were still present in their data (Kisselev, 2019, p. 161).

Overall, Kisselev (2019) reports that L2 learners and HSs produced varied word orders in a similar order of preference as monolingual speakers. However, unlike monolinguals, L2 learners and HSs did not produce all six grammatically possible word orders. Besides, L2 learners and HSs produced significantly fewer VS and more SV orders than monolingual speakers.

Additional evidence about the varied word order in heritage Russian comes from the Master's thesis by Ivashchyk (2019) which explored the distribution of different word orders by HSs of Russian in the US.[36] Ivashchyk (2019) examined the distribution of different word order combinations produced by HSs of Russian in the US (basic SV(O)word order, word orders with subject-verb inversion, and word orders involving dislocation)[37], the effects of information status on word order variation, and the role of prosody in cases that were identified as pragmatically infelicitous. The participant pool included eight adult speakers of heritage Russian in the US (between 26 and 30 years old) obtained with the "Language Situations" method developed by the RUEG team (Wiese, 2020) (see a full description of the method in chapter 3). Ivashchyk (2019, p. 33) found that although HSs in the US predominantly produced clauses with the basic SV(O) order (around 69% of all clauses), they also produced non-SV(O) orders, i.e., word orders with inversion (20%) and dislocation (circa 11%).

A more recent study by Zuban et al. (2021) on word order in heritage Russian in the US and Germany found that the ML of HSs as well as the clause type might contribute to the observed differences in word order patterns between speaker groups. The word order patterns of 16 HSs of Russian (8 HSs in the US and 8 HSs in Germany) and 8 monolingual speakers of Russian were investigated in a corpus of semi-spontaneous spoken and written narratives using the "Language Situations" developed by the RUEG research team (the research unit and the method were be

[36] Ivashchyk (2019) also examined the contextual appropriateness and intonation of contextually-infelicitous utterances by HSs, and the results of these investigations will be presented in detail in chapter 7.4.

[37] Ivashchyk (2019) adopts the definition of inversion and dislocation by Laleko & Dubinina, 2018).

described in detail in chapter 3.1).[38] The mean age of participants varied from 15,7 to 17,0 years old. Almost all HSs were born in the US or Germany (one participant from each HS group was born in Russia and came to Germany or the US at the age of four and six, respectively).

The results of the study revealed that HSs in Germany were similar to monolingual speakers while HSs in the US differed from monolinguals by producing more SVO orders and fewer OVS orders in the overall dataset. The split of the data into main and embedded clauses revealed further interesting findings. Both HS groups as well as monolingual speakers produced all six grammatically possible word order combinations in the main clauses and all the groups behaved similarly to each other regarding the overall distribution of different word orders. In embedded clauses, all speaker groups produced fewer different word order combinations and increased the frequency of the SVO order compared to the main clauses. Specifically, HSs in the US produced four word order combinations while monolingual speakers and HSs in Germany produced five word order combinations. Moreover, HSs in Germany were similar to monolinguals while HSs in the US differed from both monolinguals and HSs in Germany by producing significantly more SVO orders in embedded clauses. The results of the study are discussed with reference to the differences between main and embedded clauses as well as the differences between the MLs of HSs.

Finally, a recent study by Martynova et al. (in press) found that HSs of Russian in the US and Germany were similar to monolingual speakers regarding their production of OV/VO orders. Martynova et al. (in press) report on the influence of clause type and the object role on the preference of OV and VO orders in the narrations of HSs of Russian in the US and Germany as well as monolingual speakers of Russian. Martynova et al. (in press) examine the productions of the same speakers that were investigated by Zuban et al. (2021) but focus on the position of the verb relative to the object and not a particular word order combination. The results of the study showed the influence of clause type and object role on the OV/VO patterns and no effect of speaker group. Specifically, objects realized by pronouns are very much associated with OV patterns in the narrations of all speaker groups. Further, the probability of OV patterns over the VO significantly decreased in the embedded clauses compared to the main ones, and this result was found in all speaker groups. Martynova et al. (in press) did not find any effect of the speaker group on the choice of OV/VO orders, i.e., all investigated speaker groups behaved similarly to

[38] Both Zuban et al. (2021) and I use the "Language situations" method. However, Zuban et al. (2021) and I have a different data sample in terms of size (8 participants per group by Zuban et al., 2021 vs. 40 participants per group in this thesis) and the exact participants (Zuban et al., 2021 and I examine different people).

each other. These results do not give support for any transfer effects from the majority German or English.

It has to be acknowledged that some factors such as age have, to the best of my knowledge, not been investigated yet in connection with the word order choice, neither in monolingual Russian nor in heritage Russian. The factor of age might be especially relevant for HSs since HSs of different age groups (adolescents and adults in this thesis) typically have different access to their HL in terms of quantity, and as a possible result, HSs of different age groups may behave differently regarding the word order choice. Furthermore, an effect of age in HSs was found to be important for some other linguistic phenomena such as gender agreement (Alexiadou et al., 2021), an effect of focus or definiteness on word order (Van Osch et al., 2019), comprehension of relative clauses (Polinsky, 2011) (see a detailed overview of the studies that focus on age differences in HSs in chapter 2.3.1).

To sum up, numerous studies on the word order in heritage Russian in the US report on the considerable increase of the SVO order use and the reduction of word order flexibility by HSs (e.g., Polinsky, 1995, 2006; Kagan & Dillon, 2006). However, some studies found that HSs of Russian in the US produced not only utterances with the basic SV(O) word order, but a substantial number of utterances with the non-SVO orders showing word order flexibility in their HL (e.g., Laleko & Dubinina, 2018; Kisselev, 2019). A more recent study by Zuban et al. (2021) found that the reduction of word order flexibility and the increase of the SVO order in narrations of HSs was not shown across the board and was only apparent in particular clauses, namely embedded. Finally, there is also evidence that HSs of Russian in the US are similar to monolinguals in their production of OV and VO word orders (Martynova et al., in press).

6.4 Research questions and hypotheses

Taking the aforementioned studies on the word order of HSs of Russian into account, the current thesis aims at answering the following research questions:

RQ1:

Do HSs produce a similar repertoire of different word orders as monolingual speakers? There are two competing hypotheses for the RQ1.

Hypothesis 1.1:

HSs will differ from monolingual speakers by producing fewer word order combinations (Kisselev, 2019; Polinsky, 2006).

Hypothesis 1.2:

HSs and monolingual speakers will not differ from each other regarding the number of word order combinations, i.e., both speaker groups will produce a similar number of different word orders (maximum six) (Zuban et al., 2021).

RQ2:

Are the word order patterns produced by HSs of Russian different from those of monolingual speakers of Russian?[39]

Hypothesis 2:

The distribution of different word order patterns will not be similar between HSs and monolingual speakers. HSs are expected to produce more SVO orders and fewer non-SVO orders (i.e., OVS and SOV) than monolingual speakers (Laleko & Dubinina, 2018; Polinsky, 2006, 2007; Kagan & Dillon 2006; Isurin & Ivanova-Sullivan, 2008; Kisselev, 2019).

RQ3:

Is word order influenced by different communicative situations, i.e., specifically by formality and mode?

Hypothesis 3.1:

As for monolingual speakers, their word order choice is expected to be influenced by formality. Specifically, it is expected that monolinguals will produce SVO and OVS orders more frequently in formal situations than in informal ones while SOV orders will be more frequent in informal situations than in formal ones (Adamec, 1966; Sirotinina, 2003; Slioussar, 2011). Mode on its own is not expected to play an important role in the SVO and OVS orders (see Sirotinina, 2003). However, mode may play a role in the production of SOV orders. Specifically, it is predicted that SOV will be more frequent in the spoken mode than in the written mode (Slioussar, 2007).

[39] Word order patterns refer to the frequency of a particular word order. Here and further the word orders under discussion are SVO, OVS, and SOV.

Hypothesis 3.2:

Formality and mode are not expected to influence the HSs' choice of a particular word order since the majority of HSs in this study did not receive formal education in Russian. Even though HSs received their main input in Russian in the informal spoken situations, I do not predict them to pattern with monolinguals in these situations since these situations typically show a decrease of SVO and an increase of other word orders, namely SOV or OSV (Adamec, 1966; Sirotinina, 2003). Since SVO is a basic word order in English and Russian it might be challenging for HSs to use other word orders that are marginal in their ML and that are less frequent in their HL. Besides, previous studies report on the increase of the SVO and the decrease of non-SVO orders in the narrations of HSs (e.g., Laleko & Dubinina, 2018; Polinsky, 2006, 2007).

RQ4:

Are there differences between HSs and monolingual speakers regarding the word order patterns across different age groups (adolescent vs. adult speakers)?

Hypothesis 4.1:

Adolescent HSs may be closer in their word order patterns to monolingual adolescent speakers while adult HSs may be more distinct from adult monolingual speakers of Russian (Polinsky, 2011; Osch et al., 2019 on the effect of definiteness on word order by HSs of Spanish in the Netherlands).

Hypothesis 4.2:

Adolescent HSs may differ from adolescent monolingual speakers while adult HSs may be similar to adult monolingual speakers as some studies on HL showed for domains other than word order (Alexiadou et al., 2021; Osch et al., 2019 on the effect of focus on word order in heritage Spanish in the Netherlands).

Hypothesis 4.3:

Adolescent and adult HSs will not differ from adolescent and adult monolingual speakers (Osch et al., 2019 on the sensitivity to the verb type for word order choice in intransitive sentences by HSs of Spanish in the Netherlands; Polinsky, 2016, p. 550).

RQ5:

Is word order influenced by different clause types (main vs. embedded)?

Hypothesis 5.1:

Both HSs and monolinguals are expected to produce fewer varied word order combinations in embedded clauses compared to main clauses (Bailyn, 2012; Zuban et al., 2021). Furthermore, both speaker groups are expected to produce more SVO and fewer non-SVO utterances (i.e., OVS and SOV) in embedded clauses compared to main clauses (Zuban et al., 2021; Martynova et al., in press).

6.5 Syntactic annotation

I manually annotated the data of 80 participants (40 HSs and 40 monolingual speakers) for word order and clause type.

6.5.1 Word order

The categories used for the annotation of word order are shown in Table 28. I partially took some of the symbols from Bailyn (2012, xvii-xviii: S, V, O, Obl, PRO) and additionally added some other symbols.[40]

Table 28 Annotation of word order

Abbreviation	Meaning
S	Subject
V	Finite verb
O	Direct object
Obl	Oblique argument
PP	Prepositional phrase (only for cases with possession with copular "be")
Vn	Non-finite verb in a non-finite clause (infinitival, participle, gerundial)
Vc	Copular verb
Vp	Verb in the passive voice
V1V2	Verbs in periphrastic constructions where V1: finite verb, V2: non-finite verb
V1Vp	V1: finite verb, Vp: verb in passive voice
(S)	Subject that is not realized overtly in a finite clause
PRO	Subject that is not realized overtly in a non-finite clause
p	Pronoun (was marked for S, O, Obl)
a	Adjective (was marked for S, O, Obl expressed by an adjective)
X	Adjunct

Some further remarks about annotation are necessary. In this dissertation, only the basic word orders with direct objects and oblique arguments are taken into account, i.e., SVO(Obl), SO(Obl)V, O(Obl)VS, O(Obl)SV, VSO(Obl), VO(Obl)S. The position of modifiers or two different objects (one direct and one oblique) will not be explicitly discussed here although they were also annotated in the data.

[40] A syntactic annotation was performed as the last annotation for this thesis since it was expected that the syntactic annotation would be available in the RUEG corpus. However, due to some technical issues and the shift of the time schedule syntactic annotation was not available. Thus, I annotated relevant data parts on my own.

It is necessary to spell out what was considered an oblique argument. Oblique arguments included objects in dative or instrumental cases as well as objects with prepositions and PPs that are obligatory or optional verb arguments.

A remark is necessary about the treatment of PPs since they can have different syntactic statuses in a clause. For the current analysis, I used the categorization of PPs by Villavicencio (2002) according to whom PPs can appear in the following functions (Villavicencio, 2002, p. 4):

- PP as an obligatory verb argument:

  For some verbs, a PP is an obligatory argument and should be included in its subcategorization frame. "The subcategorization frame includes all the complements of a given word." Villavicencio (2002, p. 4) (e.g., the verb "put" in "Mary put out the book *on the shelf"*).
- PP as an optional verb argument:

  Some verbs can appear with a PP or without it. For instance, the verb "swim" can either occur as "Bill swims" or "Bill swims *across the river*." When it does occur with the PP, the PP should be included in the subcategorization frame of the verb and treated as an optional argument.
- PP as an adjunct:

  Some PPs modify the logical form of the sentence, but they are not part of the subcategorization frame of the verb (e.g., Bill kisses Mary *in the park*).

  The PPs were treated as obliques when they were obligatory or optional verb arguments. If they were adjuncts, they were annotated as such.

One remark concerning the expression of subjects is necessary. Russian is not viewed as a canonical null subject language, but it allows subject drop in a variety of contexts (particularly of 1st and 2nd person in present tense). Thus, it is viewed as a partial null subject language (Lindseth, 1998; McShane, 2009). Not only instances of overtly expressed subjects were annotated - finite clauses in which the subject was omitted from the surface but could be reconstructed based on the structure of other elements were annotated as (S). Take a look at example (18):

(18)

Vtoraja mašina ne smogla ostanovitsja s toežej skorostʹju i slegka vrezalasʹ v pervuju
second car not could stop with same speed and slightly bumped into first
'The second car could not stop with the same speed and slightly bumped into the first one.'
(USbi51FR_fw)

In example (18), the first clause has an explicit subject "second car," and in the second clause, this subject is not realized on the surface but can be easily reconstructed from the previous clause. Thus, the word order of the first clause is SV, and the word order of the second clause is (S)VObl.

Word order was not marked for all productions but only for the parts that contained 23 most frequently occurring referents (the list of referents can be found in chapter 7.6.1) in the story that were singled out for information status analysis. If a clause contained at least one referent from the list, it was also analyzed for word order.

6.5.2 Clauses

The word order was analyzed based on the order in a clause. The annotation of CUs (communication units) was available, but it was insufficient for the current analysis since one CU could contain one main clause and several embedded clauses (Hughes et al., 1997). Thus, one CU could have different word order combinations, and it would not be possible to classify them. Thus, it was decided to split the data into clauses. The following clause types were annotated: (see Table 29)

Table 29 Annotation of clause type

Abbreviation	Meaning
m	Main clause
e	Embedded clause (both finite and non-finite)
er	Embedded relative clause with case-marked relativizer "kotor-"

An independent clause is defined as a structure that consists of a subject and a finite verb and has a completed meaning on its own (O'Dwyer, 2006, p. 141). A dependent clause was defined as a structure with a subject and a finite verb that needs "a second clause for completed meaning" (O'Dwyer, 2006, p. 143).

Both declarative and exclamatory clauses were taken for the analysis. Exclamations mostly appeared in informal situations. Interrogatives were left out of the analysis. Two types of independent clauses were analyzed: (1) those that contain one subject and one finite verb (2) those that contain one subject, one finite verb, and one non-finite verb. The latter group of instances forms a group of so-called periphrastic (or analytic) constructions. In such constructions, word order was identified relative to the non-finite verb since non-finite verbs in these constructions carry the lexical meaning. Periphrastic construction included the following instances:

- Phasal finite verb and a non-finite verb (e.g., to start, continue, finish)
- Auxiliary and a non-finite verb (e.g., will and infinitive)
- Modal verb and a non-finite verb (e.g., can, must)
- Other finite verbs that do not have lexical meaning on their own and a non-finite verb (e.g., try, decide, manage, etc)

(19)

Oni načinali eë perexodit′
they started her cross
'They started to cross it (the road).'

(USbi52MR_fs)

In example (19), the word order was marked as SOV since the non-finite verb "to cross" gives the lexical meaning to the clause.

The following clause types were identified: main (mostly indicatives, some imperatives, and no interrogatives), embedded, and relative clauses with case-marked relativizer. The difference between the main clauses that formed part of the embedded clauses and the main clauses of simple indicatives or imperatives has not been made.

Embedded clauses were of different types. The following finite embedded clauses have been identified in the data (types are taken from Bailyn, 2012):

- Embedded declarative indicatives with complementizer "čto":
  These embedded clauses do not differ in their basic properties from main clauses (i.e., they are marked for tense and there are no specific word order patterns that are not found in main clauses of a simple indicative) (Bailyn, 2012, p. 84).
- Embedded adverbials with various PPs and CPs as phrasal adjuncts:
  Within those, there were the following types: purpose clause, temporal, and locative wh-clauses. See example (20) that shows an embedded temporal clause with the SVObl order and a main clause with the OblVS below:

(20)

Kogda mjač pokatilsja čerez dorogu za nim pognalas′ sobaka
when ball rolled across street after him chased dog
'When the ball rolled across the street a dog started chasing it.'

(USbi55MR_fw)

- Relative clauses with case-marked relativizer:
  Typically, relative clauses in Russian are introduced by a relative pronoun "which" (kotor-) that replaces a nominal element of the relative clause. The relative pronoun takes gender, number, and case from the head noun it modifies (Bailyn, 2012, p. 106).

Embedded clauses described were annotated in the data, but their types were not differentiated, i.e., all of the mentioned embedded clauses received the label "e" (i.e., embedded). Relative clauses with a case-marked relativizer received a different label "er" (i.e., embedded relative). Relative clauses with the case-marked relativizer were marked separately from other embedded clauses since the position of the relative pronoun is rather fixed, it always appears right at the beginning of the relative clause. Thus, relative clauses have less flexibility in word order than other embedded clauses in which word order can vary just like in main clauses.

Except for the finite embedded clauses, other embedded clauses (non-finite) were also identified in the data:

- Infinitival clauses
- Participle
- Gerundial

The word order of the abovelisted non-finite clauses stands out from other embedded clauses since they do not allow an overt subject in Russian, and one is only able to analyze the VO or OV word order.

Non-finite embedded clauses had a label (PRO). PRO labels an implied subject that can be inferred from the overt element of the clause that follows or precedes the non-finite embedded clause. PRO is referred to as "control," meaning that the overt element c-commands the missing subject of the non-finite clause (Bailyn, 2012, pp. 112, 114).

6.5.3 Further remarks

Only clauses with overt finite verbs were taken for the final analysis. Instances, where the verb was absent (e.g., copular "be" in present tense), were excluded since nothing could be said about the word order in such instances.

Some remarks about the instances with the copular "be" are necessary. The copular *be* was explicitly marked as Vc, because some cases with Vc should be treated separately from those cases with finite verbs. These are the cases when the copular is used to express possession with the possessor PP (in Russian the verb "have" is not used to express possession). In possessive constructions, the possessor PP typically appears preverbally, and the subject appears

postverbally, i.e., the neutral order of possessive constructions is PP-V-S. A different word order for these constructions, such as PP-S-V or S-V-PP is infelicitous in neutral contexts (Bailyn, 2004, p. 13; Bailyn, 2012, p. 313).

Example (21) illustrates a typical possessive construction from the data:

(21)

U neë byla sobaka
at her was dog
'She had a dog.'

(USbi28FR_is)

To sum up, possessive constructions usually have a fixed word order in Russian, and that is why they were explicitly annotated in order to find them easily in the data. Instances of possessive constructions were annotated in the data as PP-Vc-S and they were excluded from further analysis. Other instances with the copular *be* allow for word order alternations, thus, they were not treated separately from the rest of the cases and were included for further analysis.

Sometimes HSs used some non-canonical structure in different domains of grammar: case, gender, or number assignment. HSs were quite creative when they had to express something that they did not know a word for. Due to the nature of the experiment, code-switching was infrequent in the data, and HSs found a way to tell the story in Russian trying to avoid English words. All these factors made the analysis of word order challenging but not impossible. Even if speakers used forms distinct from those of monolingual Standard Russian, it was usually possible to identify the word order. In example (22), there is a non-standard use of the verb form and its gender as well as the case of the determiner and the noun, but the word order was identified as SVObl quite easily:

(22)

a) Sobačka pobega-l (-) a:m (-) a: (-) za èt-ot mjačik
dog.NOM.F ran-M after this-NOM/ACC ball.NOM/ACC
'The dog ran after this ball.'

(USbi20MR_fs)

In Standard Russian:

b) Sobačka pobeža-la za èt-im mjačik-om
dog.NOM.F ran-F after this-INS ball-INS
'The dog ran after this ball.'

Sometimes, however, it was impossible to identify which word order was meant due to the abundance of non-standard case assignment. Example (23) was not transliterated, it reflects the original spelling of a participant.

(23)

tam tsots-a product-oi v mashin-u c sabak-oi
here lady-NOM groceries-INS.SG.F in car-ACC.SG.F with dog-INS-SG.F

be-l-i cheriz darog-i
be-PST-PL across road-GEN.SG.F

?'Across the road there was a lady with groceries into a car with a dog.'

(USbi09FR_fw)

In example (23), only the tentative translation is given. It is not clear what is meant due to the use of non-standard cases. It seems that these could be two clauses instead of one, for instance, "*Across the road, there was a lady with a dog and she put her groceries into a car*." Since it cannot be said for sure, instances like the one above were excluded from the analysis.

In spoken situations, intonation is an additional help for some difficult cases concerning decisions about a clause type or word order. Consider example (24):

(24)

Segodnja ja videla (-) èm mašinu (-) stuknula v druguju mašinu
today i saw car bumped into another car

potomu čto sobaka (-) è:m begala v ulice i: (--) è:m mašina (-) stops
because dog ran in street and car stops

'Today I saw how a car bumped into another car because a dog was running in the street and a car stops.'

(USbi58FR_fs)

In example (24), the part "and a car stops" is ambiguous with respect to the clause type. Formally it can be considered as a continuation of the embedded clause that starts with "because." However, the part "and a car stops" can be considered the next main clause since there is a long pause of 3.5 seconds between this part and the conjunction "and." Thus, "a car stops" is not perceived as a continuation of the embedded clause but rather as a new main clause.

Sometimes the prosodic information helped identify the word order.[41] Consider example (25):

[41] The prosodic annotation was described in detail in the Section 5.8.

(25)

Mužčina s mjačom (-) šël
man with ball went
'The man was walking with the ball.'

(USbi50FR_fs)

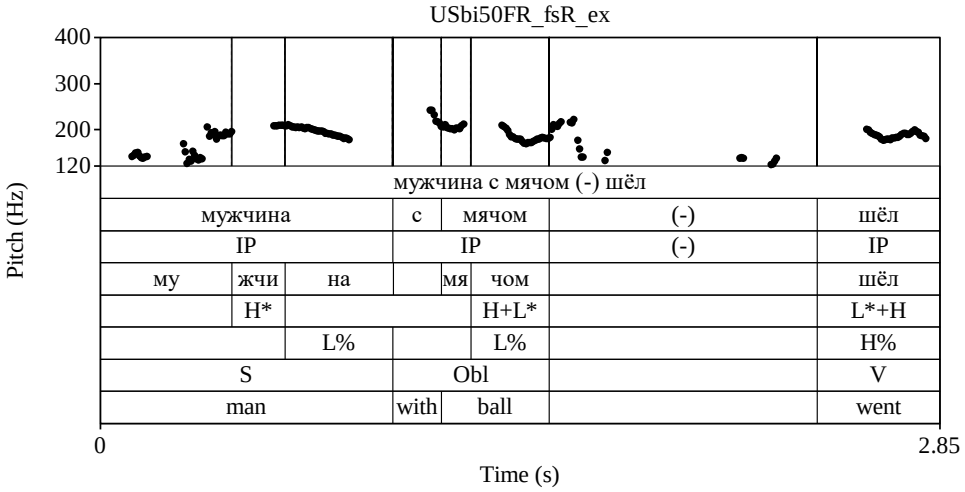
Example (25) is ambiguous and can be interpreted as having different word orders:

a) SV: The man with the ball was walking.

b) SOblV: The man was walking with the ball.

If the speaker meant the SV word order, then "the ball" was expected to form one IP with "the man" and the "with the ball" should have received the NPA. However, in example (25) "the man", "with the ball" and "went" were all pronounced as separate IPs and carried a pitch accent. That is why it was decided that example (25) had an SOblV and not an SV order.

Figure 18 Pitch track for the annotation of word order



To sum up, I manually added the following syntactic annotations of the spoken and written data:

- Word order
- Clause main
- Clause embedded: relative clauses and all the other embedded clauses

The translation was not included in the annotation. The layer "translation" was included for illustrative purposes in this thesis for the readers who cannot read Russian.

6.5.4 Simplification of the data

Since the annotation for word order was detailed, it was difficult to maintain such a level of detailing for further analysis. After the full annotation of word order, approximately 500 different word order combinations were generated. Thus, data simplification was needed to get categories that are meaningful for statistical analysis and that are not too diverse. Here is an example of a simplified SVO order:

SVO, SVOp, SVObl, SVOblp -> SVO

Regular expressions were used to search for specific patterns in the word order. For example, the following expression finds all the OSV word orders:

@"^.*O.*S.*V.*$"

Overall, the following word orders were generated: SVO, SOV, OVS, OSV, VSO, VOS, SV, VS, VO and OV. Some word orders were considered as a separate category, and they were removed from the simplified word orders. Those are the word orders with the following categories: PRO, PP, Vn, double Object. Additionally, adjuncts were removed from the simplified word orders. Additional columns have been generated for the simplified word orders.

6.6 Results

This chapter will present the results of the study on the word order choice by HSs and monolingual speakers of Russian. It will start with a descriptive presentation of the data, so a reader can see which data set was taken for the statistical analysis. It will further describe the statistical modeling of the data in detail and the outcome of each model. Finally, the results will be summarized and discussed.

6.6.1 Descriptive overview

The overall number of different word order combinations annotated for this thesis is 3205 (HSs: 1834; monolinguals: 1371) across two clause types (i.e., main and embedded). However, not all the annotated word orders were taken for further statistical analysis. Word order combinations were left out from further discussion if their number was small (e.g., VO and OV orders), if there was no possibility of determining the position of subjects (e.g., finite clauses with an implicit subject), or if they had a relatively fixed word order (possessive constructions).

The word orders under discussion in this thesis will be only the ones with a finite verb, one object (either a direct object or an oblique object), and an explicitly realized subject (the ones shown in Table 30).

Table 30 Overall number of occurrences and the distribution of basic word orders across two speaker groups

Word order	HSs, N	HSs, %	Monolinguals, N	Monolinguals, %
SVO	758	66.6%	458	59.2%
OVS	158	13.9%	174	22.5%
SOV	138	12.1%	94	12.2%
OSV	38	3.3%	35	4.5%
VSO	29	2.6%	8	1.0%
VOS	17	1.5%	4	0.5%
Total	1138	100.0%	773	100.0%

Table 30 displays the number of occurrences and the distribution (%) of the six basic word orders with both oblique and direct objects, a finite verb, and an explicitly expressed subject in both main and embedded clauses. The percentage shows the percentage of a particular word order counted out of all word order combinations in a particular speaker group.

It can be seen that SVO is the most frequently occurring word order for both speaker groups followed by OVS, SOV, OSV, and verb-initial orders. It can be also seen that HSs produced more SVO and fewer OVS and OSV orders than monolinguals. The distribution of the SOV order is roughly the same across speakers of both groups. Interestingly, verb-initial orders are very rare in productions of monolingual speakers (1.5% of all word order combinations), but they are more frequent in productions of HSs (4.1% of all word order combinations).

Since one of the research questions in this thesis is to see whether a clause type influences the word order choice of HSs and monolingual speakers, it is necessary to present the data set for the main and embedded clauses, respectively (see Table 31 and Table 32).

Table 31 Number of occurrences and the distribution of basic word orders across two speaker groups in main clauses

Word order	HSs, N	HSs, %	Monolinguals, N	Monolinguals, %
SVO	585	64.6%	342	56.6%
OVS	139	15.4%	143	23.7%
SOV	117	12.9%	82	13.6%
OSV	20	2.2%	28	4.6%
VSO	29	3.2%	5	0.8%
VOS	15	1.7%	4	0.7%
Total	905	100.0%	604	100.0%

Table 31 displays the number of occurrences and the distribution of the six basic word orders with both oblique and direct objects, a finite verb, and an explicitly expressed subject in main clauses. It can be seen that HSs again produced more SVO and fewer OVS and OSV orders than

monolingual speakers. Monolingual speakers produced slightly more SOV orders than HSs, but the difference is less than 1%. HSs again produced more verb-initial orders than monolingual speakers.

Table 32 Number of occurrences and the distribution of basic word orders across two speaker groups in embedded clauses

Word order	HSs, N	HSs, %	Monolinguals, N	Monolinguals, %
SVO	173	74.2%	116	68.6%
OVS	19	8.2%	31	18.3%
SOV	21	9.0%	12	7.1%
OSV	18	7.7%	7	4.1%
VSO	0	0.0%	3	1.8%
VOS	2	0.9%	0	0.0%
Total	233	100.0%	169	100.0%

Table 32 displays the number of occurrences and the distribution of the six basic word orders with both oblique and direct object, finite verb and explicitly expressed subject in embedded clauses. First, it can be seen that embedded clauses are less frequent in the data than main clauses. Second, just like previously HSs produced more SVO and fewer OVS orders than monolingual speakers. However, HSs produced more SOV and OSV orders than monolinguals. Finally, the number of verb-initial orders was generally very small, and monolingual speakers produced slightly more verb-first orders than HSs.

Table 30 - Table 32 presented the data sets used for the further statistical modeling of the data. It has to be noted that the abovementioned tables only gave a descriptive overview of the data without any data analysis. At this point, the data interpretation is preliminary since no statistical analysis was applied and other factors that might influence the word order choice by the two speaker groups were not considered. In what follows the statistical modeling used to analyze the word order choice by HSs and monolingual speakers will be presented in detail.

6.6.2 Statistical modeling

Three generalized linear mixed effect models were fit to the data using R (R Core Team, 2020) and RStudio (Rstudio Team, 2020) via lme4 package (Bates et al., 2015). In short, the word order selection was modeled as a function of *speaker group, formality, mode, age group,* and *clause type*.

The most frequently used word orders (SVO, OVS, and SOV) were modeled, each of them as a separate dependent variable via the glmer function. (The other word orders, namely OSV, VSO, and VOS were not considered since their frequency was low and thus not suitable for modeling). To be able to answer the research questions, the following independent variables were taken into account as fixed effects: *Speaker group* (HSs/monolinguals), *formality* (formal/informal), *mode*

(spoken/written), *age group* (adolescents/adults), *clause type* (main/embedded). The *speakers* were treated as a random effect. The models are fully specified (i.e., not minimal) since each model is hypothesis-driven. Thus, some of the abovementioned fixed effects play little to no role in the word order selection.

The models included the interactions of *speaker group* with every other fixed effect. The motivation was to see if the group itself had an influence on the word order selection or if it influenced the selection together with one or more fixed effects. The models for word order did not contain random slopes and 3-way interactions, since those could not improve it. Complex interactions were not motivated by theory, and furthermore, according to Winter (2020) taking them into a model may lead to amplified interpretation problems.

The dependent variable of each model is binomial, it is either a specific word order (e.g., SVO) that is coded in this model as 1 or not (SVO) that is coded in the mode as 0.

For post hoc tests of interactions (pairwise Tukey test), the emmeans package (Russell, 2020) was used. The following further packages were used for data transformation and visualization: sjplot (Lüdecke, 2020), readxl (Wickham & Bryan, 2019), tidyverse (Wickham et al., 2019)

The fixed effects were contrast-coded using sum contrast coding (either -0.5 or 0.5). This is essential to allow analysis of their interactions. Table 33 below shows the printed attributes of contrasts that will help interpret the results of the models.

Table 33 Attributes of contrasts for the word orders according to the generalized binominal linear mixed-effect models

Fixed effects	Levels of fixed effects	Attributes of contrasts
Speaker group (country)	Monolinguals (ru) HSs (us)	0.5 -0.5
Formality	Formal Informal	0.5 -0.5
Mode	Spoken Written	0.5 -0.5
Age group	Adolescents Adults	0.5 -0.5
Clause type (eorm simple)	Embedded Main	0.5 -0.5

The estimates of the models are categorized as follows:

0.00 - 0.25 mild 0.25 - 0.50 moderate 0.50-0.75 strong > 0.75 very strong

6.6.2.1 SVO

The results of the model regarding the most frequent word order SVO are shown in Table 34.

Formula: wo_model.svo.full = glmer(is_SVO ~ country * (formality + mode + eorm_simple + agegroup) + (1|speaker), data=WOs, family = binomial)

Table 34 Word order SVO: Outcome of the generalized binominal linear mixed-effect model

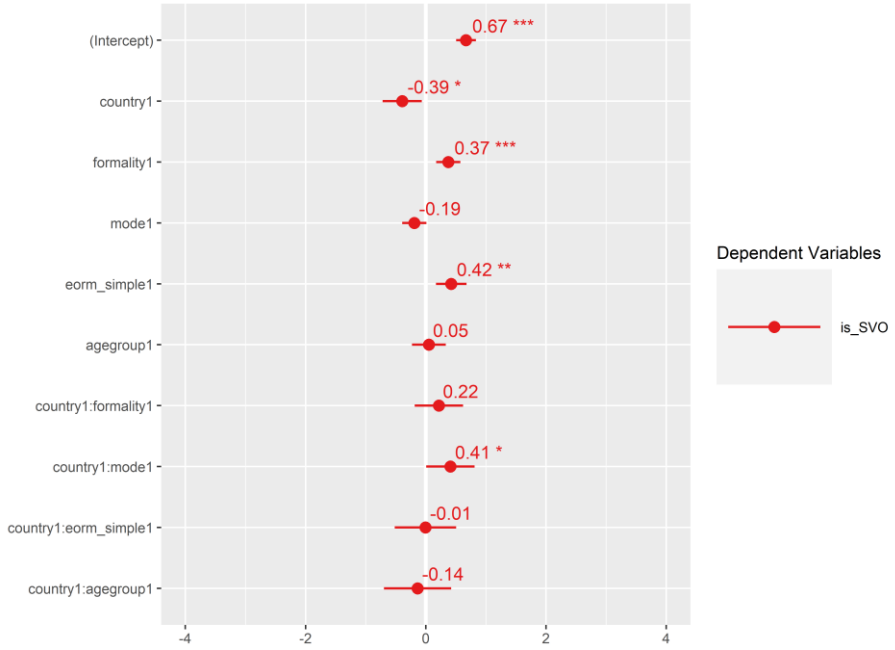
	Estimate	Std. Error	z value	Pr(>|z|)
(Intercept)	0.669024	0.083516	8.011	1.14e-15***
country1	-0.392824	0.166748	-2.356	0.018483*
formality1	0.373747	0.102591	3.643	0.000269***
mode1	-0.190374	0.102615	-1.855	0.063564.
eorm_simple1	0.422997	0.130056	3.252	0.001144**
agegroup1	0.051719	0.142916	0.362	0.717438
country1:formality1	0.217648	0.205150	1.061	0.288724
country1:mode1	0.408140	0.205215	1.989	0.046719*
country1:eorm_simple1	-0.005959	0.260043	-0.023	0.981719
country1:agegroup1	-0.137253	0.285855	-0.480	0.631121

In order to understand the results, the tables, including Table 34, can be read the following way: the intercept shows in general how likely the specific word order is. The estimates that apply to our interest are added to the intercept. The result is going to be a number that is less or more than 0.5, which corresponds to the 50% probability level (Since this model was coded on the dependent variable as 1 and 0). Above the 0.5 level, the specific word order (here SVO) is likely to appear, below this level, other word orders are more likely to appear. The model allows numbers below 0 and above 1, this comes from the nature of modeling.

For the SVO word order, the intercept of the model shows that there is a relatively high chance in general that the word order is SVO. Furthermore, three main effects and one interaction were observed (see Table 34). First, there was a moderate main effect of country: monolingual speakers produced relatively fewer (-0.39) SVO utterances than HSs. Second, there was a moderate main effect of formality: speakers of both groups produced more SVO utterances in formal situations compared to informal ones (+0.37). Third, there was a moderate main effect of the clause type: speakers of both groups produced more SVO utterances in embedded clauses compared to the main ones (+0.42). Additionally, there was a significant two-way interaction between country and mode (see Figure 19 below for the estimates of all main effects and their 95% confidence intervals. This also applies to all subsequent model figures).

It should be noted that there was no main effect of the mode and the age group on their own.

Figure 19 The estimates of all main effects and their 95% confidence intervals: SVO word order



For the interaction of country and mode, Tukey multiple comparison test was run. The results of Tukey's adjustment are presented in Table 35:

Formula: emmeans (wo_model.svo.full, list(pairwise ~ country:mode), adjust = "tukey")

Table 35 Word order SVO: Tukey multiple comparison test

	estimate	SE	df	z.ratio	p.value
ru s - us s	-0.1888	0.183	Inf	-1.032	0.7307
ru s -ru w	0.0137	0.154	Inf	0.089	0.9997
ru s - us w	-0.5832	0.196	Inf	-2.973	0.0156
us s- ru w	0.2025	0.195	Inf	1.036	0.7282
us s -us w	-0.3944	0.135	Inf	-2.914	0.0187
ru w - us w	-0.5969	0.208	Inf	-2.871	0.0213

Tukey's adjustment revealed significant differences between monolingual and HSs (see Table 35 First, monolingual speakers produced fewer SVO utterances in the spoken mode than HSs in the written mode. Second, HSs produced fewer SVO utterances in the spoken mode than in the written mode. Third, monolingual speakers produced fewer SVO utterances in the written mode than HSs while the two speaker groups did not differ from each other in the spoken mode (see Figure 20). These results indicate that monolingual speakers behaved similarly regarding the production of SVO utterances in the spoken and the written mode while HSs behaved differently by producing more SVO utterances in the written than in the spoken mode.

Figure 20 Word order SVO: Interaction of country and mode

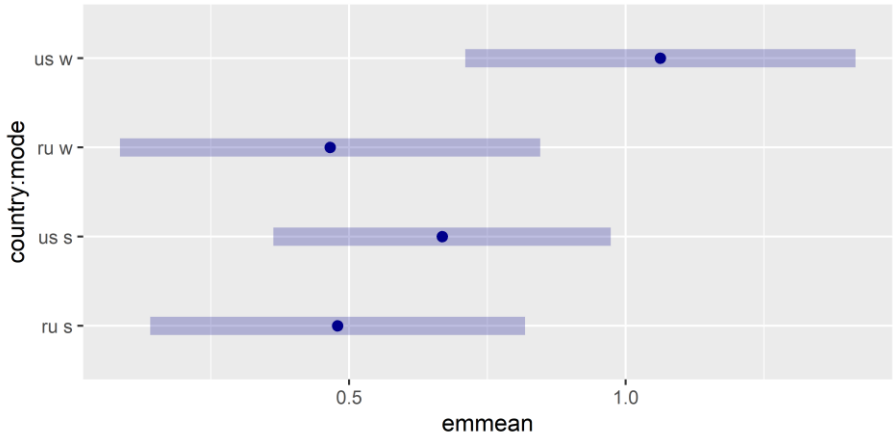


Figure 20 displays the estimates and their 95% confidence intervals.

The main results of the SVO order can be summarized as follows. HSs produced significantly more SVO utterances than monolingual speakers, but they only did so in the written mode, not in the spoken mode. Both speaker groups produced more SVO utterances in formal situations than in informal ones. Speakers of both groups produced significantly more SVO utterances in the embedded clauses compared to the main ones. Furthermore, HSs produced more SVO orders in the written mode than in the spoken mode. Monolinguals, however, behaved similarly in both spoken and written mode.

6.6.2.2 OVS

The results of the model regarding the OVS order are shown in Table 36.

Formula: wo_model.ovs.full = glmer(is_OVS ~ country * (formality + mode + eorm_simple + agegroup) + (1|speaker), data=WOs, family = binomial).

Table 36 Word order OVS: Outcome of the generalized binominal linear mixed-effect model

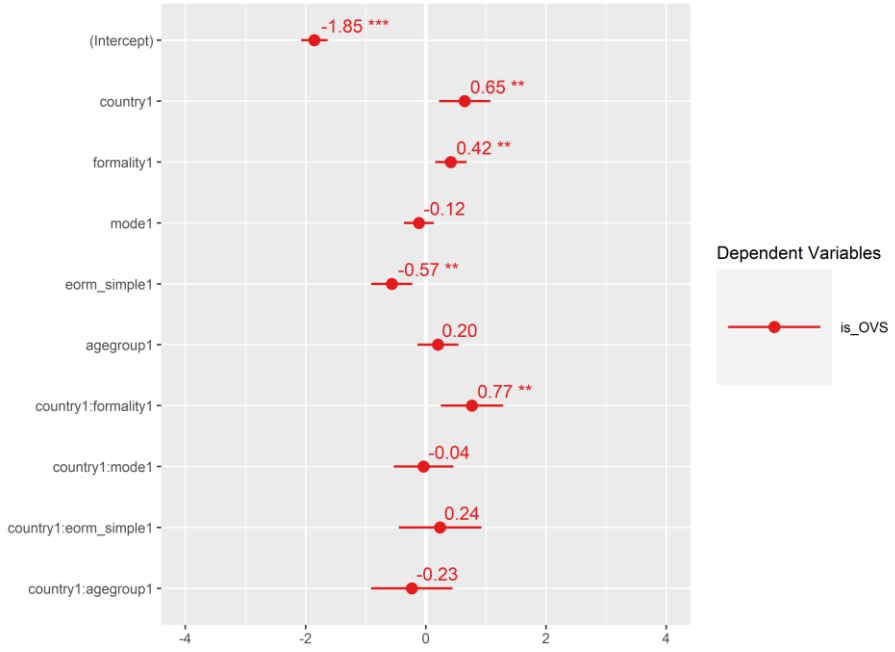
	Estimate	Std. Error	z value	Pr(>|z|)
(Intercept)	-1.85379	0.11183	-16.577	< 2e-16***
country1	0.64683	0.21750	2.974	0.00294**
formality1	0.41686	0.13265	3.143	0.00167**
mode1	-0.11581	0.12640	-0.916	0.35957
eorm_simple1	-0.56534	0.17516	-3.228	0.00125**
agegroup1	0.20281	0.17302	1.172	0.24112
country1:formality1	0.76758	0.26507	2.896	0.00378**
country1:mode1	-0.03671	0.25297	-0.145	0.88461
country1:eorm_simple1	0.23806	0.35051	0.679	0.49702
country1:agegroup1	-0.23363	0.34576	-0.676	0.49924

For the OVS word order, the intercept was quite low (-1.8). This means that the usage of this word order is in general much less likely than it was for SVO. Three main effects and one interaction were observed (see Table 36). First, there was a strong main effect of country:

monolingual speakers produced more OVS utterances than HSs. Second, there was a moderate main effect of formality: speakers of both groups produced OVS more frequently in the formal situation than in the informal one. Third, there was a strong main effect of clause type: speakers of both groups produced fewer OVS utterances in embedded clauses. Additionally, there was a significant two-way interaction between country and formality (see Figure 21 below for the estimates of all main effects and their interactions).

It should be noted that, as in the case of the SVO order, there was again no main effect of mode or age group on their own.

Figure 21 The estimates of all main effects and their 95% confidence intervals: OVS word order



For the interaction of country and formality, Tukey multiple comparison test was run. The results of Tukey's adjustment are presented in Table 37:

Formula: emmeans (wo_model.ovs.full, list(pairwise ~ country:formality), adjust = "tukey")

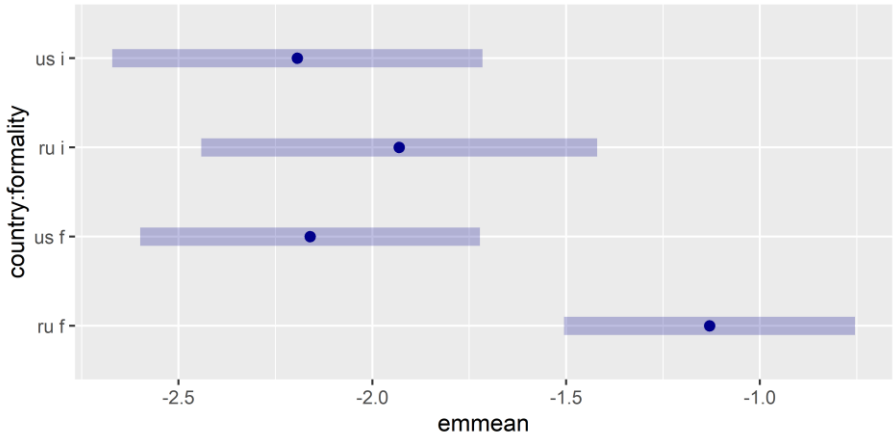
Table 37 Word order OVS: Tukey multiple comparison test

	estimate	SE	df	z.ratio	p.value
ru f - us f	1.0306	0.230	Inf	4.485	<.0001
ru f - ru i	0.8007	0.197	Inf	4.059	0.0003
ru f - us i	1.0637	0.242	Inf	4.395	0.0001
us f - ru i	-0.2300	0.267	Inf	-0.862	0.8246
us f - us i	0.0331	0.177	Inf	0.187	0.9977
ru i - us i	0.2630	0.277	Inf	0.948	0.7787

Tukey's adjustment revealed significant differences between monolingual and HSs (see Table 37). First, monolingual speakers produced more OVS utterances than HSs in formal situations.

Second, monolingual speakers produced more OVS utterances in formal than in informal situations. Third, monolingual speakers produced more OVS utterances in the formal situation than HSs in the informal situation (see Figure 22). These results indicate that monolinguals differentiated two situations with respect to the formality by producing more OVS in the formal situation while HSs did not make such distinction.

Figure 22 Word order OVS: Interaction of country and formality



The main results of the OVS order can be summarized as follows. HSs produced significantly fewer OVS utterances than monolingual speakers, but they only did so in formal situations and not in informal ones. Both speaker groups had more OVS utterances in the main clauses compared to embedded ones. Besides, both speaker groups produced more OVS utterances in formal situations than in informal ones. However, Tukey's adjustment revealed that the major influence behind this effect is coming from monolingual speakers, HSs had a similar number of OVS in both formal and informal situations.

6.6.2.3 SOV

The results of the model regarding the SOV order are shown in Table 38.

Formula: wo_model.sov.full = glmer(is_SOV ~ country * (formality + mode + eorm_simple + agegroup) + (1|speaker), data=WOs, family = binomial).

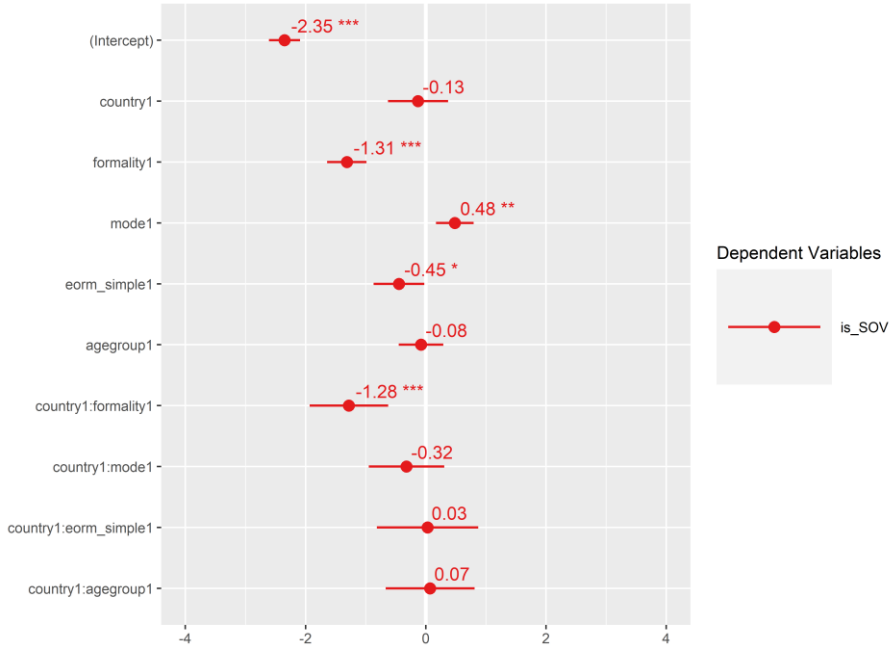
Table 38 Word order SOV: Outcome of the generalized binominal linear mixed-effect model

	Estimate	Std.Error	z value	Pr(>|z|)
(Intercept)	-2.35011	0.13260	-17.724	< 2e-16***
country1	-0.12936	0.25472	-0.508	0.611554
formality1	-1.31327	0.16659	-7.883	3.19e-15***
mode1	0.48235	0.16008	3.013	0.002586**
eorm_simple1	-0.44656	0.21499	-2.077	0.037792*
agegroup1	-0.08075	0.18891	-0.427	0.669051
country1:formality1	-1.27901	0.33300	-3.841	0.000123***
country1:mode1	-0.32104	0.32013	-1.003	0.315929
country1:eorm_simple1	0.02973	0.43055	0.069	0.944945
country1:agegroup1	0.07220	0.37716	0.191	0.848179

For the SOV word order, the intercept was even lower than for the OVS (-2.3). There were three main effects and one interaction observed (see Table 38). First, there was a very strong main effect of formality: speakers of both groups produced fewer SOV utterances in formal situations compared to informal ones. Second, there was a moderate main effect of mode: speakers of both groups produced more SOV utterances in the spoken than in the written mode. Third, there was a moderate main effect of clause type: speakers of both groups produced fewer SOV utterances in embedded clauses than in the main ones. Additionally, there was a significant two-way interaction between country and formality (see Figure 23 below for the estimates of all main effects and their interactions).

It should be noted that there was no main effect of country or age group on their own.

Figure 23 The estimates of all main effects and their 95% confidence intervals: SOV word order



For the interaction of country and formality, Tukey multiple comparison test was run. The results of Tukey's adjustment are presented in Table 39:

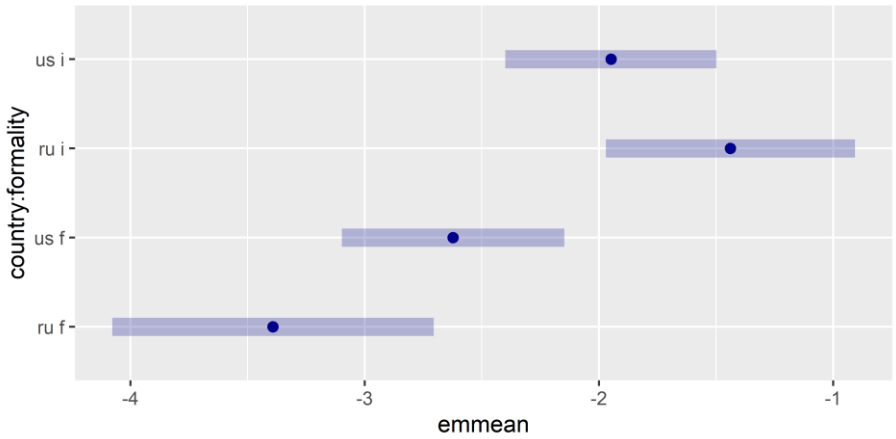
Formula: emmeans (wo_model.sov.full, list(pairwise ~ country:formality), adjust = "tukey")

Table 39 Word order SOV: Tukey multiple comparison test

	estimate	SE	df	z.ratio	p.value
ru f - us f	-0.769	0.330	Inf	-2.327	0.0919
ru f - ru i	-1.953	0.275	Inf	-7.105	<.0001
ru f - us i	-1.443	0.325	Inf	-4.437	0.0001
us f - ru i	-1.184	0.282	Inf	-4.198	0.0002
us f - us i	-0.674	0.188	Inf	-3.581	0.0019
ru i - us i	0.510	0.276	Inf	1.850	0.2502

Tukey's adjustment revealed the following significant differences (see Table 39). First, both HSs and monolingual speakers produced significantly more SOV utterances in informal situations than in formal ones. Second, monolingual speakers produced fewer SOV utterances in formal situations than HSs in informal situations. Third, HSs produced fewer SOV utterances in formal situations than monolingual speakers in informal situations (see Figure 24). These results indicate that monolinguals and HSs behaved similarly to each other by producing SOV utterances more frequently in informal situations than in formal ones. However, the estimates showed that the formality had a (very) strong effect, the magnitude was very different for HS and monolinguals: monolinguals had a greater difference between the informal and formal situations than HSs.

Figure 24 Word order SOV: Interaction of country and formality



The main results of the SOV order can be summarized as follows. SOV order seems to be the register-bound order in terms of both formality and mode. Speakers of both groups produced SOV utterances more frequently in informal than in formal situations. Additionally, speakers of both groups had more SOV utterances in the spoken mode compared to the written mode, and speakers of both groups produced fewer SOV utterances in the embedded clauses than in the main clauses. Although it was shown that HSs of Russian also produced SOV utterances in informal situations more frequently than in formal ones, the difference between the two situations and the use of the SOV was not as great as the difference made by monolingual speakers.

The results of the abovedescribed three models can be summarized as follows. HSs generally differed from monolingual speakers regarding the preference of some word orders in some particular communicative situations. Specifically, HSs produced more SVO than monolinguals in the written mode but not in the spoken mode. Furthermore, HSs produced fewer OVS orders than monolingual speakers in formal situations but not in informal ones. The preference for the SOV order was similar for HSs and monolinguals regarding different communicative situations.

Formality played an important role for all word orders under discussion, i.e., both HSs and monolinguals produced the SVO order in formal situations more frequently than in informal ones while the SOV order was more frequent in informal situations compared to formal ones. Further, monolingual speakers, but not HSs, produced more OVS orders in formal situations compared to informal ones while HSs had no effect of formality on this word order.

Mode was also an important factor for some word orders. Specifically, HSs produced more SVO orders in written productions compared to spoken ones. Monolinguals, however, did not have any effect of mode on the SVO order. SOV order was found to be more frequent in spoken productions than in written ones by both HSs and monolinguals.

Clause type was also found to play a role in all word orders. Both HSs and monolinguals had a similar effect of clause type on the three investigated word orders. For both speaker groups, the probability of producing an SVO order increased in embedded clauses compared to the main ones while the probability of producing OVS and SOV orders increased in main clauses compared to the embedded ones.

Age did not play an important role in the examined word orders.

6.7 Summary of the results and discussion

This chapter aimed to investigate the word order repertoire and the word order preferences of HSs of Russian in the US and monolingual speakers of Russian. Additionally, factors such as communicative situations (formality and mode), clause type, and age were looked at to see whether they influence the production of a particular word order under investigation (i.e., SVO, OVS, and SOV). In what follows I will address different research questions in detail.

The first research question focused on whether HSs and monolingual speakers have a similar repertoire of different word orders. There were two competing hypotheses for this research question. Hypothesis 1.1 stated that HSs would produce fewer word order combinations than monolingual speakers while hypothesis 1.2 stated that the two speaker groups would be similar to each other. The data confirmed Hypothesis 1.2, and it was shown that both HSs and monolinguals were similar to each other by producing all six grammatically possible word order combinations in the overall data set (i.e., in both main and embedded clauses).

Furthermore, word order preferences of both speaker groups were similar, i.e., SVO order was the most frequent one followed by OVS, SOV, and other word order combinations (OSV and verb-initial word orders) that were infrequent in the data of both HSs and monolinguals. These results are in line with the findings by Kallestinova (2007) on the frequency of different word orders by monolingual speakers of Russian in the controlled oral elicitation task. The results are,

however, only partially in line with other research on the distribution of different word order combinations in monolingual Russian. For instance, Lobanova (2011) and Bivon (1971) report the SVO, OVS, and OSV to be the most frequently produced word orders in monolingual Russian while according to Berdicevskis and Piperski (2020), SVO, OVS, and VOS orders are the most frequent ones in monolingual Russian. The difference between my results and some of the previous studies can be related to the type of investigated speech and the data selection: while Lobanova (2011) and Bivon (1971) solely looked at the written productions, I included the spoken productions as well. Moreover, Berdicevskis and Piperski (2020) only included the data with nominal subjects and objects which was not the case in the data of this thesis which included both nominal and pronominal subjects and objects.

Note that in order to answer the first research question no statistical data modeling was necessary since this question could be answered by inspecting the raw data and the distribution of different word orders (%).

The results regarding the word order repertoire of HSs of Russian are noteworthy since they go against some previous findings on word order in HSs of Russian in the US. Researchers such as Polinsky (2006) and Kisselev (2019) found that HSs of Russian in the US limited the range of word orders. Contrary to their findings, my results demonstrate that HSs do not limit the word order range in their HL, and they show word order flexibility similar to monolingual speakers. The discrepancy between the abovementioned research and my results can be explained by the experimental approach, the speakers' profiles and the statistical method.

While Kisselev (2019) only looked at written productions, I included spoken productions as well. Further, Polinsky (2006) does not provide any numerical support for her claim that HSs limit their word order range in Russian, but her claim is rather based on her impression. I, on the other hand, provide numerical evidence that shows that HSs behave similar to monolinguals regarding their word order repertoire. Furthermore, HSs examined by Polinsky (2006) and HSs of this thesis differed regarding their knowledge of Russian. Polinsky (2006) examined low-proficiency HSs while HSs in this thesis were fluent in Russian and highly engaged with Russian in their everyday life.

The results regarding the word order repertoire of HSs of Russian support those of Zuban et al. (2021), who found that Russian HSs in the US produced all six grammatically possible word orders, and their word order preferences were similar to the ones of monolingual speakers, i.e., SVO, OVS, and SOV were the most frequent word orders while OSV and verb-first word orders were infrequent in the data. Although Zuban et al. (2021) reported on the results of the same corpus study that was presented in this thesis, the participant pool was different (both in terms of

the number of speakers and the speakers themselves). Thus, the results by Zuban et al. (2021) were confirmed in this thesis on a different data set.

The second research question focused on whether the word order patterns produced by HSs of Russian differ from those of monolingual speakers of Russian.

The data refute Hypothesis 2, which stated that the distribution of different word order patterns would not be similar between HSs and monolinguals in a way that HSs would produce more SVO and fewer non-SVO word orders than monolingual speakers. Although the results showed that HSs produced significantly more basic SVO orders and significantly fewer OVS orders than monolingual speakers, the differences between the two speaker groups were only apparent in some specific communicative situations and not across the board. As for the SOV word order, this word order was preferred in some specific communicative situations by both speaker groups in a similar manner.

The abovedescribed results about the word order patterns of HSs do not support the frequently reported findings on the word order preferences by HSs of Russian in the US. Previous studies generally report on the increase of the SVO and the decrease of the non-SVO word orders in productions of HSs of Russian in the US compared to monolingual speakers of Russian (Polinsky, 2006, 2007; Kagan & Dillon 2006; Isurin & Ivanova-Sullivan, 2008; Laleko & Dubinina, 2018; Kisselev, 2019). The differences between the abovementioned research and the results of this thesis can be explained with reference to the statistical analysis and speaker number.

Although Polinsky (2006, 2007) states that HSs of Russian in the US clearly limit their word order repertoire by predominantly producing SVO orders these claims are rather suggestions since they are not based on any numerical analysis of the word order patterns. Some other studies, such as the study by Isurin and Ivanova-Sullivan (2008) report the results based on a small pool of participants, namely 7 HSs. Thus, their results should be viewed as the first ones that offer a testing ground of word orders by HSs on a greater data set.

In addition to the number of participants, the methodological approach can account for the differences between the aforementioned studies and the current thesis. Specifically, previous studies either focus on some specific word orders without discussing the other word orders or the grouping of word orders differs from the one used in this thesis. Kagan and Dillon (2006) solely focused on the inverted word orders (i.e., VS) of HSs excluding the other word orders from the analysis. Thus, although they report on the decrease of the inverted word orders in productions of HSs compared to one monolingual speaker of Russian, it remains unclear how HSs behave regarding other word orders such as SVO or SOV. Laleko and Dubinina (2018) focused on the SVO orders and all non-SVO orders of HSs reporting that HSs produced more SVO and fewer

non-SVO orders than monolingual speakers of Russian. Next, Kisselev (2019) reported on the increase of the SV orders and the decrease of the VS orders by HSs of Russian. The SV orders included all word orders in which the subject was followed by the verb (i.e., SVO, SOV, OSV). This thesis provides a more fine-grained analysis of different word orders concentrating on three word order combinations, namely SVO, OVS, and SOV. A more detailed look at the separate word order combinations without grouping according to the position of subject and verb gives new insights into the word order patterns produced by HSs and monolinguals. Specifically, the word order SOV was not found to be influenced by speaker group. Had I added SOV to the OVS or SVO order (depending on the theoretical approach), an important result would have been lost.

The next difference between the previous studies on word order in HSs of Russian and this thesis, and clearly the greatest one, relates to the inclusion of multiple factors that can influence word order choice. None of the aforementioned studies considered the influence of different factors on word order. This thesis included communicative situations (formality and mode), clause type, and age as possible factors that can influence the word order choice of HSs. The inclusion of multiple factors proved to be fruitful and provided more insights into heritage grammar.

The findings of the second research question lead to the next research question. The third research question focused on whether the word orders under discussion are influenced by different communicative situations (i.e., formality and mode). There were two different hypotheses about the two different speaker groups.

The results generally confirm the predictions of Hypothesis 3.1 for monolingual speakers. Specifically, it was predicted that monolingual speakers would produce more SVO and OVS in formal situations and more SOV in informal situations, and that is precisely what was found. Thus, the results confirm previous studies on the word order in monolingual Russian by Adamec (1966), Sirotinina (2003), and Slioussar (2011). Mode was not predicted to have an influence on the SVO and OVS word order, and SVO and OVS orders of monolingual speakers of this thesis were indeed not affected by mode. These findings are in line with Adamec (1966) and Sirotinina (2003). As for the SOV order, it was predicted to appear more frequently in the spoken mode than in the written mode. In line with Slioussar (2007) SOV order was found to be more frequent in the spoken mode of monolingual speakers compared to the written mode. To sum up, formality was found to have an effect on all three word orders under discussion in productions of monolingual speakers while mode was only important for the SOV word order.

The results of the word order study refute Hypothesis 3.2, according to which formality and mode were not expected to influence the HSs' choice of a particular word order due to the lack of formal education in Russian and because non-SVO orders are marginal in their ML and less

frequent in their HL compared to the SVO order. Contrary to the prediction, both formality and mode were found to influence the HSs' preference for a particular word order. As for formality, HSs were found to be sensitive to formality in SVO and SOV word orders in exactly the same fashion as monolinguals. Specifically, SVO order appeared more frequently in formal situations while SOV order appeared more frequently in informal situations in productions of both HSs and monolinguals. As for the mode, HSs were found to be sensitive to the mode in SVO and SOV word orders. Monolingual speakers showed an effect of mode that was similar to HSs, but only in one word order, namely SOV. Specifically, SOV order appeared more frequently in the spoken mode in productions of both HSs and monolinguals while SVO order appeared more frequently in the written mode in the narrations of HSs. The only word order which was not influenced by formality or mode in the narrations of HSs was the OVS word order, and this word order will be discussed in detail later.

The abovedescribed results of this thesis show that HSs are generally sensitive to different communicative situations in Russian. These findings refute the findings of some previous studies that report on the lack of register differentiation by HSs. For instance, Schroeder et al. (in press) found that monolingual speakers of Turkish produced *new* postverbal referents (that are not predicted to appear at all according to the literature on monolingual Turkish) only in informal situations while HSs of Turkish did so in every communicative situation (i.e., formal and informal as well as written and spoken). Similar to the findings by Schroeder et al. (in press), Wiese et al. (2022) report that monolingual speakers of German produced bare NPs and V3 structures (that are unexpected according to the literature on monolingual German) only in informal situations while HSs of German in the US did so in formal situations as well.

The results of this thesis differ from the results of the two aforedescribed studies presumably due to the nature of the investigated phenomena. Schroeder et al. (in press) and Wiese et al. (2022) focus on phenomena that are unexpected or even ungrammatical in monolingual varieties while word order choice presented in this thesis cannot be viewed in a similar manner. First, all six word order combinations are grammatical in Russian, and the choice of one over another is governed by the discourse requirements. The analysis of word order choice presented at this point in this thesis did not consider the contextual appropriateness of a particular word order. Second, the use of one word order in both formal and informal situations or in spoken or written modes does not make this word order ungrammatical or absolutely unexpected. For instance, although SOV is more frequent in informal spoken situations in monolingual Russian its appearance in formal situations can be motivated by the object role (i.e., pronominal) or by the preceding context (i.e., by the necessity to focus the verb). Thus, the differences in the investigated phenomena could

have led to the differences between the results by Schroeder et al. (in press), Wiese et al. (2022), and this thesis.

The results of the current thesis are in line with the studies that found HSs to be sensitive to the different communicative situations in their HL. Pashkova et al. (2022) and Schleppegrell and Colombi (1997) suggested that HSs had an underlying knowledge of different communicative situations in their HL that could be drawn from their ML. Although this explanation seems to be plausible for the abovementioned studies it cannot account for the results of this thesis due to the nature of the investigated phenomena. The studies by Pashkova et al. (2022) and Schleppegrell and Colombi (1997) looked at the distribution of different clause types by HSs of German and Spanish with the ML English, and both studies connect the register awareness by HSs in their HLs with their knowledge of the preference of different clause types in their ML. For the results of this thesis, it is not plausible that HSs could use the knowledge of their ML to pattern with monolinguals in different communicative situations in their HL since English is a strict SVO language and only allows for some word order changes.

Moving to other possible explanations of the results in this thesis, I suggest that the overall high fluency (measured by speech rate) and performance of HSs as well as their high involvement with Russian played a role in distinguishing between different formalities and modes.

Speech rate was reported to be predictive of HSs' performance: those HSs who showed a speech rate comparable to monolingual speakers were also closer to monolinguals regarding the lexical and grammatical knowledge of the HL. On the contrary, those HSs whose speech rate was considerably slower compared to monolingual speakers were farther apart from monolinguals with respect to lexical and grammatical knowledge in their HL (Polinsky, 2008a; Kagan & Friedman, 2003; Nagy & Brook, 2020). Furthermore, the amount and quality of exposure to a HL and the frequency of HL use were also reported to play a role in HL production with monolingual-like performance usually being linked to greater and more frequent exposure to the HL (Vorobyeva & Bel, 2021; De Houwer, 2007; Lü & Koda, 2011; Paradis et al., 2010).

As far as fluency is concerned, the mean speech rate of HSs was comparable to that of monolingual speakers (HSs: 114 words/minute, monolinguals: 119 words/minute). Furthermore, according to the statistical modeling, HSs and monolinguals could not be distinguished from each other by speech rate in formal situations. Such results could mean that HSs had at least an intermediate knowledge of Russian (see Laleko & Dubinina, 2018 for similar results about speech rate and their interpretation). Besides, it could also mean that HSs were able to build phrases and clauses in Russian fairly well since speech rate was found to correlate with the knowledge of lexical items, grammatical knowledge, and construction of sentences (Polinsky & Kagan, 2007).

Apart from the measured fluency of HSs, I presented the observations about HSs' performance in Russian in different areas of grammar (see chapter 4.3 on HSs of Russian for details). HSs of this thesis were not found to show any dramatic restructuring and simplification with respect to the case and gender system, verbal aspect, use of the clitic *li*, referents' tracking, or sound system. These observations suggest that HSs in this thesis show a rather high performance in Russian.

Regarding the involvement of HSs with their HL, according to the self-reports, HSs sometimes watch TV programs or shows in Russian and write on Russian-speaking social media. Besides, HSs regularly speak Russian with their caregivers. Furthermore, almost every HS could write in Cyrillic and could read in Cyrillic as well. Reading in Cyrillic was not a part of the RUEG experiment, but it was a part of an extra experiment that was conducted by a research assistant of the project and myself (see the details of this experiment in Zuban et al., 2023). In the extra experiment, participants who took part in the RUEG study were asked to read the questions presented to them in a PowerPoint presentation. For this purpose, two sets of stimuli were created, in Cyrillic and in Latin (in case HSs could not read the Cyrillic script). None of the participants wanted to read the sentences in the Latin script, all HSs preferred reading in the Cyrillic script. To sum up, HSs presented in this thesis showed a high fluency and performance in Russian and a high involvement with Russian in their everyday life. These factors most likely contributed to the sensitivity of HSs to the different formalities and modes in their HL.

Next to the effect of formality and mode on the preference of a particular word order within one speaker group (i.e., HSs and monolinguals separately) formality and mode were found to have an effect when the two speaker groups were compared to each other. Specifically, HSs were found to produce SVO order more frequently than monolingual speakers in the written mode while the two speaker groups were similar to each other in the spoken mode. Furthermore, HSs were found to produce OVS order less frequently than monolingual speakers in formal situations while the two speaker groups were similar to each other in informal situations.

The abovedescribed results do not confirm the results by Zuban et al. (2021) who reported that HSs in the US produced significantly more SVO orders and significantly fewer OVS orders than monolingual speakers in the overall dataset. The differences between Zuban et al. (2021) and the results of this thesis can be accounted for by the number of participants and the methodological approach. Zuban et al. (2021) checked the possible influence of formality and mode on different word orders and found no influence of formality and an influence of mode only on one particular word order in one speaker group. Based on this result, Zuban et al. (2021, p. 272) state that if one were to see a clearer effect of formality and mode on the word order, a greater number of speakers is needed. Furthermore, Zuban et al. (2021) checked the possible influence of formality and mode

on different word orders within a group, but not across the different speaker groups. Thus, it is possible that some additional effects of the communicative situations were there, but they were not explicitly looked at since the study by Zuban et al. (2021) mainly focused on the word orders in different clauses.

This thesis presented the results of 40 participants per speaker group as opposed to 8 participants per speaker group presented by Zuban et al. (2021). Moreover, this thesis explicitly included *formality* and *mode* as separate predictors in the linear mixed-effects models, and the models included the interaction of *speaker group* with *formality* and *mode*. The sufficient number of speakers and the abovedescribed statistical method used in this thesis allowed not only seeing the possible effects of formality and mode within one speaker group but also across the two speaker groups.

The results of this thesis also do not confirm the results by Martynova et al. (in press) who did not find any effect of formality or mode on the preference of different word orders by HSs in the US and Germany and monolingual speakers. The differences between Martynova et al. (in press) and the results of this thesis can be explained by the differences in the grouping of the word orders. Specifically, Martynova et al. (in press) grouped all the word orders into two groups based on the position of the verb relative to the object (OV vs. VO) while the word orders in this thesis were the following ones: SVO, OVS, and SOV. OVS was reported to be typical for formal situations while SOV was reported to be typical for informal spoken situations in monolingual Russian (Adamec,1966; Sirotinina, 2003; Slioussar, 2007), and the results of monolingual speakers in this thesis are in line with previous research. In the study by Martynova et al. (in press) the OVS and SOV are grouped together although they are not predicted to appear in the same communicative situations with a similar frequency. Thus, it is plausible that the absence of the effect of formality and mode stems from the grouping of word orders. Table 40 summarizes the abovedescribed results of the effect of formality and mode on the different word orders. The columns "HSs" and "Monolinguals" provide information about the word order preferences in different communicative situations within the groups while the last column "HSs and monolinguals" shows the comparison of HSs and monolingual speakers.

Table 40 Effect of formality and mode on different word orders: Summary

WO	HSs	Monolinguals	HSs and monolinguals
SVO	formal>informal written>spoken	formal>informal -	- HSs>SVO in written than monolinguals. No difference in spoken
OVS	- -	formal>informal -	HSs<OVS in formal than monolinguals. No difference in informal -
SOV	informal>formal spoken>written	informal>formal spoken>written	- -

After having presented the results of the study related to the research questions 2 and 3, I will focus on their interpretation. It was found that HSs produced significantly more SVO orders and significantly fewer OVS orders than monolingual speakers. On the one hand, such results can point to transfer from the ML since English is a strict SVO language with few reordering options. Such explanation is, however, problematic since HSs differed from monolinguals not across the board, but in some specific communicative situations, namely in written (in the case of SVO order) and in formal (in the case of OVS order) ones. If the effect of formality had not been included in the analysis, I might have speculatively concluded that transfer was at play.

On the other hand, the increased frequency of SVO and the decreased frequency of OVS by HSs might be explained by the strategies that are called "*Shift from one construction type to another*" and "*Extension of frequency*" (Heine, 2008). According to Heine (2008) these strategies are among the ones that can lead to contact-induced developments in word order. Both of these strategies will be discussed in detail.

The strategy "*Shift from one construction type to another*" involves a change in the frequency of use of one construction over another one (Heine, 2008, pp. 40-42). A pattern that is frequent and productive in a non-contact language is less frequent in a contact language. For example, noun-noun compounding is productive in non-contact German (e.g., Herbstzeit, lit. "autumn time") while non-contact French uses attributive possessive patterns to build noun-noun combinations (e.g., le temps d'automne). German speakers living in eastern Belgium may use the German compound, but they also use the attributive/possessive pattern as well following the model of French (i.e., Zeit des Herbstes, lit. "time of the autumn") (Heine, 2008, p. 40 citing Riehl, 2001).

The strategy "*Extension of frequency*" "can be seen in the extension of existing structures to new contexts and an increased frequency of use" (Heine, 2008l, p. 54). Heine (2008, p. 55 citing Chikovani, 2005) gives an example of this strategy by presenting HSs of Arabic with the ML Uzbek. Uzbek is an SOV language while monolingual Arabic is a language with flexible word order in which the main word order patterns are SVO, OVS, and SOV. HSs of Arabic were found to produce SOV orders more frequently than other word orders in their Arabic, thus extending the frequency of use of the SOV order.

The results of this thesis can be related to the abovedescribed strategies. The increase of SVO utterances by HSs can be explained by the strategy *Extension of frequency*. The *Shift from one construction type to another* can possibly explain the decresed use of OVS by HSs. OVS order is a frequent order in Standard Russian (it was the second most frequent word order after SVO for monolingual speakers), but it became less frequent in productions of HSs. However, it remains to

be explained why these two strategies were not applied in the overall productions but only in the specific communicative situations, namely written and formal ones.

Let us consider the possible reasons behind the increase of the SVO orders in the written productions by HSs. HSs were reported to typically have better speaking skills compared to their writing skills (e.g., Montrul, 2011). HSs who are literate are typically predicted to be more fluent in reading than writing (Polinsky, 2015). According to the self-reports of HSs, *writing* received the lowest scores compared to the other language domains such as *understanding, speaking,* and *reading*. Additionally, in the course of the experiment HSs typically spent a lot of time writing a police report since they were not used to writing using a Cyrillic keyboard. Additionally, the autocorrection and letter suggestions were switched off for both formal and informal writing. The difficulty of writing in Russian and particularly in Cyrillic could lead to the increased cognitive load in the written productions compared to the spoken ones. As a result, HSs produced more SVO since it is the basic word order in both Russian and English. The productiton of SVO orders by monolingual speakers was not influenced by mode possibly because they have a similar competence in both spoken and written Russian.

Moving to the OVS order, HSs produced fewer OVS orders than monolinguals in formal situations, but the preference for the OVS in informal situations was similar between the two speaker groups. Besides, OVS is the only word order which was not influenced by formality in the narrations of HSs. Concentrating on the results between the two speaker groups it should be pointed out that OVS was reported to be more frequent in formal situations in Standard Russian (e.g., Sirotinina, 2003), and monolingual speakers showed more OVS precisely in the formal scenario. Most of the HSs of this study were not exposed to Russian in formal settings (i.e., school), and as a result, they might have had a different quality of input in their HL (see Rothman, 2007; Kupisch & Rothman, 2018 for similar observations). Furthermore, the results of the SOV order strengthen the abovementioned point about the differences in the input between HSs and monolinguals. HSs patterned with monolinguals in their use of SOV order that was reported to be frequent in the informal spoken situations in monolingual Russian. HSs mainly received the input of Russian at home from their caregivers, i.e., in informal spoken situations, and these are exactly the situations in which they behaved similarly to monolinguals. Thus, the differences in the input that manifest themselves in the lack of exposure to formal situations (e.g., formal instruction) in Russian may have contributed to the differences between HSs and monolinguals regarding the use of the OVS order.

The decreased number of OVS orders in formal situations by HSs can have implications for information status. OVS order is usually used to introduce *new* referents into the discourse, i.e.,

object is typically *given* while subject is typically *new* (Kallestinova, 2007; Slioussar, 2007). It is possible that HSs used another word order, namely SVO in the cases where OVS would be preferred. First, such assumption comes from other studies that report that word order in heritage Russian does not always correspond to the requirements of information structure (e.g., Laleko & Dubinina, 2018; Brehmer & Usanova, 2015; Kisselev, 2019; Zuban et al., 2021). Second, HSs of this thesis produced more SVO orders in written situations than monolingual speakers. It remains to be explored whether HSs of this thesis indeed produced SVO utterances in which OVS would be expected, and if such unexpected SVO utterances were produced, which other strategies were employed to mark information status of referents (i.e., intonation). The expression of information status by different word orders will be investigated in detail in chapter 7.

The fourth research question focused on whether the word orders under discussion were influenced by the age across the two speaker groups. There were multiple hypotheses for this research question. According to Hypothesis 4.1, adolescent HSs were expected to be similar to adolescent monolinguals, but adult HSs were expected to differ from adult monolinguals. According to Hypothesis 4.2, it was predicted that adult HSs might be similar to adult monolinguals while adolescent HSs would differ from adolescent monolinguals. Finally, Hypothesis 4.3 stated that HSs of both age groups would be similar to monolinguals of both age groups. Only the last prediction was partially born out for the SOV order where HSs of both age groups were similar to monolingual speakers of both groups. However, none of the aforementioned predictions about HSs were born out regarding the SVO and OVS orders, i.e., both adolescent and adult HSs differed from adolescent and adult monolingual speakers by producing more SVO and fewer OVS orders in some particular communicative situations.

Additionally, age on its own was not a predictor that influenced the choice of different word orders within a speaker group, i.e., both adolescent and adult HSs as well as monolingual adolescent and adult speakers had a similar preference for different word orders.

The fifth research question focused on whether the word orders under discussion were influenced by different clause types (main vs. embedded). The data confirm Hypothesis 5.1 which stated that both HSs and monolinguals would produce fewer varied word order combinations in embedded clauses compared to main ones. Both monolingual and HSs produced six word order combinations in main clauses and five word order combinations in embedded clauses (HSs did not have a VSO order while monolinguals did not have a VOS order in embedded clauses). These results confirm the predictions by Bailyn (2012, p. 84) who states that the word order in main clauses might be more varied compared to that of embedded clauses due to the differences between these two clause types regarding their discourse structure (the exact differences are not specified).

Furthermore, the results of this thesis confirm the findings by Zuban et al. (2021) who reported that both HSs of Russian in the US and monolingual speakers of Russian produced fewer varied word order combinations in the embedded clauses compared to the main ones.

The data also confirm Hypothesis 5.1 regarding the increase of SVO and the decrease of non-SVO utterances in embedded clauses in narrations of both HSs and monolinguals. Indeed, both HSs and monolingual speakers were found to be similar to each other by producing more SVO utterances in the embedded clauses compared to the main ones and more OVS and SOV utterances in the main clauses compared to the embedded ones. The results of the current thesis are in line with the results by Zuban et al. (2021) and Martynova et al. (in press). Zuban et al. (2021, p. 271) report on the increase of the SVO frequency in embedded clause compared to the main ones in productions of both HSs in the US and monolingual speakers. However, Zuban et al. (2021) refrain from comparing the influence of clause type on the non-SVO orders (SOV or OVS) due to the small number of non-SVO orders produced by HSs in the US in embedded clauses. Thus, as this thesis demonstrated, one would need to test a greater number of speakers to be able to see the effect of clause type on the different word orders.

The results of the current thesis are furthermore in line with a study by Martynova et al. (in press) that showed that the probability of producing the OV orders (i.e., SOV, OVS, or OSV grouped together) decreased in the embedded clauses compared to the main ones by both HSs in the US and monolingual speakers. Although Martynova et al. (in press) examined the data of the same participants as Zuban et al. (2021), Martynova et al. (in press) analyzed a greater data sample by including not only the finite but also the infinite clauses since the position of the verb relative to the object and not a particular word order combination was in focus the study.

6.8 Conclusion of this chapter

Summing up the results of the word order choice, it was found that both HSs and monolinguals used a similar word order repertoire by producing all six grammatically possible word orders in the overall data set. Besides, both speaker groups produced some word orders more frequently (SVO, OVS, and SOV) than the others (OSV, VSO, and VOS), and their preferences were similar. Clause type was also found to have an effect on different word orders and this effect was similar between HSs and monolinguals for all word orders under discussion. Age was not found to have an effect on its own on the different word orders.

Formality and mode were found to have an effect on the preference of different word orders within one speaker group and across the two speaker groups. Both HSs and monolinguals produced more SVO orders in formal situations compared to informal ones. Furthermore, both

speaker groups produced SOV orders more frequently in informal and spoken situations compared to formal and written ones. These results were explained with reference to the overall high fluency and performance of HSs in their HL and their high involvement with Russian.

As for the effect of formality and mode across the two speaker groups, HSs produced more SVO order in the written mode than monolinguals and the former group produced fewer OVS orders in formal situations than the latter group.

The increase of SVO orders and the decrease of the OVS orders by HSs in the US was not attested across the board but only in some particular communicative situations, namely written and formal ones. Apparently, formality and mode were found to be the major factors driving the increase of SVO and the decrease of the OVS order in the narrations of HSs. The increase of SVO order in the written situations can be motivated by the increased cognitive load in the written productions that stems from the difficulty of writing in Russian and particularly in Cyrillic. The decrease in OVS in formal situations can be motivated by the lack of exposure to formal situations in Russian. Additionally, the OVS order itself could be more challenging for HSs than SVO (in which they showed an effect of formality) since one needs to change the word order relative to the basic SVO and assign the specific referent types to the object and subject. The "*Shift from one construction type to another,*" "*Extension of frequency,*" and transfer are problematic for the explanation of the results since they do not allow for the inclusion of different communicative situations. One could think of a modified version of "*Shift from one construction type to another,*" and "*Extension of frequency,*" under specific conditions.

Furthermore, the results of this thesis showed the relevance of the fine-grained analysis of different word orders and the inclusion of the multiple factors that can influence word order choice.

7 Corpus study: Expression of information status

The previous chapter investigated the word order choice by the two speaker groups without considering how different word orders are produced to express the intended information status of a referent. Since information structure and status is one of the main factors that influences word order variation in Standard Russian a discussion of word order without information structure and status is far from being exhaustive. Thus, this chapter will look at the distribution of different referent combinations across different word orders. Also, the previous chapter showed that HSs and monolingual speakers of Russian did not differ from each other across the board but only in some specific communicative situations. Therefore, the next natural step in the investigation of word order is to see what the content of the different word orders is and whether this content is similar between the two speaker groups.

This chapter will start with a definition of information structure and information status moving to the expression of the information structural categories in monolingual Russian, HLs, and heritage Russian specifically. Further, the chapter will present the detailed research questions and hypotheses devoted to the expression of information status by the two speaker groups.[42] In addition to the research questions and the hypotheses, this chapter will describe how the data were annotated for information status. Then, the results of the study will be presented followed by the discussion.

Next to the syntactic expression of information status in the two abovedescribed populations, this chapter will examine the intonation of *new* unexpectedly placed subjects in the $S_{new}VO_{given}$ utterances. Specifically, pitch accent location, type, phrasing, and strategies to increase the prominence of S_{new} by decreasing the prominence of the verb and object will be investigated. The results of the study will be presented followed by the discussion and the overall conclusions of the chapter.

7.1 Definition and primitives of information structure

Information structure deals with the "packaging" of information to make an utterance fit the immediate communicative needs of interlocutors (Krifka, 2007, p. 13). In order to meet the communicative needs of interlocutors, a message should be organized in a way that it is understood by the addressee. Thus, information structure is about modeling the knowledge that is

[42] Although this thesis investigates the syntactic and prosodic expression of information status and not information structure, the theoretical background on both information status and structure will be given since the literature on monolingual Russian mainly focuses on the discussion around information structure, and information status is rarely examined on its own.

"mutually known to be shared and continuously modified in communication" (the Common Ground) (Krifka, 2007, p. 15).

Information structure is usually described at two levels: relational and referential (Gundel, 2003). The referential level "is the level of the cognitive representation of referents or propositions in the interlocutors' minds" and this level is typically expressed in terms of *given* and *new* (Baumann, 2006, p. 156). The relational level involves the division of a sentence into two parts, X and Y, where X is what the sentence is about while Y is a predication about X. Y is *new* in the sense that it is *new* information asserted about X (Gundel & Fretheim, 2008). According to Gundel and Fretheim (2008), referential and relational givenness and newness are independent from each other. Take a look at the following example (26) from Gundel and Fretheim (2008, p. 177):

(26)

a) Did you order the chicken or the pork?
b) It was the PORK that I ordered.

In example (26), capital letters show the location of a prominent pitch accent. In this example, *pork* is referentially *given* since it was previously mentioned in the question, but it is relationally *new* since it expresses *new* information about the listener.

This thesis will investigate the referential level of information structure that is typically referred to as *information status*. Although the relational level of information structure is not of a direct interest in this thesis, this level will be discussed to derive the predictions for some research questions.

The primitives of information structure are usually described in pairs. Among the pairs of primitives discussed in the literature are the following ones: Topic - Comment (e.g., Gundel 1974, 1978), Background - Focus (e.g., Vallduví, 1990), *Given - New* (e.g., Chafe, 1976), Theme - Rheme (e.g., Firbas, 1964). Although the meaning of these categories of information structure partially overlaps they do not necessarily mean the same. The following subsections will discuss the abovementioned pairs in detail.

Topic-Comment vs. Background-Focus

The division of utterances into topic-comment and background-focus is not of the same kind. The definitions of topic, comment as well as background and focus are based on the work by Krifka (2007). "The topic constituent identifies the entity or set of entities under which the information expressed in the comment constituent should be stored in the Common Ground content" (Krifka, 2007, p. 41). Consider example (27) from Krifka (2007, p. 40):

(27)

a) [Aristotle Onassis] $_{\text{Topic}}$ [married Jacqueline Kennedy] $_{\text{Comment}}$.
b) [Jacqueline Kennedy] $_{\text{Topic}}$ [married Aristotle Onassis] $_{\text{Comment}}$.

In example (27), the topic of the sentence is Aristotle Onassis while in example (27) the topic of the sentence is Jacqueline Kennedy.

The definition of topic given above reflects the definition of so called aboutness topic. There are, however, other types of topics that will not be discussed here (e.g., contrastive topics).

Another pair of primitives of information structure is background-focus. Krifka (2007, p. 19) defines focus as a set of alternatives that are important for the interpretation of an expression. The rest of the expression that is not in focus is called "background." Consider example (28) from Krifka (2007, p. 22):

(28)

a) Who stole the cookie?
b) [PEter]$_{\text{F}}$ stole the cookie.

In example (28) speaker A wants to know who stole the cookie and speaker B chooses one alternative and expresses this choice by placing a pitch accent on the focused constituent *Peter*. The rest of the sentence, namely *stole the cookie*, belongs to the background. Focus does not necessarily need to be an answer to a question. It can be also used to confirm or correct information (for a detailed overview see Krifka, 2007).

Krifka (2007, p. 28) points out that focus has been defined differently, for example, as "highlighting," "most important" or "*new*" information in an utterance, but the notions in quotation marks are problematic. The terms "highlighting" and "importance" are quite vague and difficult to define, and according to Krifka (2007), there is no theory of communication that would define these notions. As for the notion of "new" that can be found in definitions of focus by Halliday (1967), Sgall et al. (1987) (Prague School) and Jackendoff (1972) the concept of "newness" appears to be inaccurate since focus is not always discourse-*new*, but can be, for instance, discourse-*given* (all authors are cited by Krifka, 2007, p. 29).

To sum up, the division into topic-comment and background-focus can sometimes result in the same partitioning of an utterance, but this is not always the case (example (29)):

(29)

- What did Masha do?
  [Masha]T/B [painted the house]C/F
- What did Masha paint?
  [Masha]T [painted the house]C or [Masha painted]B [the house]F

Information status: Givenness

Information status refers to the degree of cognitive activation or degree of givenness of referring expressions (Baumann & Riester, 2012, p. 121; Im & Baumann, 2020, p. 686).

There is no unique classification of referring expressions. Among the major proposals for classification of referring expressions are the ones by Gundel et al. (1993) (givenness hierarchy); Lambrecht (1994); Poesio and Vieira (1998); Eckert & Strube (2000); Ariel (2001) (accessibility theory); Nissim et al. (2004); Götze et al. (2007) and Riester et al. (2010).

Information status is typically discussed in terms of *new* (those that did not occur in the previous context), *inferable* (discourse-*new* referents that are related in some way to the previously introduced referent), and *given* (referents that were previously introduced into the discourse) referents (Baumann & Riester, 2012, pp. 125-131). More detailed definitions of the aforementioned referents will be given in chapter 7.6.1.

7.2 Expression of information structure and status in monolingual Russian

This chapter is set to give a general overview of the expression of information structure and status across a variety of languages with a special reference to Russian. Different languages use different linguistic strategies to encode information structure and status which include lexical markers, syntactic positioning, prosody, or a combination of these strategies (Gundel, 1999 cited by Song, 2017, p. 45; Baumann, 2006). Since syntactic positioning and prosody are the main ways of expressing information structure in Russian these two strategies will be discussed in detail. The expression of information structure will be discussed on both referential and relational levels (King, 1995; Slioussar, 2007; Kallestinova, 2007; Bailyn, 2012; Švedova et al., 1980; Kovtunova, 2002).

7.2.1 Word order

Information structure and status can be marked through a dedicated position in a clause. As for the information status, cross-linguistically there is a tendency for discourse-*given* referents to appear at the beginning of an utterance before the discourse-*new* referents that usually occur towards the end of an utterance (for monolingual English see Chen & Lei, 2012, p. 43; Junge et

al., 2015, p. 591; Haviland & Clark, 1974; Arnold et al., 2000; Bock & Irwin, 1980; for the references on monolingual Spanish, Finnish, Japanese, Korean see Gómez Soler & Pascual y Cabo, 2016, p. 441).

As for information structure, the aboutness topics are claimed to typically appear clause-initially (see an overview by Song, 2017, p. 63 about the position of aboutness topics in different languages). Focus is typically expressed by a position in a clause or focus particles (Gussenhoven, 2008a, p. 384). As for the position of focus, various strategies are used by different languages: focus can be placed (1) clause-initially (e.g., in Akan, Yiddish, Breton, Hausa or English), (2) clause-finally (e.g., in Russian, Bosnian, Croatian, Serbian, American Sign Language, some Chadic languages such as Tangale and Ngizim), (3) preverbally (e.g., in Hungarian, Basque, Turkish, Armenian), and (4) postverbally (e.g., in Toba Batak, Portuguese, Chichewa) (Song, 2017, pp. 57-63).

Now the discussion will concentrate on the expression of information structure and information status in monolingual Russian zooming into the first frequent strategy, namely word order.

Russian is claimed to be among the languages in which narrow focus is located clause-finally[43] (Neeleman & Titov, 2009; King, 1995; Krylova & Xavronina, 1986; Yokoyama, 1986; Kallestinova, 2007; Kovtunova, 2002). Take a look at the examples:

(30)

a) Miša uronil mjač
S V O
Misha dropped ball
'Misha dropped a ball.'

b) Mjač uronil Miša
O V S
ball dropped Misha
'Misha dropped a ball.'

c) Mjač Miša uronil
O S V
ball Misha dropped
'Misha dropped a ball.'

The sentences in (30) differ in their word order expressing different information packaging. (30) a) is typically associated with a broad focus answering the question "What happened?" or it could be associated with a narrow VP focus *uronil mjač* answering the question "What did Misha

[43] Narrow focus typically highlights one syntactic constituent while broad focus highlights the whole sentence (Krifka, 2007).

do?" or it could be associated with a narrow focus on the object NP *mjač* answering the question "What did Misha drop?" (30) b) is compatible with a narrow focus on the subject NP *Misha* and (30) c) is usually associated with a verb focus *uronil* answering the question "What did Misha do with the ball?"

It is important to mention that in spoken speech, especially in informal Russian, intonation is often used to express information structure without changing the word order. Take a look at the following examples (31) in which the small caps mark the location of the NPA:

(31)

1. Miša uronil MJAČ
2. Miša URONIL mjač
3. MIŠA uronil mjač

All the sentences in example (31) have the same word order, namely SVO, but each of the sentences in (31) has a different location of the NPA. Thus, (31) a) could be an answer to the question "What did Misha drop?", (31) b) could answer the question "What did Misha do with the ball?" while (31) c) could answer the question "Who dropped the ball?" (see more details on the expression of information structure through intonation in the subchapter 7.2.2).

As for the information status, Slioussar (2011, p. 292) states that in most free word order languages (e.g., in Finnish or Russian), "the vast majority of narrative sentences have a *given-new* constituent order" (Slioussar, 2011, p. 292 citing Kaiser & Trueswell, 2004 for Finnish). The location of *given* referents before *new* ones may facilitate sentence processing and ease of comprehension (Luchkina & Cole, 2016, p. 281).

In Russian, the expected and felicitous word order of referents in a target sentence is *given-new* or *given-given-new*. The orders of *new-given-given* or *given-new-given* are infelicitous (Slioussar, 2007, p. 198). What is also important is the exact location of *given* and *new* referents, i.e., in a discourse-neutral context *given* referents are placed clause-initially while *new* referents are placed clause-finally (Luchkina & Cole, 2016, p. 284; Laleko & Dubinina, 2018, p. 195; Topaj, 2020, p. 82). Take a look at examples (32) and (33) from Slioussar (2007, pp. 1-2):

(32)

Context 1:
Naši sisadmin i programmist rešili obustroit′ novyj ofis.
‘Our system administrator and programmer decided to settle in the new office.’

Target sentence:

a)	Programmist	kupil	kofevarku
	programmer	bought	coffee machine
	S_{given}	V	O_{new}
b)	# Kofevarku	kupil	programmist
	coffee machine	bought	programmer
	O_{new}	V	S_{given}

(33)

Context 2:
Vskore v novom ofise pojavilis’ čajnik, kofevarka i toster.
‘Before long, there were a kettle, a coffee machine, and a toaster in the new office.’

Target sentence:

a)	# Programmist	kupil	kofevarku
	programmer	bought	coffee machine
	S_{new}	V	O_{given}
b)	Kofevarku	kupil	programmist
	coffee machine	bought	programmer
	O_{given}	V	S_{new}

Sentence (32) a), with the word order SVO is felicitous for the context (32), because “the programmer” was already previously mentioned, but “the coffee machine” was not. The expected order of referents is *given-new* and this order is presented in (32) a). Sentence (32) b) is infelicitous in the context (32) since the order of referents is reversed, namely *new-given* (O-*new*, S-*given*). In context (33), sentence (33) a) with the order SVO is infelicitous because S is *new* and O is *given*. Sentence (33) b) is felicitous since it satisfies the expected referents’ order, *given-new* (O-*given*, S-*new*) (Slioussar, 2007, pp. 1-2).

Slioussar (2007) conducted an experiment comparing accuracy and reading times of sentences with different word orders (neutral: S-V-IO-O[44], simple scrambled: O-S-V-IO and complex scrambled: O-IO-V-S) and referent organization (*given-given-new* which was considered to have a felicitous order of referents, *new-given-given* and *given-new-given* that were both viewed as infelicitous) by 28 monolingual speakers of Russian (undergraduate students). Slioussar (2007, p.

[44] IO stands for the indirect objects and O stands for the direct object.

204) reports that it took significantly longer for monolingual speakers of Russian to process instances of *new-given-given* and *given-new-given* than *given-given-new*. Furthermore, the results of the experiment showed a significant effect of context with both neutral and scrambled word orders (felicitous vs. infelicitous) but no effect of word order itself (neutral vs. simple scrambled or complex scrambled). Participants processed contextually infelicitous sentences slower independently whether it was a neutral or a scrambled word order (Slioussar, 2007, p. 208).

In a follow-up study, Slioussar (2011) confirmed the results of Slioussar (2007) but with different word orders (IO-S-V-O, IO-O-V-S, S-V-IO-O). The results showed, as previously, that sentences with felicitous ordering of referents were processed significantly faster than those with infelicitous ones (Slioussar, 2011, pp. 302-303). Overall, Slioussar (2007, 2011) showed that information status is important for monolingual speakers of Russian in processing different word orders. Table 41 summarizes how different referents and word order combinations relate to each other in monolingual Russian.

Table 41 Typical organization of referents across different word orders in Standard Russian (compilation from Kallestinova, 2007, p. 38 and Slioussar, 2007)

S V O	O V S	S O V	O S V	V O S	V S O	SV	VS
n n g n g g	g n	g g	g g	g n	g n n n	g	n

In Table 41, "n" stands for referentially *new* while "g" stands for referentially *given*. It can be seen that the typical sequences of referents are those in which both S and O are *new* or *given* or in which the *given* referent is located before the *new* one. It has to be noted that the sequence of referents presented in Table 41 is typical in a neutral formal context.

However, discourse-*new* referents do not necessarily need to appear clause-finally, they can appear in different clausal positions and even clause-initially, before the discourse-*given* referents (King, 1995). Examples (34) show the utterances with the order of referents *given-new* and *new-given* (Junghanns, 2001, pp. 336-337):

(34)

Context:
Kto ubil starux-u?
who.NOM killed old woman-ACC
'Who killed the old woman?'

Target sentence 1:
a) Staruxu ubil neznakomec
old woman.ACC killed stranger.NOM
'The old woman was killed by a stranger.'

Target sentence 2:
b) Neznakomec ubil staruxu
stranger.NOM killed old woman.ACC
'A stranger killed the old woman.'

The examples in (34) show that there are multiple options for discourse organization in monolingual Russian and it is important to determine what contributes to the speakers' choice of a particular option for the placement of referents.

It was suggested that the position of information-structural elements in monolingual Russian reflects a particular language situation: formal vs. informal (colloquial). In formal speech, *new* referents typically appear clause-finally after the initially placed *given* referents while in informal speech *new* referents are not restricted to the clause-final position and can appear anywhere in an utterance (Dyakonova, 2009; Slioussar, 2007; Slioussar, 2015). Thus, word order is strongly governed by information structure/status in formal Russian, but in informal speech, word order plays a weaker role since information status is mainly expressed by intonation (Sirotinina, 2003, p. 152).

Sirotinina (2003, pp. 7-8) investigated word order in different situations in monolingual Russian: in fiction writing, formal texts as well as in formal and informal speech. The data for the analysis of formal texts come from linguistic, medical, and mathematical articles. The analysis of the formal speech relies on the data of lectures recorded on a tape. Informal speech includes recordings of participants' everyday life. In what follows some of the results relevant for the word order and information structure/status will be summarized.

As for the position of objects, in formal situations (both spoken and written) referentially *new* objects were typically placed postverbally (Sirotinina, 2003, p. 59). One frequent scenario in which an object appears preverbally is when it is referentially *given* and located clause-initially (i.e., in OVS) (Sirotinina, 2003, p. 40). In colloquial speech, objects are frequently located preverbally. Sirotinina (2003, p. 47) found that 48% (recordings made in 1962 and 1963) and up

to 63% (recordings made in 1959) of all direct objects in the colloquial speech were located preverbally.

As for the position of subjects, in formal written and formal spoken speech, a referentially *given* subject is typically located preverbally whereas a *new* subject is frequently located postverbally (Sirotinina, 2003, pp. 96-98; 108). In informal spoken speech, 93% of subjects were found to appear before the verb (Sirotinina, 2003, pp. 103-104).

Except for an effect of register some other factors that were not investigated in depth may contribute to the non-clause-final placement of *new* referents in monolingual Russian. Luchkina & Cole (2021) investigate constituent order and information status in two Russian texts (a piece from a biography and a folk tale). The analysis revealed that although in general *given* referents appear before *new* referents there are also instances in which *new* referents appear clause-initially while *given* referents appear clause-finally. Luchkina & Cole (2021) point out that it is to be clarified in future studies which factors contribute to the violation of the *given-new* principle in monolingual Russian.

So far it has been shown that information status is important for the choice of a particular word order in monolingual (at least formal) Russian. However, some studies argue that information status does not play an important role in word order alternations in monolingual Russian. Kizach (2010, pp. 189-194) describes a study by Holden and Krupp (1987) that investigated whether the word order choice is governed by information status in Standard Russian (*given* vs. *new* referents). Monolingual speakers of Russian were asked to evaluate different word orders with different sequences of referents regarding their contextual appropriateness. Holden and Krupp (1987) found that the information status of referents was the weakest factor that influenced word order choice by monolingual speakers of Russian. The strongest factor that influenced word order choice was found to be the basic word order factor, i.e., speakers frequently preferred the SVO over all other word orders because it is the basic word order in Russian. According to Holden and Krupp (1987), the connection between information status and word order is rather stylistic in Russian (i.e., the participant who produced the *given-new* order most frequently was a published writer of prose fiction).

It has to be noted that the results of the study should be treated with caution since it is not entirely clear whether the target sentences included *new* and *given* referents only. Take a look at an example (35) from Holden and Krupp (1987, pp. 262-263) given by Kizach (2010, p. 190):

(35)

Context:
Mama prigotovila obed
mother prepared dinner
'Mother prepared dinner.'[45]

Target:
1. Deti s''eli obed
children ate dinner
'Children ate the dinner.'

2. Deti obed s''eli
3. S''eli obed deti
4. S''eli deti obed
5. Obed deti s''eli
6. Obed s''eli deti

It is stated that *lunch* is a *given* referent since it was previously mentioned while *children* are a *new* referent since it has not been mentioned before. I would argue that *children* are not a *new* referent but rather *bridging* since there is a mention of a mother before. If a mother is mentioned, it is expected that she will have a child or children. Thus, one would need to make a prediction about the order of *bridging* and *new* referents in such an example.

Kizach (2010) conducted a pilot study in which five monolingual speakers of Russian were asked to choose a word order (or word orders) that fits a given context the most. Participants could choose among six possible word orders. The data came from an online corpus <*ruscorpora.ru*>. It was found that on average participants accepted 3.7 word orders as being felicitous for every context (Kizach, 2010, p. 208). However, participants only agreed on particular word orders in 5 contexts out of 40. Thus, it is concluded that context sensitivity is a mainly stylistic phenomenon. Another interesting result is that the order SVO was assessed as felicitous in almost all contexts (in 39 contexts out of 40) (Kizach, 2010, p. 209).

Overall, word order is reported to be highly influenced by information structure/status in formal Russian while in colloquial language information structure and status play a weaker role in the linearization of different constituents since information structure/status can be solely expressed by intonation and a basic SVO order. Some studies, however, question the importance of information structure/status for the choice of different word orders in monolingual Russian.

[45] *Obed* was translated as *dinner* by Holden and Krupp (1987) although it means *lunch* in Russian.

7.2.2 Intonation

Except for the word order, another frequent way of expressing information structure and status in monolingual Russian is through intonation. This chapter starts off with the description of the prosodic expression of information structure and status in different languages with a special reference to English and moves on to Russian.

As for information status, in West Germanic languages (particularly in English, German, and Dutch) *new* information is claimed to be accented while *given* information tends to receive no pitch accent (Baumann, 2006, p. 163; Selkirk, 2008, p. 338; Kügler & Calhoun, 2020, p. 457 on *given* referents in English; Ladd, 2008; Chen & de Ruiter, 2008). A lack of an accent on a *given* referent is, however, not a universal strategy, but one option among the others (Baumann, 2006, p. 163).

Some studies report that different referents (*given, new, accessible*) can be signaled by different PA types. According to Pierrehumbert and Hirschberg (1990, pp. 289 - 302) the following PAs mark different degrees of givenness in American English: H* accent is used when a referent is *new*, L* is typical for discourse-*given* referents while H+L* (in their notation)[46] is a usual accent on the *assessable* (or *bridging*) referents.

In a more recent study by Im et al. (2018) that examined the relationship between PAs and information status in TEDTalks, it was found that speakers generally had a weak association between a referent type and a particular PA, contrary to what was previously reported in the literature. It was revealed that all PA types were used to mark each referent (Im et al., 2018).

Further evidence for a weak association of a referent type and a particular PA comes from De Ruiter (2015) who examined the expression of information status in read and spontaneous monolingual German. The results of her study showed that in spontaneous speech there was no clear correlation between a particular PA type and referent while in read speech different referents were clearer marked with a pitch accent of a specific type.

Intonation is not only used to express information status but also information structure. As for the initially located aboutness topics, they typically have rising accents and are not usually followed by prominence reduction in the post-topical field (Féry & Krifka, 2008; Kügler & Calhoun, 2020). As far as focus is concerned, in English, focus[47] is usually the most prominent element prosodically that receives a falling accent. Post-nuclear elements typically do not carry a PA (Kügler & Calhoun, 2020, p. 455; Ladd, 2008; Büring, 2010; Calhoun, 2010).

[46] There is no H+L* accent according to the current ToBI notation system. There is a downstepped accent that is recognized for American English which is H+!H* (Beckman & Ayers, 1994).

[47] See Gussenhoven, 2008 b) for a detailed description of different focus types.

In English SVO neutral declarative sentences with broad focus, both the subject and object are expected to receive a PA while the verb is not likely to be accented, although it can carry an optional PA (Katz & Selkirk, 2011; Gussenhoven, 2008b). Also, the subject and object typically receive an H*(+L) PA (Katz & Selkirk, 2011; Sityaev & House, 2003; Pierrehumbert & Hirschberg, 1990, pp. 289-290).

As for the prosodic expression of different information-structural categories in monolingual Russian, in a pragmatically neutral context, clause-initial aboutness topics that are typically referentially *given* are marked with a rising PA (L+H* or L*+H), or they may not carry any PA at all (Janko, 2001, p. 26; Alter & Junghanns, 2002). As for the prosodic expression of focus which is usually referentially *new* and is located at the right edge of an utterance, it typically receives a falling H+L* PA (Zybatow & Mehlhorn, 2000; Jasinskaja, 2016, pp. 711-712; Junghanns, 2001).[48] Furthermore, *given* and *new* referents were found to differ in their phonetic realization. Luchkina and Cole (2016, p. 297) report that *new* referents are produced with higher mean intensity than *given* referents, but *given* referents have greater F0 range and longer vowel duration compared to *new* referents.

If focus, however, is placed clause-initially, the focused element receives a falling NPA and all constituents that follow focus are unaccented (Yokoyama, 1986, pp. 182-191; Jasinskaja, 2016; Junghanns, 2001, p. 340). Finally, if focus appears after the topic, but is not located clause-finally, the initially-placed topic typically has a rising accent, the focused constituent has a falling NPA, and all material that follows the focused constituent is unaccented (Junghanns, 2001, p. 340).

Finally, in SVO utterances with broad focus in an all-*new* context, the typical intonation contour is the following one: L+H* PA on the subject, downstepped !H* on the verb, and !H+L* PA on the object (Jasinskaja, 2016).

To sum up, this chapter focused on the definition and the primitives of information structure and status. Further, different strategies to express information structure and information status have been discussed. In Russian, two main ways of expressing information structure and status are through word order and intonation. As for the word order, *given* referents are usually located clause-initially while *new* referents are typically placed clause-finally. However, such tendency is typically observed in the formal language whereas the order *given-new* can be violated in the informal language. In the latter scenario, intonation plays a central role to express information structure/status in a way that the focused constituent which is referentially *new* is typically marked by a falling NPA, and the material that follows it is unaccented.

[48] The discussion of intonation in the literature on monolingual Russian mainly focuses on information structure and does not usually discuss intonation of information status separately.

7.3 Expression of information structure and status in heritage languages

Some studies that examined the encoding of information structure and status through word order report on the considerable differences between HSs and monolinguals while other studies found only subtle differences between the former and the latter group or no differences at all. Among the studies that report on the substantial differences between the syntactic expression of information structure are Zapata et al. (2005) on the interpretation and production of word order alternations in heritage Spanish in the US, Laleko and Dubinina (2018) on the production of different word order patterns in heritage Russian in the US, Laleko (2022) on the acceptability of basic and non-SVO orders by HSs of Russian and L2 learners (the two aforementioned studies on heritage Russian will be described in detail in chapter 7.4 devoted to heritage Russian).

In what follows, some of the recent studies on word order and information structure in HLs will be summarized in more detail since it is one of the topics investigated in this thesis.

Contrary to the abovementioned studies (Zapata et al., 2005; Laleko & Dubinina, 2018; Laleko, 2022), numerous studies report that HSs are largely similar to monolingual speakers regarding the knowledge of discourse principles that govern word order variation or if the two groups differ these differences are rather subtle and not fundamental (for a detailed overview of the studies see Laleko, 2021).

For instance, a recent study by Hoot and Leal (2023) on the syntactic expression of information structure of HSs of Spanish reports that HSs and first-generation immigrants are overall similar to each other. Hoot and Leal (2023) examined how the non-canonical word orders in heritage Spanish are used to express narrow focus. In monolingual Spanish, narrow focus can be either expressed syntactically by moving the focused constituent to the rightmost position, or it can stay in situ (in this case a basic SVO order is used). Hoot and Leal (2023) explore the two V-initial word orders (VOS is typical for the narrow focus on the subject, and VSO typically marks narrow focus on the object) to see whether HSs of Spanish can differentiate the contexts in which these orders are appropriate.

Hoot and Leal (2023) conducted two experiments: a forced-choice judgment task and a self-paced reading task. HSs of Spanish residing in the US as well as first-generation immigrants from Spanish-speaking countries to the US (further baseline speakers) took part in the experiment. 46 HSs and 31 baseline speakers participated in the forced-choice judgment task while a subgroup of these participants took part in the self-paced reading task (23 HSs and 22 baseline speakers) (Hoot & Leal, 2023, p. 9).

In the forced-choice judgment task, participants saw a context utterance, a question about this utterance (on the subject, object, or the adjunct prepositional phrase), and different answers. The

answers for the subject focus did not contain the basic Spanish word order SVO, but only non-SVO orders while the answers for the object and prepositional phrase focus (PP focus) contained basic as well as fronted word orders. Participants were asked to select one answer that fitted the question the most. In the self-paced reading task, participants were asked to read the context utterances, the question that elicited the subject, object, or the PP focus, and the answer to this question. Some of the answers were felicitous while some other answers were not (Hoot & Leal, 2023, pp. 10-14).

The results of the forced-choice judgment task showed that HSs were similar to baseline speakers in all tested focus conditions. Specifically, both speaker groups preferred VOS order for the subject focus and VOPP for both object and PP. Hoot and Leal (2023) also tested the role of proficiency, dominance, and age of onset of bilingualism on the realization of different word orders in every focus condition separately. The result showed no effect of the three aforementioned factors in HSs and an effect of proficiency in the PP focus condition in baseline speakers. Specifically, more proficient baseline speakers prefer VOPP orders over VPPO orders in the PP focus condition focus (Hoot & Leal, 2023, pp. 14-17)

The results of the self-paced reading task revealed that the two speaker groups were similar to each other in their processing patterns of subject focus by reading focus that is located utterance-finally faster. Furthermore, speakers of both groups read the basic VOPP utterances faster in the object and PP focus condition. As previously stated, Hoot and Leal (2023) examined the role of proficiency, dominance and age of onset of bilingualism on the processing of different word orders in every focus condition. It was found that the three aforementioned factors had no effect on the performance of HSs, and there was an effect of proficiency in the subject/object focus condition for baseline speakers. Specifically, more proficient baseline speakers read the VOS order slower (Hoot & Leal, 2023, pp. 17-21).

All in all, HSs were found to be similar to baseline speakers in both their judgments and processing of non-SVO orders to express focus. These results are explained with reference to the properties of focus, namely its facilitating effect on processing due to the structural and pragmatic salience.

Another recent study by Sequeros-Valle et al. (2020) reports on the subtle differences between HSs and first-generation immigrants in their acceptability and production of clitic-doubled left dislocation (LD). In Spanish, there are other constructions that are similar to the LD on the surface, namely constructions with focus fronting and clefts. All three of these constructions have a fronted constituent in the left periphery, but they are used in different contexts in monolingual Spanish. An LD is used when there is a connection to the previous contexts [+anaphoric] while focus

fronting and clefts are used when there is no connection to the previous context [-anaphoric] (Sequeros-Valle et al., 2020, chapter 1.1).

15 HSs of Spanish residing in the US as well as 14 bilingual speakers of Spanish with a later onset of English (after 12 years of age, further baseline speakers) took part in an acceptability judgment task as well as in a production task. Speakers of the latter group all came from different Spanish-dominant speaking countries and lived in the US at the time of the test. The results of the written proficiency test showed that HSs were overall highly proficient in their HL. Participants saw a context sentence with a question at the end and were shown two answers to this question. They had to judge these two answers on a 4-point scale from very strange to perfect. One of the answers always had an LD while another answer did not. Further, participants were presented with two different types of contexts, +/- anaphoric (Sequeros-Valle et al., 2020, chapter 2.1.2).

The results of the acceptability judgment task revealed that HSs similarly to tbaseline speakers distinguish between pragmatically felicitous and infelicitous utterances in the anaphoric condition. In the non-anaphoric condition, however, HSs do not distinguish between pragmatically felicitous and infelicitous utterances, unlike baseline speakers who do (Sequeros-Valle et al., 2020, chapter 2.2).

The same participants took part in a speed production task in which they had to answer a given question in 10 seconds. The question was based on a short context utterance that participants had been presented with before the question. The answer was expected to be an utterance with an LD, fronted focus, or a cleft (Sequeros-Valle et al., 2020, chapter 3.1). The results showed that both baseline speakers and HSs preferred an LD in the anaphoric contexts, as predicted for monolingual Spanish. Sequeros-Valle et al. (2020) conclude that HSs of Spanish are sensitive to the pragmatic felicitousness of LDs in general, but their sensitivity does not fully unfold in the acceptability judgment task due to some task effects (Sequeros-Valle et al., 2020, chapter 4.3).

Apart from a strong interplay between word order and information structure and status, cross-linguistically there is a strong association between information structure and prosody, as it was outlined in 7.2.2. Considering the fact that HLs usually manifest themselves in a spoken form, rather than a written form, it is expected that prosody will be used by HSs to express information structure/status.

Several studies showed that in languages that mainly use syntactic means to encode information structure or status, HSs used both prosodic and syntactic means to mark information-structural distinctions, i.e., HSs used a combination of different options available to them. The use of prosody in this case was typically attributed to the influence of the ML.

For instance, in a case study by Bullock (2009) it was found that two HSs of French in the US made more liberal use of pitch accents in comparison with Standard French. In Standard French, focus is typically expressed through syntactic dislocation and phrasing (Bullock, 2009, p. 180). Unlike French, English mainly uses intonation to express focus rather than syntactic means or phrasing. Bullock (2009) found that focus was expressed by high PAs in a substantial number of HSs' productions, but HSs also used syntactic means to express focus typical for Standard French.

Kim (2019) examined the expression of focus by HSs of Spanish with ML English. In Spanish, focus is usually expressed by word order while in English focus is typically expressed by intonation (Kim, 2019, p. 988). It was found that HSs used both means to express focus, namely prosodic (e.g., relative prosodic prominence, postfocal deaccentuation) and syntactic (e.g., cleft constructions, complementizer que 'that') while monolingual speakers of Spanish preferred syntactic means.

Furthermore, Gries and Miglio (2014) found a more visible role of prosody in narrations of HSs of Spanish compared to monolingual speakers of Spanish. Gries and Miglio (2014) investigated how discourse-*new* and *given* information is expressed by HSs of Spanish with the ML American English in naturalistic speech. Two other speaker groups were also included in the study, namely monolingual speakers of English and Spanish. In monolingual English, discourse-*new* information is usually expressed by intonation (i.e., pitch accent on a *new* referent) while in monolingual Spanish, discourse-*new* information is usually expressed by word order (Gries & Miglio, 2014, pp. 14-15). It was found that monolingual speakers of Spanish were less likely to distinguish *new* vs. *given* information by pitch movement (around 11%) compared to monolingual English speakers (26%) and HSs (30.5%) (Gries & Miglio, 2014, p. 22).

To sum up, various studies report that HSs are generally similar to monolingual speakers regarding the knowledge of discourse principles that govern word order variation. However, the two speaker groups still show subtle differences in their use of word order for information structure variation. Furthermore, HSs were found to employ prosodic means to express information structure more actively than monolingual speakers.

7.4 Expression of information structure and status in heritage Russian

Studies that investigate the interplay of word order and information structure or status in heritage Russian are less numerous than studies that explore the general distribution of different word orders without taking information structure into consideration. This is curious since in monolingual Russian word order variation is highly dependent on information structure (Kallestinova, 2007; Slioussar, 2007, 2011; Bailyn, 2012; Sirotinina, 2003).

Some studies that tested the acceptability of different word orders depending on information structure came to different conclusions. On the one hand, HSs of Russian were generally found to under-accept inverted structures and over-accept basic SV(O) orders (Laleko, 2022). On the other hand, HSs were reported to rate SVO and OVS utterances depending on different focus conditions similarly to monolingual speakers (Ionin et al., 2020). These two studies will be summarized in detail.

Laleko (2022) examines how HSs of Russian and L2 learners judge the appropriateness of SV(O) and (O)VS word orders depending on the information structure (subject focus vs. broad focus) and verb type (unergative, unaccusative, transitive). As described before (see chapter 7.2.1) word order in monolingual Russian is highly governed by information structure/status in a way that *given* referents usually precede *new* ones, and *new* information focus is located utterance-finally. Additionally, word order in monolingual Russian depends on other factors unrelated to information structure, and one such factor is verb type. A typical order of constituents with unergative verbs is SV while if a verb is unaccusative both SV and VS orders are frequently produced (Laleko, 2022, p. 752 referring to Kallestinova, 2007, p. 47).

27 HSs of Russian residing in the US, 20 L2 learners of Russian, and 15 monolingual speakers from Russia took part in an acceptability judgment task. Bilingual speakers were subdivided into groups according to their proficiency level so that there were two groups of HSs of higher and lower proficiency and one group of L2 learners of lower proficiency. Participants saw a question that either elicited broad focus or narrow focus on the subject, and they were shown two answers to this question. One answer was the one with a basic SVO order while another answer included an inverted word order. Participants had to judge these two answers on a 5-point scale from completely unacceptable to completely acceptable. The verb predicates were varied so that there were unergative, unaccusative, and transitive verbs (Laleko, 2022, pp. 754-756).

The results demonstrated that, overall, all bilingual speakers (both HSs and L2 learners) rated (O)VS orders as less acceptable across all the conditions, and showed a general preference for basic SV(O) order. HSs of higher proficiency were similar to monolingual speakers regarding some patterns. Specifically, in intransitive utterances they showed sensitivity to the verb type under broad focus by showing a higher preference towards VS order with unaccusative verbs and SV order with unergative verbs. However, none of the bilingual groups, contrary to monolingual speakers, showed sensitivity to the occurrence of VS order with unergative verbs in both narrow and broad focus condition. Furthermore, in transitive utterances, HSs of higher proficiency were similar to monolingual speakers by rating OVS orders higher in the subject-focus condition than

in the broad-focus condition. HSs of lower proficiency and L2 learners rated SVO orders higher irrespective of the focus condition.

The results are explained with reference to possible transfer effects from the ML, the high frequency and salience of SVO order in monolingual Russian as well as the lower processing costs of basic word orders. Laleko (2022, p. 761) concludes that the reduction of word order variation in bilingual speakers "seems to reflect a systematic reorganization of the underlying principles affecting, most notably, the information-structural component of the word order system." Another conclusion of the paper relates to the results of the high proficiency HSs who followed the principles of word order alternation in Russian more closely to monolingual speakers than to other bilingual groups of lower proficiency. Thus, proficiency plays an important role in the successful acquisition of word order highly driven by information structure Laleko (2022, p. 763).

Ionin et al. (2020) examined the acceptability of SVO and OVS orders for the expression of narrow object and subject focus by HSs and L2 learners of Russian with ML American English. The preverbal constituent of these two word orders typically signals *given* information (which is often a topic) while a postverbal constituent marks *new* information (which is often focused). Thus, an SVO order is expected in an object focus condition while an OVS order is appropriate in the subject focus condition.

The notions of *given* and *new* are closely linked to the notions of definites and indefinites. There are no articles in Russian, and a bare NP can be definite or indefinite depending on the context. The preverbal bare NP is typically definite while the postverbal NP is typically indefinite. However, word order in Russian does not directly reflect the distinction between definite and indefinite NPs since non-anaphoric definites and proper nouns can be discourse-*new* and still be located postverbally. Two types of contexts were included: the ones in which there is correspondence between information status and (in)definiteness, and the ones in which there is no such correspondence (Ionin et al., 2020, p. 210-212).

20 HSs of Russian residing in the US, 32 L2 learners of Russian, and 43 monolingual speakers from Russia took part in a series of tasks, namely a case check task, a proficiency test, and an acceptability judgment task. The first two tasks aimed to establish the proficiency level of bilingual speakers. In the case check task, bilingual participants were presented with a written declarative sentence with an SVO or an OVS order, and they were asked a comprehension question in English. There were multiple answers provided for participants, and they had to choose one of them.

In the acceptability judgment task, participants saw and heard a series of short dialogues (each dialogue had a question-answer structure) recorded by two monolingual speakers of Russian using

neutral prosody, i.e., with an NPA on the rightmost constituent. Each question aimed to elicit a narrow subject or object focus with an SVO or an OVS order being the answer. Participants had to judge the answer on a 5-point scale from 1 unacceptable to 5 acceptable. The target items either included bare common nouns (Experiment 1) or proper nouns (Experiment 2) to check whether one of these Experiments was more challenging for bilingual speakers (according to the predictions, Experiment 2 should be more challenging) (Ionin et al., 2020, p. 215-216).

Based on the results of the proficiency test only participants who scored higher than 50% were included in the further analysis (18 HSs and 20 L2 learners), and HSs were more proficient than L2 learners. The remaining 38 bilingual participants scored around 85% correct on the case-check test (Ionin et al., 2020, p. 217).

The results of the study showed that HSs patterned with monolingual speakers in both experiments (with bare common nouns and proper nouns) by rating SVO utterances above OVS in object focus, and rating OVS utterances above SVO in subject focus. L2 learners rated SVO utterances higher than OVS in both object and subject focus in both experiments (Ionin et al., 2020, p. 219).

The results of the HSs are explained with reference to their higher proficiency in Russian than that of L2 learners as well as their early naturalistic input in Russian. The results of L2 learners are explained with reference to the cross-linguistic influence of English as well as the high frequency of SVO order in Russian (Ionin et al., 2020, p. 222).

The two abovedescribed studies show that the high proficiency HSs of Russian generally converge with monolinguals on their knowledge of pragmatically driven word orders in Russian while lower proficiency bilingual speakers (HSs and L2 learners) differ from monolingual speakers by rating basic SVO utterances higher than utterances with non-SVO order. Thus, there is considerable variation in bilingual speakers ranging from those who show less word order variation under the requirements of information structure to those who perform monolingually-like.

Regarding the production of different word orders and their contextual appropriateness, it was generally reported that the word orders of HSs are not always contextually felicitous as opposed to the word orders by monolinguals that are nearly always contextually appropriate. The degree to which HSs produce contextually infelicitous word orders varies across different studies. While some studies report on the overall substantial amount of particular word orders that are produced inappropriately in a given context by HSs (e.g., up to 30% of infelicitous word orders with dislocations) (Laleko & Dubinina, 2018; Ivashchyk, 2019) some other studies report that only a

small number of word orders by HSs does not fit the requirements of information structure (Kisselev, 2019).

For instance, a study by Laleko and Dubinina (2018) that was described in chapter 6.3 in detail reports that HSs not only produced canonical SVO orders in their HL but utterances with non-canonical orders as well (although at a lower frequency compared to monolingual speakers). However, not all non-canonical word orders were found to be contextually appropriate in the data of HSs as opposed to the non-canonical orders by monolinguals that were nearly always contextually felicitous. HSs produced 8.97% of contextually infelicitous word orders with inversion (out of all inverted word orders) and 29.77% of infelicitous dislocations (out of all word orders with dislocation) (Laleko & Dubinina, 2018, p. 203).

Below are some examples (36)-(38) that were identified as contextually infelicitous by Laleko and Dubinina, 2018, p. 204):

(36) Infelicitous use of dislocation

V reku oni upali
into river.ACC they.NOM fell
'Into the river, they fell.'
(cf. Oni upali v reku)

Example (36) is contextually inappropriate since a *river* was introduced for the first time and is expected to occur clause-finally.

(37) Infelicitous use of inversion

Context:
Iz dereva, na kotorom sidel mal′čik, vylezla sova
from tree.GEN on which sat boy.NOM crawled out owl-NOM
'From the tree on which the boy was sitting came out an owl.'

Target:
i za nim poletela sova
and after him.INS flew owl.NOM
'And after him flew the owl.'
(cf. sova poletela za nim)

Example (37) is contextually inappropriate since *the owl* was recently mentioned in the context utterance and is expected to appear before the PP *after him* in the target utterance.

(38) Infelicitous use of the canonical order

Doxodit do dereva, gde pčëly živut
reaches to tree.GEN where bees.NOM live
'Approaches the tree where the bees live.'
(cf. Doxodit do dereva, gde živut pčëly)

Example (38) is contextually inappropriate since *bees* have been introduced for the first time and are expected to appear clause-finally.

Overall, it was found that HSs used more structures with dislocation than with inversion, and dislocation was found to be less contextually felicitous than inversion (Laleko & Dubinina, 2018, p. 205).

As for the canonical word order, HSs produced 2.7% of infelicitous orders compared to monolinguals who had only one instance of infelicitous canonical word order that resulted in 0.16% (Laleko & Dubinina, 2018, p. 205). Laleko and Dubinina (2018, p. 206) consider these findings important despite the small number of infelicitous occurrences because the infelicitous use of SVO order could be the result of HSs not using inversion or dislocation where it was required for information structural purposes. The authors point out that infelicitous use of the SVO order is not necessarily a sign of a rigid word order of HSs, but it can be a sign of a new strategy of discourse reorganization in which prosody may be extremely important. Perhaps, HSs use prosody to express information structure in SVO utterances as a more economical way instead of moving the constituents (inversion or dislocation). Moreover, HSs are usually exposed to spoken language from birth, and they may have suitable prosodic tools in their HL. It is further noted that it is an open question how exactly prosody is used by HSs to express information structure (Laleko & Dubinina, 2018, p. 206).

Laleko and Dubinina (2018, p. 207) also discuss the relevance of the weight principle "light-before-heavy" according to which light constituents (personal or demonstrative pronouns, PP with a preposition with a single noun or pronoun, adverbs, and locatives that consist of a single word) should be placed before heavy ones (full NPs, complex modifiers with an NP). Further, the status of the moved constituents was taken into account (e.g., whether it was an object or a modifier). The relevance of information structure, specifically the *given-before-new* principle is left out due to the difficulty of distinguishing between *new* and *given* referents (in their task the same information could be discourse-*new* for the speaker and hearer-*old* for the listener).

The results of the weight principle for dislocation showed that monolinguals had an equal distribution of heavy and light constituents preverbally. Such results suggest that monolingual speakers of Russian do not exclusively rely on syntactic weight in constructions with dislocation. HSs, on the other hand, were found to dislocate light elements from their default position more often than heavy elements. These results suggest that syntactic weight is an important cue for HSs in constructions with dislocation (Laleko & Dubinina, 2018, p. 208). Laleko & Dubinina (2018) further investigated dislocation with respect to the status of the moved constituent: object or modifier. It was found that both HSs and monolinguals performed similarly to each other

regarding the dislocation of objects: light objects were dislocated more frequently than heavy ones (Laleko & Dubinina, 2018, p. 208). However, the pattern was different for dislocated modifiers in the two groups. Monolinguals dislocated heavy modifiers more often than light ones. On the contrary, HSs were found to dislocate heavy modifiers significantly less frequently than monolinguals. The number of dislocated light modifiers was comparable to that of monolinguals.

The results of the weight principle show that HSs and monolinguals use different strategies in constructions with dislocation. HSs generally rely on the "light-before-heavy" principle while monolinguals move heavy modifiers to the preverbal position despite the "light-before-heavy" principle. Laleko and Dubinina (2018, p. 209) suggest that other factors except for syntactic weight are at play for monolinguals and these factors possibly relate to the information structure (*given-before-new*). If this is indeed the case it means that HSs are less susceptible to the requirements of information structure.

HSs of Russian in the US were found to produce a substantial amount of pragmatically infelicitous word orders by Ivashchyk (2019) in her master's thesis (it was briefly discussed earlier in chapter 6.3). Ivashchyk (2019) investigated whether variation of word order in heritage Russian was triggered by discourse factors, i.e., whether the information status of referents influenced the choice of a particular word order. The referential level of information status was annotated for subjects, objects, and modifiers using the RefLex scheme (Baumann & Riester, 2012).

Ivashchyk (2019, p. 42) generally found word order variation to be discourse-driven in productions of HSs of Russian in the US. Specifically, it was found that when discourse-*given* and discourse-*new* referents are placed ex-situ (i.e., ex-situ relative to the SVO order in which both subject and object are located in-situ) discourse-*given* referents are more likely to be fronted than post-posed while discourse-*new* referents are more likely to be post-posed than fronted.

Despite the general finding by Ivashchyk (2019, p. 47) about the discourse-driven word order variation in heritage Russian, closer investigation revealed that sometimes the referents in a clause were placed infelicitously by HSs (e.g., the *given-before-new* principle was not always adhered to or discourse-*new* referents were placed after *given* ones but not clause-finally). Ivashchyk (2019, p. 47) found that around 20% of all clauses produced by HSs were contextually infelicitous with respect to the order of referents inside the clause. Additionally, the greatest proportion of contextually infelicitous instances was found with word orders involving dislocation (circa 33%), followed by word orders with inversion (circa 27%) and the basic SV(O) order (circa 16.5%) (Ivashchyk 2019, p. 48). Among the contextually infelicitous utterances with the SV(O) order

circa 12.5% were the ones with the *new-before-given* order of referents and around 4% of the utterances had different contextual infelicity (Ivashchyk 2019, p. 52).[49]

The master's thesis by Ivashchyk (2019) gives valuable insights into the interplay of word order, information status, and intonation (see the summary of the results regarding intonation in chapter 5.6) by HSs of Russian. However, the data sample used by Ivashchyk (2019) is rather small (only eight speakers). Further, Ivashchyk (2019) did not present the data of monolingual speakers of Russian who might have shown patterns similar to those of HSs.[50]

Another study that explores the interplay of word order and information structure is the one by Kisselev (2019) (the study was presented in detail in chapter 6.3). Kisselev (2019) reports on the word orders that are used inappropriately in a particular context by HSs and L2 learners of Russian, but only a small number of such instances were found in productions of different bilingual speaker groups. Monolinguals were found to produce word order combinations that were always contextually felicitous. As for the SV(O) order, L2 learners of a lower proficiency produced slightly more contextually inappropriate clauses (13 out of 536 SV(O) orders) than HSs (8 out of 462) and L2 learners of higher proficiency (4 out of 531). In such instances, a VS order was expected for the introduction of *new* referents. As for the SOV order, it was found to be used infelicitously more often than SV(O) orders (HSs: 7 out of 73; L2 learners of lower proficiency: 5 out of 34; L2 learners of higher proficiency: 5 out of 28). As for the OSV orders, their number was generally very small, and speakers of all groups had some contextually inappropriate instances of this order. As for the VS orders, Kisselev (2019, p. 166) reports that all speaker groups used VS appropriately, i.e., for the introduction of *new* referents (there was only one infelicitous case found in the data of HSs and L2 speakers of lower proficiency and three cases out of 70 produced by L2 learners of higher proficiency).

[49] It has to be pointed out that Ivashchyk (2019, p. 47) considers not only the instances of *new-before-given* referents to be contextually infelicitous, but also the instances of *bridging-before-given* and *unused-before-given*. I do not share the opinion that *bridging-before-given* and *unused-before-given* combinations are pragmatically infelicitous since *bridging* and *unused* referents have a connection to the context and are not "strictly" *new*, i.e., *bridging* referents depend on other expressions in the discourse context and *unused-unknown* referents come with sufficient descriptive material to insure their identifiability.

[50] Ivashchyk Yuliia was a student assistant in the RUEG (project P7) and helped me collect the data of HSs of Russian in the US. The data used in this thesis comprise seven participants that were analyzed by Ivashchyk (2019) in her master's thesis and include more HSs of two age groups (40 HSs overall). Further, I present an annotation scheme for the word order that differs from the one used by Ivashchyk (2019). Although both abovementioned authors used the RefLex scheme for the annotation of information status they define the infelicitous combinations of referents differently (see the previous footnote). Furthermore, work by Ivashchyk (2019) and myself differ regarding some other crucial aspects such as specific research questions, data sample (not only HSs, but also monolingual speakers) and data analysis (I used the linear mixed effects models and inferential statistics while Ivashchyk (2019) resorted to descriptive statistics).

To sum up, multiple production studies on word order and information structure found that although HSs generally showed discourse-driven word order variation, they also produced word orders that were contextually infelicitous. The amount of contextually infelicitous utterances varied from just some instances up to 30% of some word orders (Kisselev, 2019; Laleko & Dubinina, 2018; Ivashchyk, 2019). The studies that investigated the acceptability of different word orders depending on information structure report that HSs of higher proficiency are generally more similar to monolingual speakers while HSs of lower proficiency differ from monolinguals by overaccepting basic SVO orders in Russian (Ionin et al., 2020; Laleko, 2022).

As for the use of prosody for the expression of information structure/status in heritage Russian, Zerbian et al. (2022) examined the frequency and prosodic realization of contrastive adjectives in mono- and bilingual speakers of English and Russian. The data were extracted from a corpus that included speakers' narrations in two different formalities (formal and informal) (Language Situations method by Wiese, 2020; for a detailed description of the method see chapter 3). It was found (among other things) that HSs of Russian frequently produced double accents (on the contrastively focused adjective and a noun) in both their HL and ML (although to a lesser extent in English than in Russian) instead of one single accent (on the contrastive adjective) that is expected in monolingual Russian and English. Such results were interpreted as a possible effect of bilingualism and an attempt of HSs to be more explicit and avoid ambiguities by producing more pronounced accent patterns.

Interestingly Zerbian et al. (2022) found that monolingual speakers also produced double accents, but they mainly did so in formal situations. In informal situations, they showed a preference for a single accent on the adjective, as expected from the literature on monolingual Russian. However, it should be pointed out that the overall number of contrastive adjectives in the data of monolingual speakers was low.

Drawing from the findings by Zerbian et al. (2022), Zerbian and Barabashova (2023) examined how HSs of Russian in the US and Germany and monolingual speakers of Russian rate different accent patterns in adjective+noun phrases with semantic focus on the adjective. In an online perception study, participants were asked to rate different accent patterns (PA only on the noun, only on the adjective, or on both) regarding their naturalness. The pattern in which only the adjective is accented is expected to be the most natural in monolingual Russian. Two types of stimuli were used in the experiment: a) Semi-spontaneous productions from the RUEG corpus that involved a description of two cars of different colors (a semantic contrastive focus on the adjective is implied) (for details see Zerbian et al., 2022); b) lab-produced recordings of contrastive adjective+noun phrases.

The results of the study showed that in lab speech both HSs and monolinguals rated a pattern in which only the contrastive adjective carried a PA as more natural than the two other conditions (i.e., a PA only on the noun or a PA on both an adjective and a noun). In semi-spontaneous speech, HSs also rated a PA on the adjective as being more natural than a PA on the noun or a double-accent condition (although the distinction between the rating scores in three conditions is less clear than in lab speech). Monolingual speakers rated all three PA patterns as highly natural.

The results of Zerbian and Barabashova (2023) demonstrated that HSs of Russian preferred a single PA on the contrastive adjective which is in line with the expected pattern in monolingual Russian. Monolingual speakers behaved differently depending on the experiment showing less sensitivity to the PA location in semi-spontaneous speech. HSs demonstrated a "better" perception of contrastive accents than monolingual speakers presumably due to their perceptual advantage that manifests itself in a "better-than-native perception" (e.g., Chang, 2016). HSs might be more familiar with variation and accents, and consequently they might adapt to different speech more quickly than monolinguals.

The master's thesis by Ivashchyk (2019) (it was described in chapter 6.3 and earlier in this chapter) examined the prosodic expression (pitch accent type, placement, and IP boundary insertion) of instances that were identified as contextually infelicitous regarding the information status of referents (e.g., cases in which discourse-*new* referents appeared before the *given* ones). Such instances involved the following word order patterns: inversion, dislocation, and SVO utterances. I will concentrate on the prosodic pattern of 16 SVO utterances in which S was discourse-*new*[51] and O was discourse-*given*.

It was found that in half of the produced $S_{\text{discourse-new}}VO_{\text{given}}$ utterances, the subject was placed in a separate IP and either received a rising L+H* accent (five instances) or an H* accent (3 instances). When $S_{\text{discourse-new}}$ did not form its own IP, it usually received an H* accent. Also, O_{given} referents that occurred in the same IP with $S_{\text{discourse-new}}$ were unaccented in three out of five clauses (Ivashchyk, 2019, pp. 79-81)

In general, across all the $S_{\text{discourse-new}}VO_{\text{given}}$ utterances S_{new} either had an H* accent (in ten cases) and a rising L+H* accent (in six cases) Further, 11 *new* subjects were marked with an NPA, five carried prenuclear PAs while two were less prominent than the following O_{given}. As for the *given* objects, they were unaccented circa half of the time (in seven out of 16 cases), and they received different PAs in the other 9 instances (H+L*: four cases, L+H*: four cases, !H*: 1 case) (Ivashchyk, 2019, p. 81).

[51] Discourse-*new* referents under consideration are *new*, *bridging*, and *unused*. The results of solely *new* referents cannot be reported separately since their number is very low.

To sum up, Ivashchyk (2019) found that in $S_{discourse\text{-}new}VO_{given}$ utterances, *new* subjects were either produced with an H* or an L+H* PA while *given* objects were either unaccented or received rising or falling PAs. Ivashchyk (2019) discusses the results with reference to the restructuring of discourse organization principles in productions of HSs (*new-before-given*) and the visible role of prosodic marking to express information status of contextually infelicitous referents.

The results by Ivashchyk (2019) give valuable insights into the prosodic expression of $S_{discourse\text{-}new}VO_{given}$ utterances in productions of HSs, but it should be noted that the number of the investigated utterances is rather low, and it is unclear which prosodic pattern would be shown by monolingual speakers in these cases.

Since Ivashchyk (2019) reports on the interplay between a particular PA type and phrasing it has to be pointed out that phrasing in general has been found to influence the prominence of a word. It was reported that a boundary insertion after a particular word (or before it in some languages) increases the perception of that word as being prominent (Cole et al., 2019; Mády et al., 2016).

Except for phrasing some pitch accents were reported to be perceived as more prominent that the others. For instance, Hualde et al. (2016, p. 461) found that L+H* accents were perceived to be more prominent than H* accents by monolingual speakers of American English. Baumann (2014) found that rising accents were perceived as more prominent in prenuclear and nuclear final positions than high H* accents by monolingual speakers of German. Baumann and Röhr (2015) report that monolingual speakers of German perceive nuclear L+H* accents as being more prominent than H* accents.

Finally, a study that does not directly deal with information structure but deals with the intonation of HSs of Russian should be mentioned again due to its relevance to the current study (see a more detailed description in 5.6). Zuban et al. (2023) investigated the intonation of yes-no questions produced by HSs of Russian in the US and Germany as well as monolingual speakers of Russian. Both HS groups were found to use pitch range modification, namely upstep, more frequently than monolinguals, to highlight a nuclear pitch accent on the verb in SVO yes-no questions when they placed a prenuclear H* on the subject.

To sum up, HSs of Russian were found to differ from monolinguals regarding the prosodic expression of information structure by producing PAs on both the contrastively focused adjective and a noun (Zerbian et al., 2022). However, HSs rated a single PA on the contrastive adjective to be appropriate and demonstrated a "better" perception than monolingual speakers Zerbian & Barabashova, 2023). Finally, HSs of Russian were also reported to use prosodic means to express information status of referents that were not expressed syntactically (Ivashchyk, 2019).

7.5 Syntactic expression of information status: Research questions and hypotheses

Taking the previous studies on the syntactic expression of information status in heritage and monolingual Russian into account, the current thesis aims to answer the following research questions:

RQ1:

Is the distribution of frequent combinations of referents across frequent word orders similar in productions of HSs and monolinguals?

Hypothesis 1.1:

Both speaker groups will be generally similar regarding the preference for frequent combinations of referents across frequent word orders (Kisselev, 2019).

Hypothesis 1.2:

HSs will differ from monolingual speakers regarding the distribution of frequent referent combinations, especially with non-SVO orders (Laleko & Dubinina, 2018; Ivashchyk, 2019).

RQ2:

Are there combinations of *new-given* referents in narrations of HSs and monolinguals, and if *new-given* referents are produced, is their frequency similar across the two speaker groups?

Hypothesis 2.1:

Monolingual speakers will not produce any instances of *new-given* referents, or such instances will be very infrequent (Kisselev, 2019; Laleko & Dubinina, 2018).

Hypothesis 2.2:

HSs are expected to produce *new-given* referents more frequently than monolingual speakers (Kisselev, 2019; Laleko & Dubinina, 2018).

RQ3:

Is the frequency of *new-given* referents influenced by different communicative situations in the narrations of HSs and monolinguals?

Hypothesis 3.1:

If monolingual speakers produce some *new-given* referents, they will be more likely to do so in informal situations than in formal ones (in line with Slioussar, 2007; Slioussar, 2015; Sirotinina, 2003).

Hypothesis 3.2:

As for the HSs, it is expected that they will not differentiate between different communicative situations and produce *new-given* referents roughly equally frequently in all four language situations (e.g., Schroeder et al., in press).

RQ4:

Are there differences between HSs and monolingual speakers regarding the occurrences of *new-given* referents across different age groups (adolescent vs. adult speakers)?

Hypothesis 4.1:

Adolescent HSs may be closer to monolingual adolescent speakers while adult HSs may be more distinct from adult monolingual speakers of Russian (due to the decreasing input and use of Russian by adult HSs compared to adolescent HSs). [52]

Hypothesis 4.2:

Adolescent HSs may differ from adolescent monolingual speakers while adult HSs may be similar to adult monolingual speakers as some studies on HL showed for domains other than word order.

Hypothesis 4.3:

Adolescent and adult HSs will not differ from adolescent and adult monolingual speakers.

7.6 Annotation of information status

For the conceptual definitions of different categories of referents, the RefLex scheme (Riester & Baumann, 2017) was applied to the data of both HSs and monolingual speakers. Furthermore, in order to assign a particular category to a referent, the language-specific ways of expressing information status had to be taken into account. This chapter will present the RefLex scheme followed by the means of expression of (in)definiteness and information status in Standard Russian.

7.6.1 RefLex scheme

The annotation of information status in monolingual and heritage Russian follows the definitions and classification of different referents presented in the RefLex scheme (Riester & Baumann, 2017). RefLex provides a possibility to analyze spoken or written corpus data for two dimensions of information status: referential (r-level) and lexical (l-level).

[52] For hypotheses 4.1-4.3, see the previous Section 6.4 on the word order choice for the similar predictions and references to the respective studies.

As described earlier (chapter 7.1), information status describes the degree of givenness of referring expressions. The RefLex scheme allows for a detailed analysis of different referent types (see Riester & Baumann, 2017 for the full overview). For the current analysis, four referent types were annotated since they were the most frequent in the narrations and since not all referent types discussed in RefLex could be found in the data.

The following referring expressions were labeled in the data for referential information status:

- Noun phrases (NPs)[53] with their modifiers (e.g., that ball, a young couple)
- Quantified NPs (many cars, all the participants, some groceries)

Some annotation steps suggested by RefLex were sometimes tailored to the specific research questions of this thesis. Besides, sometimes some aspects of the scheme had to be clarified since they were not specified as detailed as it was need for the current annotations. Most importantly, RefLex primarily served as the conceptual guidelines for the annotation of the data in the current thesis since this scheme was not developed to annotate information status in Russian.

In RefLex, referring expressions are analyzed together with prepositional phrases (PPs). The reasons for this decision are the following: in some languages, determiners and a preposition are conflated (e.g., in German), and in some languages, a preposition is attached to the noun (e.g., in Finnish, Turkish, or Hungarian). Further, "the preposition linguistically "belongs" to the referring expression rather than to the embedding verb" (Riester & Baumann, 2017, p. 17). The reasons to mark the entire PP are clearly stated in RefLex. However, for the current analysis prepositions were not marked as parts of referring expressions for simplicity (since Russian does not behave like the languages described above, it was decided not to include PPs in the annotation). Moreover, the layer of information status was analyzed together with other layers, namely prosodic and syntactic. Prepositions can carry a pitch accent, and if they were included in the annotation of referents, it would complicate further analysis of the interplay between particular referents and pitch accents. Discourse particles (e.g., even, only, too) and temporal quantifiers (e.g., on Monday, always, often) were not marked as referring expressions.

The following types of referents have been marked in the data according to Riester and Baumann (2017, p. 5):

[53] In Russian literature, it is debated whether Russian has a determiner phrase (DP) level since Russian has no articles (e.g., Bošković 2004, 2005 does not assume a DP domain in Russian while Rappaport, 2002; Pereltsvaig, 2007; Linde-Usiekniewicz & Rutkowski, 2006 assume that there is a DP level in Russian) (all mentioned authors are cited by Bailyn, 2012, p. 43). I will use the term "noun phrase" descriptively meaning a noun with its modifiers without reference to the DP/NP debate.

Table 42 Annotation tags of the r-level (Riester & Baumann, 2017, p. 5)

Tag	Contextual class
Given	Referents mentioned in previous discourse context
Bridging	Discourse-*new* entities that depend on other expressions in the discourse context
Unused-unknown	Globally unique entities that are discourse-*new* and are independent of the discourse context
New	Non-unique discourse-*new* entities

Some details about *bridging* and *unused-unknown* referents are necessary since it may not be entirely clear which referents are meant by the description in Table 42. *Bridging* referents are those that are understood as unique due to the presence of a previous scenario or a frame. *Bridging* referents do not have a coreferential antecedent and they are not defined in terms of a part-whole relation. *Unused-unknown* referents are those that are *new* in the global context (first mention) and are not likely to be known by the listener but come with sufficient descriptive material to ensure identifiability (Riester & Baumann, 2017, p. 4). Since RefLex does not define what "sufficient descriptive material" is, for the current analysis the sufficient descriptive material was based on the referents that were inside a description. If the description included *given* or *bridging* referents or if the description referred to the referents that were previously mentioned, a discourse-*new* referent received the label *unused-unknown*. If the descriptive material was *new*, the referent was considered to be *new* as well.

The tags described in Table 42 were abbreviated as *g, b, u*, and *n* in the data. 23 referents that appear in the story most frequently have been selected for annotation of information status. EXMARaLDA was used for the annotation of the written data while Praat was used for the annotation of the spoken data. The full list of referents chosen for the analysis is given below:

man (with the ball), *woman1* (with the stroller), conjoined referent: *couple* (man and woman1), conjoined referent: *people* (all the people in the parking lot), conjoined referent: *family* (man+woman1+baby), *ball*, *stroller*, *baby*, *woman2* (with the dog), *dog*, *leash*, *groceries*, *trunk*, *car1* (blue one), *car2* (white one), *car3* (red one, it belongs to the woman with groceries), conjoined referent: *cars* (car1 + car2), *driver1* (blue car, calls 911), *driver2* (white car), conjoined referent: *drivers* (driver1 + driver2), *parking lot*, *road*, *police*.

7.6.2 Language-specific principles

It is important to point out that givenness influences the use of determiners/articles in languages which have them. Russian, as opposed to English and German, has no obligatory overt determiners to express (in)definiteness (Brun, 2001, p. 119). Since RefLex presents the data from the languages with articles, (English and German), the procedure of assigning an exact category to a referent in Russian could not be taken from this scheme.

Standard Russian uses three main ways of marking (in)definiteness: lexical, morphosyntactic, and syntactic. Also, except for the category of definite and indefinite, Russian NPs might be unmarked for (in)definiteness and their status can only be determined from the context (Brun, 2001). Lexically, (in)definiteness in Russian can be marked with some overt items that appear before an NP (e.g., deictic or possessive determiners or certain pronouns) (Brun, 2001, pp. 119-120). Among the morphosyntactic means to express (in)definiteness are agreement or lack of agreement between a noun and a modifying adjective denoting possession (agreeing adjectives mark indefiniteness while non-agreeing ones are unmarked for (in)definiteness) (Brun, 2001, pp. 120-121). Word order in a clause can also correlate with (in)definiteness: the closer an NP is to the beginning of a clause, the likelier it will be interpreted as definite. Furthermore, the position of the NP with respect to the verb is important: preverbally placed NPs tend to be read as definite while the interpretation of postverbally placed NPs depends on the context (Brun, 2001, pp. 123-126).

Once an NP is marked for (in)definiteness by lexical or morphosyntactic means, word order does not influence its interpretation. If, however, an NP is not marked for (in)definiteness by lexical or morphosyntactic means, its interpretation seems to be affected by word order (Brun, 2001, p. 126).

Previous research found the following associations between the position of *given* and *new* referents in a clause in Standard Russian. A typical scenario for a *given* and a *new* referent to appear in a clause is the following one:

- *Given* referent appears before a *new* referent
  (cf. Birkenmaier, 1979; Krylova & Khavronina, 1986; Yokoyama, 1986; Geist, 2010; King, 1995; Junghanns & Zybatow, 1997; Laleko & Dubinina, 2018)
- *Given* referent is preverbal while a *new* referent is postverbal
  (Geist, 2010)
- *New* referent is located at the right edge of a clause
  (Slioussar, 2007, pp. 200-201; Laleko & Dubinina, 2018, p. 194)

A typical position of *bridging* and *unused-unknown* referents in monolingual Russian is not clear since previous studies typically only focused on the position of *given* and *new* referents.

Below are some examples of each category of referents described in Table 42 from the data.

(39)

Context (absolute beginning of the story):
[Značit nedavno ja: stojal na parkovke vozle polosatogo z/ zdanija i: ja: ja uvidel (-) sledujuščee]
[So, I was recently standing in a parking lot next to a striped building and I saw the following]

Target:
Tam xodil (-) è [mužik]$_{new}$ s [ženščinoj]$_{new}$
there went man with woman
'A man with a woman were walking there.'

(USbi53FR_fs)

In example (39), *a man* and *a woman* received the label *new*, because they were mentioned in the story for the first time.

(40)

The story continues:
U [ženščiny]$_{given}$ byla [koljaska]$_{new}$ i u [mužika]$_{given}$ byl (-) è: [mjač]$_{new}$
at woman was stroller and at man was ball
'The woman had a stroller and the man had a ball.'

(USbi53FR_fs)

In example (40), *the woman* and *the man* received the label *given*, because they were previously mentioned while *a stroller* and *a ball* were *new* in the discourse and received the label *new*.

(41)

Context (in the middle of the story):
[Tem vremenem pod'exala k pešexodnoj dorožke: (-) sinjaja mašina i: szadi neë pod'exala serebrjannaja i oni stolknulis′]
[Meanwhile, a blue car drove up to the footpath and a silver car drove behind it and they bumped into each other]

Target:
i: (-) značit (-) è: [voditel′]$_{bridging}$ s (-) [sinej mašiny]$_{given}$ vyšel
and so driver with blue car got out
'And so, the driver got out of the blue car.'

(USbi77FR_fs)

In example (41), *the blue car* was previously mentioned and received the label *given*. *The driver* was not mentioned before and could be marked as *new*, but *the driver* appeared after the mention of *a blue car* which served as a scenario since every car typically has to have a driver. Thus, *the driver* is considered to be *bridging*.

Consider the following example:

(42)

Context:
[U neë byla sobaka. Sobaka vdrug begala za mjačom]
[She had a dog. The dog suddenly started running after the ball]

Target:
I [mašina]$_{\text{unused-unknown}}$, kotoraja exala rjadom bystro otstanovilas′
and car that drove nearby quickly stopped
'And a car that was driving nearby quickly stopped.'

(USbi04FR_fw)

In example (42), *a car* is *new* in the discourse, but it appears with the descriptive content that refers to the previously mentioned scenario (i.e., *nearby* means near the woman with the dog and the ball that was chased by that dog). Thus, the referent *car* received the label *unused-unknown.*

In addition to the category of a referent (*new, unused-unknown, bridging,* or *given),* the position of every referent within one clause was marked relative to the verb as either preverbal (PrV) or postverbal (PV). Also, the position of different referents within a clause was marked with a number depending on the referent's position relative to the verb. If a referent was placed preverbally, its clausal position was counted from the left edge. If a referent was placed postverbally, its position was counted from the right edge of a clause. Consider the following examples (43) and (44) for exemplification:

(43)

Context (all-*new*):
[Proxodjaščij mimo paren′ vyronil mjač].
[A guy that was passing by dropped a ball].

Target:

I	na [nego]$_{\text{given}}$	sreagirovala	[sobaka]$_{\text{new}}$
	PrV		PV
	0		0
and	on him	reacted	dog

'And a dog reacted to him.'

(RUmo01FR_iw)

In example (43), the *given* referent *him* is placed preverbally and receives the label PrV and it is placed clause-initially, thus receiving the number 0. A *new* referent *dog* is located postverbally clause-finally and receives the following labels: PV and 0.

(44)

V ètot moment [dorogu]$_{given}$ [para]$_{new}$ perexodila
PrV PrV
1 2
in this moment road couple crossed
'At that moment a couple was crossing the road.'

(RUmo06MR_iw)

In example (44), the *given* referent *road* is located preverbally (PrV) and on the left edge of a clause (number 1, because there is an adjunct "at that moment" before the referent *road*). A *new* referent *couple* is also placed preverbally (PrV) and receives the number 2 following the referent *road*. Although the order of referents is *given-new*, their position within a clause is not standard (at least not standard for a formal situation). The expected position for a *new* referent would be postverbal, clause-final.[54]

Here are the categories that were marked in the data for the information status of a referent:

Table 43 Categories annotated in the data regarding the information status of a referent

Tag	Meaning
r-type	Type of a referent on the referential level
r-verbpos	Position of a referent relative to the verb
r-clpos	Position of a referent in a clause

During data annotation, some difficult cases were encountered. For instance, the relationships between *a baby and a stroller* or *a dog and a leash*. The decision about their information status was made based on their sequence of appearing in the story:

(45)

Molodaja para s [rebënkom]$_{new}$ v [koljaske]$_{new}$ šli po tropinke
young couple with baby in stroller went on path
'A young couple with a baby in a stroller was walking along a path.'

(RUmo54MR_fw)

In example (45), both *a baby* and *a stroller* were marked as *new* since it is not necessarily the case that a child will be carried in a stroller (it could be an older child who did not need a stroller anymore). However, if the order of *a baby* and *a stroller* was reversed these referents seemed to have information status that differed from the one described in (45). Consider example (46):

[54] Such detailed annotation of referent position was performed due to the absence of the syntactic annotation in the RUEG corpus at the time of the annotation of the dataset for this thesis. Information status was annotated before the word order for this thesis since the word order layer was expected to be automatically annotated by one of the RUEG projects. Due to some difficulties regarding the automatic annotation of word order and its integration into the RUEG corpus, I manually annotated the data for word order and clause type (see Shadrova et al., in press for challenges of corpus data integration). Thus, although the detailed annotation of the position of referents was performed it was not used for the current analysis.

(46)

Context:
[Ja videla, kak para šla]
[I saw how a couple was walking]

Target:
Oni v [koljaske]$_{new}$ imeli [rebënočka]$_{bridging}$
they in stroller had baby
'They had a baby in a stroller.'

(USbi05FR_fs)

In example (46), *a stroll*er was marked as *new*, because it was not mentioned before. *A baby* was marked as *bridging* because the previous mention of *a stroller and a couple* creates a typical scenario for *a baby* to appear. The same logic was used for a pair of dog-leash. If *a dog* preceded *a leash*, both of them were marked as *new* since a dog does not necessarily need to be on a leash in the street (at least in Russia). On the contrary, if *a leash* was mentioned first a typical and expected referent following it would be *a dog*. Thus, in this case *a leash* would be marked as *new*, and *a dog* would be *bridging*.

I manually annotated most of the data (72 participants) used in this thesis for information status. The student assistant of the project annotated eight HSs from the adult group as part of her master's thesis and I checked these annotations for consistency. The student assistant of the project and I cross-checked the data of 32 speakers.

It has to be mentioned that although eight people have already been annotated as part of a master's thesis, the annotation of information status for the present thesis differs in a number of ways. First, I selected the 23 most frequent referents and annotated only those in contrast to the student assistant who annotated all the speech available from eight speakers. Second, I added two additional layers to the annotation: the position of a referent relative to the verb and the position of a referent in a clause. Third, the initial annotation of information status was based on the RefLex scheme (Riester & Baumann, 2017), but I extended the current scheme to clarify some questionable language-specific cases (e.g., how to determine if some referents have *bridging* relations based on word order or how to determine whether a referent is *new* or *unused-unknown* based on a descriptive material following the referent). Thus, the annotation of eight participants by the assistant of the project had to be changed and extended with respect to the aforementioned parameters.

All in all, the RefLex scheme was used to define different categories of referents while the assignment of a particular information status to a referent was guided by language-specific principles such as the position of a referent in a clause or the expression of a referent by lexical or

morphosyntactic means. In cases when none of the abovedescribed methods gave a straightforward answer about the information status of a referent the annotators examined the context of the narrations.

7.6.3 Simplification of the data

Since the annotation for the information status of referents was detailed, it was difficult to maintain such a level of detailing for further analysis. After the full annotation approximately 92 different combinations of referents were generated. Thus, data simplification was needed to get categories that were meaningful to statistical analysis and that were not too diverse.

The simplification of the data was performed in multiple steps. First, since the analysis of different combinations of referents is connected to different word orders only those referents that formed part of the word orders with a finite verb, one object (either a direct or an oblique), and an explicitly realized subject were selected.[55] After the selection of the aforedescribed word orders, 42 different combinations of referents were left. Furthermore, only instances in which both a subject and an object had a referent were included. Instances in which only a subject or an object had a referent were excluded. It could happen that a subject or an object had more than one referent each. In such cases, the referents were grouped where possible (e.g., if a subject contained a sequence of *given* referents it was described as a *given* subject). Cases of mixed referents on either object or subject were excluded.

At the end, 15 combinations of referents were left for further general descriptive analysis (*given-given, given-new, new-new, new-given, bridging-new, bridging-given, unused-given, new-unused, given-unused, given-bridging, unused-new, new-bridging, bridging-unused, bridging-bridging, unused-unused)*. For the statistical modeling, the three most frequently produced combinations of referents were taken (*given-given, given-new, new-new*).

7.7 Results

The first part of this chapter will present the results of the study on the syntactic expression of information status by HSs and monolingual speakers of Russian. It will start with a descriptive presentation of the data in order, so a reader can see which data set was taken for the statistical analysis. It will further describe the statistical modeling of the most frequently produced combinations of referents together with the frequent word orders. Further analysis will focus on the *new-given* combinations of referents that are unexpected according to the Standard grammar.

[55] The same word orders that were taken for the analysis of the word order choice presented earlier in chapter 6.6.1.

Specifically, their frequency and use across different word orders and communicative situations will be examined. Finally, the results will be summarized and discussed.

7.7.1 Descriptive overview

The overall number of different referents annotated in the data is 5753: 3348 for HSs and 2405 for monolingual speakers. Table 44 below shows the number of four referent types produced by the speakers of two groups:

Table 44 Number of referents of different types across two speaker groups

Speaker group	Given	New	Bridging	Unused
Monolinguals	1170	983	178	74
HSs	1869	1210	154	115

Table 45 below displays the number of each of the 15 combinations of referents that appeared in a particular word order. The first referent from the left corresponds to the first constituent of a particular word order while the second referent corresponds to the second constituent in a particular word order. For instance, for the SVO order, the sequence of referents *g n* means that the subject was *given* and the object was *new* while *g n* in the OVS order means that the object was *given* and the subject was *new*. The numbers in bold show the sum of a particular combination of referents (e.g., g-g or g-n).

Table 45 Number of specific referent combinations across six word orders

	g g	g n	nn	n g	b n	b g	u g	n u	g u	g b	u n	n b	b u	b b	u u
Monos	183	131	78	22	19	10	9	6	4	2	5	3	1	2	
SVO	112	59	56	15	14	5	8	6	2		3	3	1	2	
OVS	18	58	10		4				2	2	2				
SOV	45	6	6	7	1	5	1								
OSV	8	6	2												
VOS		1	2												
VSO		1	2												
HSs	352	187	90	61	23	21	21	9	8	8	4	2	2		1
SVO	269	98	68	40	12	18	13	8	5	1	3	1	2		1
SOV	66	8	2	13	6	2	8	1	1		1				
OVS	10	65	12		2				1	5					
VSO	3	2	8	7		1									
OSV	3	8		1	3										
VOS	1	6							1	2		1			

It can be seen that both speaker groups produced the three following combinations of referents most frequently: *given-given, given-new, and new-new*. Both speaker groups also produced combinations of *new-given* referents that were unexpected according to the Standard grammar of Russian. The descriptive results of the previous chapter (chapter 6.6.1) showed that some word orders were infrequent in productions of both speaker groups, namely OSV, VOS, and VSO. The present analysis shows that the number of these word orders is even less frequent compared to the

number of word order combinations reported in chapter 6.6.1 since only those word orders were selected whose subject and object were both marked for a referent type. Since the number of OSV and verb-initial word orders is low across HSs and monolinguals, these word orders will not be included for future descriptive analysis and statistical modeling. Moreover, less frequent combinations of referents will be grouped and form a category Other (see Figure 25 for a descriptive overview of the data).

Figure 25 Distribution of frequent referent combinations across three word orders

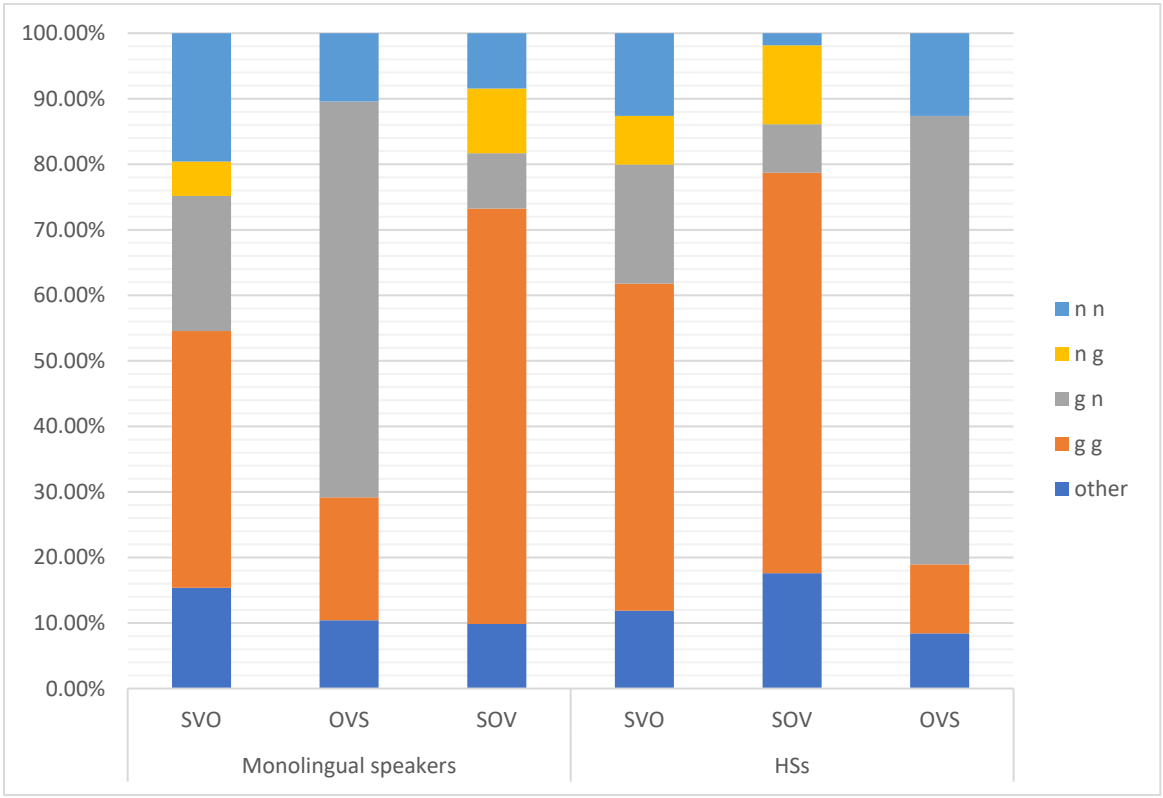


Figure 25 shows that the word order SVO frequently appeared in a combination where both subject and object were *given*. Also, SVO was often produced with the subject being *given* and the object being *new* as well as in *all-new* contexts where both subject and object were *new*. The combinations of frequent referents used in the SVO order are similar for both speaker groups.

The word order SOV mostly occurred with a combination in which both subject and object were *given*. Sometimes SOV also appeared in a combination in which the subject was *given* and the object was *new*, but such instances were infrequent. These trends hold for both speaker groups. Examples (47) a), b) illustrate the aforementioned trends:

(47)

a) Context:
[Slušaj sejčas (-) očen′ strannoe dètèpè videla. è: tam v obščem paren′ (-) a: perexodil dorogu s mjačom]
[Look I have just seen a very strange accident. So, a guy was crossing a road with a ball]

Target:
on ego vyronil
he him dropped
S_{given} O_{given} V
'He dropped it.'

(RUmo19FR_is)

b) Context:
[Šla para è: s s malyšom i s mjačom. Potom čerez dorogu: stojala ženščina s=sobakoj]
[A couple with a baby and a ball was walking. Across the street stood a woman with a dog]

Target:
Sobaka za mjačom pobežala
dog after ball ran
S_{given} Obl_{given} V
'The dog ran after the ball.'

(USbi02FR_is)

The word order OVS was frequently used to introduce *new* referents into the discourse, and it often occurred with the combination of the *given* object and a *new* subject in productions of both HSs and monolinguals, as examples (48) show.

(48)

a) Context:
[Guljaju ja, slušaju muzyku i tut vižu: mužčina idet s mjačom, i ètot mjač u nego ukatyvaetsja na dorogu]
[I am walking, listening to music and I see: a man walking with a ball and this ball is rolling onto the road]

Target:
A za mjačom bežit sobaka
and after ball runs dog
Obl_{given} V S_{new}
'And a dog is running after the ball.'

(RUmo63FR_iw)

b) Context:
[Segodnja ja byla svideteljam stolpotvorenie na parkovke]
[Today I witnessed a collision in a parking lot]

Target:
Čerez parkovku perexodila para- ženščina s koljaskoj i mužčina s mjačom
through parking lot crossed couple woman with stroller and man with ball
Obl_{given} V S_{new}
'A couple, a woman with a stroller and a man with a ball, was crossing the parking lot.'
(USbi50FR_fw)

The combination of referents *new-given* was not discussed here since it will be addressed in detail in chapter 7.7.3.

The descriptive overview of the data gives the impression that the two speaker groups have similar strategies regarding the distribution of frequent referent combinations across the frequent word orders. Also, no other factors (e.g., formality or mode) that may influence the distribution of referents were considered. To see whether the two speaker groups are similar to each other or not, I applied statistical modeling which will be presented in detail in subchapter 7.7.2.

7.7.2 Statistical modeling

To check whether speakers of the two groups were similar to each other regarding the preference of the frequent referent combinations across different frequent word orders a generalized linear mixed effect model was fit to the data using R (R Core Team, 2020) and RStudio (Rstudio Team, 2020) via lme4 package (Bates et al., 2015). The speaker group (monolinguals or HSs) was modeled as a dependent variable via the glmer function. To answer research question 1, the following independent variables were taken into account as fixed effects: *word order* (SVO, OVS, SOV) and *frequent referent combination* (g-g, g-n, n-n). Only three word orders were included since the frequency of other word orders that had a combination of two referents was low. Only three referent combinations were modeled since these were the most frequent ones produced by both speaker groups. The *speakers* were treated as a random effect.

The model included the interaction of the word order with the combination of referents to see if the word order itself had an influence on the speaker group or if it influenced the speaker group together with the referent combination. The dependent variable was dummy-coded: ru (1), us (0). The SVO word order was chosen as the reference level since it is the most frequent order in productions of both speaker groups. The referent combination *g-g* was chosen as the reference level since it occurred more often in SVO and SOV orders than other combinations of referents. Random slopes were not included in the model since they prevented the model from converging.

The results of the model are shown in Table 46.

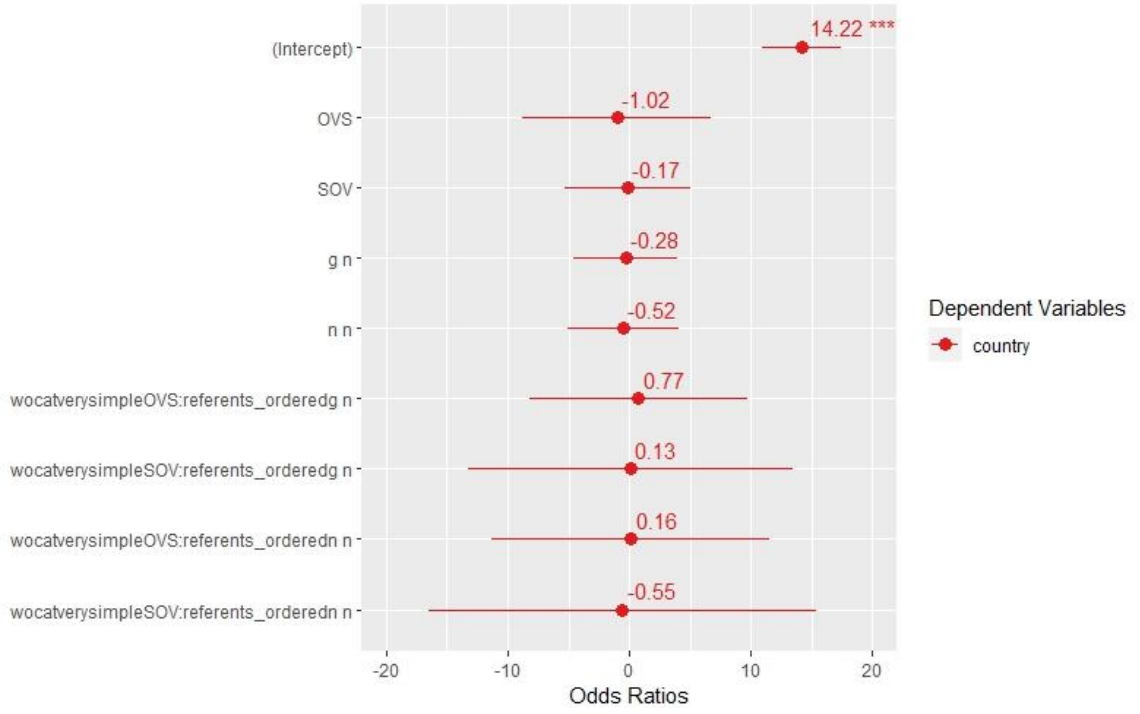
Formula: speakergroup_by_ref_and_wo = glmer(country ~ wocatverysimple * (referents_ordered) +(1|speaker), data=data_filtered_ref, family = binomial).

Table 46 Speaker group: Outcome of the generalized binominal linear mixed-effect model

	Estimate	Std. Error	z value	Pr(>|z|)
(Intercept)	14.2218	1.6775	8.478	<2e-16***
wocatverysimpleOVS	-1.0235	3.9399	-0.260	0.795
wocatverysimpleSOV	-0.1679	2.6391	-0.064	0.949
referents_orderedg n	-0.2832	2.1964	-0.129	0.897
referents_orderedn n	-0.5165	2.3224	-0.222	0.824
wocatverysimpleOVS:referents_orderedg n	0.7652	4.5875	0.167	0.868
wocatverysimpleSOV:referents_orderedg n	0.1272	6.8147	0.019	0.985
wocatverysimpleOVS:referents_orderedn n	0.1618	5.8331	0.028	0.978
wocatverysimpleSOV:referents_orderedn n	-0.5471	8.1673	-0.067	0.947

The model did not show any main effects or interactions, i.e., the two groups were indistinguishable from each other regarding the distribution of the most frequent referents in the three most frequent word orders (see Figure 26 below for the estimates of all main effects and their interactions).

Figure 26 The estimates of all main effects and their 95% confidence intervals: Speaker group



To sum up, HSs and monolingual speakers did not differ from each other regarding the frequent referent combinations in frequent word orders, i.e., HSs had knowledge about the pragmatically determined word order in Standard Russian (e.g., they mainly produced OVS order in which the object was *given* and the subject was *new*; the order SOV was frequently used with subject and object both being *given*).

7.7.3 *New-Given* referents: Overall picture

After the most frequent combinations of referents were discussed, this chapter will focus on the combination *new-given* since this combination is usually not expected to be found in Standard Russian (at least in formal speech). Both monolingual and HSs produced combinations of *new-given* referents. Consider examples (49) and (50).

(49)

Context:
[Privet. Ja sejčas šla po ulice i uvidela takuju kartinu. Paren′ vypustil iz ruk mjač, perexodja dorogu]
[Hi. I was walking down the street and I saw the following. A guy dropped a ball from his hands while he was crossing the road]

Target:
Sobaka kinulas′ za mjačom
dog rushed after ball
S_{new} V O_{given}
'A dog rushed after the ball.'

(RUmo19FR_iwR)

(cf. za mjačom kinulas′ sobaka)
O_{given} V S_{new}

In example (49), the speaker uses the SVO order in which a *new* referent *dog* infelicitously appears before the *given* referent *ball*. A neutral ordering of constituents taking the information status into account would be OVS since, in a standard scenario, *given* referents appear before *new* ones, and additionally *new* referents appear postverbally clause-finally.

(50)

Context:
[ja: [throatclearing] nevol′no okazalas′ očevidcem è: n n è situatcii kogda: (-) a: [throatclearing] stolknulis′ dve mašiny]
[I: [throatclearing] I accidentally witnessed a situation when: (-) a: [throatclearing] two cars bumped into each other]

Target:
èto: proizošlo i/ iz-za togo čto: na dorogu vykatilsja mjač
this happened due to what on road rolled ball
'It happened because a ball rolled on a road.'

I: sobaka na povodke rvanulas′ za mjačom
S_{new} V Obl_{given}
'And a dog on a leash ran after the ball.'

(RUmo24FR_fs)

(cf. i za mjačom rvanula sobaka na povodke)
Obl_{given} V S_{new}

In example (50) one would expect the speaker to change the word order from SVO to OVS due to the requirements of information status.

Here are some examples (51) of *new* before *given* produced by HSs.

(51)

Context:
[Zdravstvuite. Ja ne davno videla dve mašiny v avarii]
[Hello. I recently saw two cars in an accident]

Target:

Odin	čelovek	pnul	mjač	v	ulicu	i	#sobaka	za	nei	pobežala
							S_{new}	Obl_{given}		V
one	man	kicked	ball	in	street	and	dog	after	her	ran

'One man kicked a ball into the street and a dog ran after it.'

(USbi58FR_fwR)

(cf. i	za	nim	pobežala	sobaka)
	Obl_{given}		V	S_{new}

In example(51), a *new* referent *dog* is placed before the *given* referent *ball* and the speaker uses SOV order instead of the expected OVS.

(52)

Context:
[Mužčina deržavščij mjač i ženščina s koljaskoj vmeste proxodili vtoruju ženščinu s sobakoj, kotoraja razbirala produkty iz bagažnika v sumku]
[A man who was holding a ball and a woman with a stroller together were passing a second woman with a dog who was unloading groceries from the trunk into a bag]

Target:

# V	èto	vremja,	proezžjali	dve	mašiny	za	nimi
			V	S_{new}		Obl_{given}	
in	this	time	passed	two	cars	after	them

'At this time two cars were passing behind them.'

(USbi60FR_fwR)

(cf. V	èto	vremja	za	nimi	proezžjali	dve	mašiny)
			Obl_{given}		V	S_{new}	

In example (52), the word order OVS would be expected to satisfy the requirement of information status (*new* referents typically appear postverbally, clause-finally, and after the *given* referents).

(53)

Context:
[Ja šla po ulice i: ja uvidela kak mašina stuknula druguju mašinu]
[I was walking down the street and I saw how a car hit another car]

Target:

čto	proizošlo	èto	(-) čto	mužčina:	kinul	mjač	i:	#sobaka	pobežala	za mjačom
								S_{new}	V	Obl_{given}
what	happened	this	what	man	threw	ball	and	dog	ran	after ball

'What happened is that a man threw a ball and a dog ran after the ball.'

(USbi10FR_isR)

(cf. i: za mjačom pobežala sobaka)
Obl_{given} V S_{new}

In example (53), the word order SVO does not reflect the information status of the referents. The expected word order in this case is OVS.

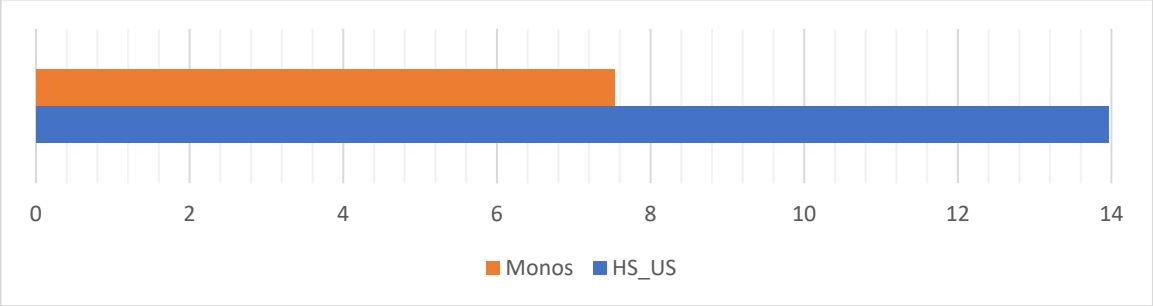
Sixteen monolingual speakers produced 22 clauses in which *new* referents were placed before *given* referents (8 adults, N of referents = 13; 8 adolescents, N of referents = 9). 31 HSs produced 61 clauses with *new-given* referents (15 adults, N of referents = 32; 16 adolescents, N of referents = 29). HSs produced clauses with *new-given* referents across four word orders (SVO, SOV, VSO, and OSV) while monolinguals did so in two word orders (SVO and SOV). As for the monolinguals, half of the *new-given* clauses contained an object expressed by a pronoun while the other half of the clauses had an object marked by a noun. As for the HSs, 23% of the objects were expressed by a pronoun while 77% of the *new-given* clauses contained an object marked by a noun. Thus, HSs used pronouns less frequently than monolingual speakers in the abovedescribed contexts.

The numerical difference of *new-given* referents between HSs and monolinguals might be connected to the fact that HSs produced more utterances than monolinguals and thus had more instances of *new-given*. For each participant, the percentage of clauses with *new-given* referents was calculated, out of all clauses that include discourse-*new* referents (*bridging, unused, new*), (see Table 45 for the absolute numbers of different referent combinations across six word orders). The number of clauses with different discourse-*new* referents was 292 for monolingual speakers and 437 for HSs in the US. Clauses in which both referents were *given* as well as clauses in which only one constituent was annotated for a referent were excluded.[56] Furthermore, since many

[56] The clauses with g-g were excluded since these were the repetitions of previously introduced discourse-*new* referents, i.e., if some speakers repeated the information about the same referents multiple times (they spoke longer), this repetition would distort (reduce) the ratio of *new-given* referents in their production. Clauses in which only one constituent was annotated for a referent were also excluded since in these cases it was impossible to talk about a combination of referents.

participants did not produce clauses with *new-given* and *given-new* referents, the analysis of their percentage was not effective.[57] Figure 27 shows that HSs produced around 14% of *new-given* referents in their data while monolingual speakers produced *new-given* referents in around 7.5% of their data.

Figure 27 Distribution of new-given referents
(in relation to all clauses with discourse-new referents)



In order to see whether the numerical difference between HSs and monolinguals is statistically significant the following tests were applied. First, the Shapiro-Wilk normality test was performed.[58] The test showed that the data of both HSs and monolinguals are not normally distributed (HSs: W = 0.78538, p = 3.405e-06; Monolinguals: W = 0.72639, p = 2.713e-07). Since the data distribution was not normal, the two-tailed unpaired Wilcoxon Rank Sum Test was calculated.[59] The results of the test revealed that the difference between the two groups was significant (W = 500, p = 0.002775), i.e., HSs produced significantly more clauses with *new-given* referents than monolingual speakers.

Since the majority of the clauses with *new-given* referents appeared in the utterances with the SVO order, I also examined whether the distribution of such referents is similar between HSs and monolinguals applying a similar method to that described earlier. Twelve monolingual speakers produced 15 clauses with *new-given* referents (6 adults, N of referents = 9; 6 adolescents, N of referents = 6) while 23 HSs produced 40 clauses with *new-given* referents (11 adults, N of referents = 23; 12 adolescents, N of referents = 17). Monolingual speakers had 40% of the *new-given* referents in which an object was expressed by a pronoun while HSs had 12.5% of such referents. Overall, HSs produced an object marked by pronoun less frequently than monolinguals did in the abovedescribed contexts.

[57] It is not possible to statistically compare such clauses with the help of the Wilcoxon Rank Sum Test due to many zeroes and ties.

[58] The null hypothesis for the Shapiro-Wilk test is that the data are normally distributed. If *p* is smaller than 0.05 the null hypothesis is rejected and the data cannot be considered to be normally distributed.

[59] Wilcoxon Rank Sum Test is used for independent samples, i.e., when the productions of different speaker groups are compared.

As previously discussed, to check for the significance of the effect, the Shapiro-Wilk normality test was performed. The test showed that the data of both HSs and monolinguals are not normally distributed (HSs: W = 0.79773, p = 6.076e-06; Monolinguals: W = 0.5094, p = 5.831e-10). Since the data distribution was not normal, the two-tailed unpaired Wilcoxon Rank Sum Test was calculated. The results of the test revealed that the differences between the two groups were significant (W = 550, p = 0.0347), i.e., HSs produced significantly more *new-given* referents than monolingual speakers in the utterances with the SVO order.

7.7.3.1 *New-given* referents: Communicative situations

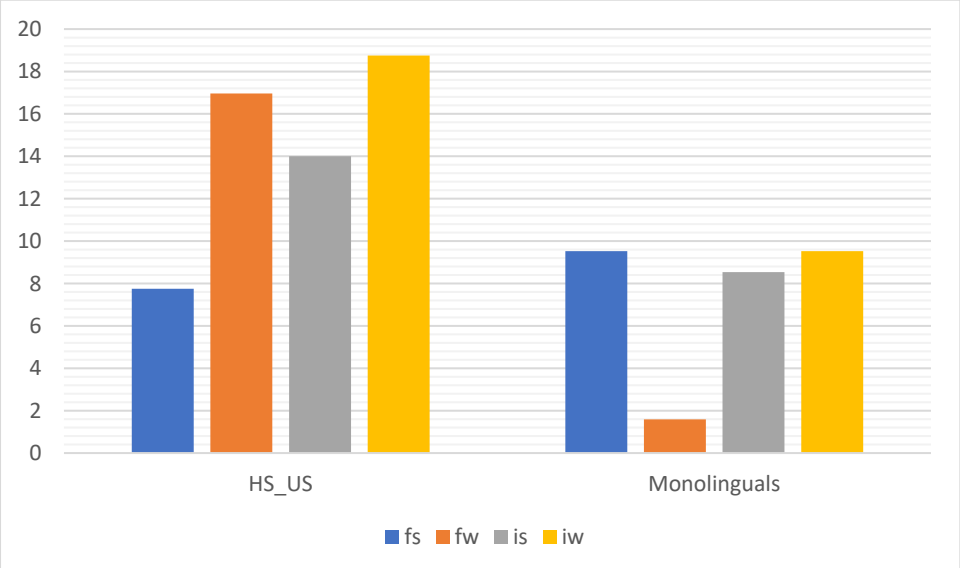
Another piece of the puzzle that needs to be addressed is the distribution of *new-given* referents across different communicative situations. The absolute overall number of clauses with *new-given* referents and clauses with all discourse-*new* referents (13 combinations described earlier in chapter 7.7.3) across all word orders and different communicative situations is displayed in Table 47.

Table 47 Number of new-given and other discourse-new referents in different situations

	HSs *new-given*	HSs other discourse-*new*	Monolinguals *new-given*	Monolinguals other discourse-*new*
Formal spoken	10	129	8	84
Formal written	19	112	1	63
Informal spoken	14	100	7	82
Informal written	18	96	6	63

Figure 28 shows the distribution of *new-given* referents in four communicative situations relative to the other combinations of discourse-*new* referents.

Figure 28 Distribution of new-given referents in four communicative situations (in relation to all clauses with discourse-new referents).



It can be seen that monolingual speakers produce *new-given* combinations similarly frequently in all situations (circa 9-10%) except for the formal written situation where monolinguals almost do not produce *new-given* combinations (only one instance). HSs produce *new-given* combinations in every situation and their frequency is higher than the frequency of *new-given* combinations produced by monolingual speakers. Further, HSs produced *new-given* combinations more frequently in the written than in the spoken situations. The situation HSs produced the least number of *new-given* combinations was the formal spoken situation.

As for the SVO utterances, the results are similar to the ones across all the word orders. Specifically, HSs produced *new-given* referents across all formalities and modes. Monolingual speakers produced *new-given* in almost all the investigated situations, except for the formal written one where they only had one instance of *new-given*.

The results of this chapter can be summarized as follows. HSs and monolingual speakers were indistinguishable from each other regarding the distribution of the most frequent combinations of referents (g-g, g-n, n-n) across the most frequent word orders (SVO, OVS, SOV). As for the *new-given* referents that were unexpected in formal Standard Russian, both speaker groups produced such combinations. HSs were found to produce such combinations significantly more often than monolingual speakers, across all word orders and in SVO utterances in particular. Finally, HSs produced *new-given* referents across all communicative situations approximately equally in frequency. Monolingual speakers produced *new-given* referents in three communicative situations except the formal written one where there was only one instance of *new-given*.

7.8 Summary of the results and discussion

This subchapter aimed to investigate the syntactic expression of information status by HSs of Russian in the US and monolingual speakers of Russian. Besides, this chapter focuses on the combinations of the referents that are not expected to appear in Standard formal Russian (i.e., *new-given* sequences). In what follows I will address different research questions in detail.

The first research question focused on whether the distribution of frequent combinations of referents across frequent word orders was similar in the narrations of HSs and monolingual speakers. The data confirm Hypothesis 1.1 according to which the two speaker groups were not expected to differ from each other regarding their preference for frequent referent combinations across frequent word orders. HSs and monolinguals were not found to differ from each other regarding their preference for the frequent referent combinations (i.e., g-g, g-n, n-n) in three frequent word orders (i.e., SVO, OVS, and SOV). It was found that HSs produced the frequent word orders according to the underlying discourse principles that govern word order variation in

Standard Russian (e.g., OVS was frequently produced to introduce *new* referents into the discourse, SOV was frequently produced with both subject and object being *given*, SVO was frequent with both subject and object being *given,* or *given* subject and *new* object, or in *all-new* contexts).

These results are in accordance with Kisselev (2019) and can be explained by the overall high fluency level of HSs in Russian measured by speech rate that was comparable in the two groups (HSs: 114 words/minute, monolinguals: 119 words/minute). Further, high involvement with Russian (e.g., use of media in Russian, regular talks in Russian with the caregivers) and rather high overall performance in Russian (no dramatic restructuring and simplification in different areas of grammar) by HSs could have contributed to their sensitivity to the underlying discourse principles that govern word order variation in Standard Russian.

The data reject Hypothesis 1.2 according to which the two speaker groups were expected to differ from each other regarding their preference for frequent referent combinations across frequent word orders. The possible discrepancy between the results of this thesis and the previous studies is possibly connected to the differences in the methodology. Both Laleko and Dubinina (2018) and Ivashchyk (2019) concentrated on the pragmatically non-felicitous word orders of HSs while this thesis focused on the three most frequently produced combinations of referents, i.e., this thesis did not make any statements regarding the contextual appropriateness of the frequent referent combinations.

The second research question focused on whether there are combinations of *new-given* referents in productions of HSs and monolingual speakers across different word orders. Also, this research question addressed the frequency of such instances. The results refute the predictions of Hypothesis 2.1 for monolingual speakers. Specifically, it was predicted that monolingual speakers would not show any instances of *new-given* referents, or such instances would be extremely infrequent. The results of this thesis showed that sixteen monolingual speakers (8 adults and 8 adolescents) produced 22 clauses with *new-given* referents. These results go against the findings by Kisselev (2019) who did not find any non-standard word orders produced by monolingual speakers of Russian. These results also go against the report by Laleko and Dubinina (2018) who showed one single instance of the contextually inappropriate SVO order produced by a monolingual speaker.

The difference between the results of this study and the two abovementioned studies may be due to differences in task and methodology. Kisselev (2019) elicited written essays asking a question about who a friend is. It is possible that such written and rather formal production did not yield any instances of *new-given* by monolingual speakers since formal written productions

are usually the most conservative in Standard Russian. Although Laleko and Dubinina (2018), similar to this study, elicited semi-spontaneous spoken narrations, the authors did not explicitly reveal the exact criteria for identifying the contextually infelicitous clauses. It is possible that the differences in methodology between Laleko and Dubinina (2018) and this study might have led to different results.

The results of this thesis are in line with Luchkina and Cole (2021) who report on the existence of some *new-given* referents in two published Russian texts. Luchkina and Cole (2021) do not attempt to explain their findings. The possible reason for the use of *new-given* referents by monolingual speakers of this thesis will be discussed in detail in the next section in relation to the different communicative situations.

The results of this thesis confirm the predictions of Hypothesis 2.2 according to which HSs were expected to produce *new-given* referents with a higher frequency compared to monolingual speakers. Indeed, 31 HSs (15 adults and 16 adolescents) in this thesis produced 61 combinations of *new-given* referents, and the frequency of such referents was significantly greater compared to monolingual speakers. These findings are in line with some previous studies on the word order and information status/structure in heritage Russian in the US that report that HSs produce more instances of pragmatically unexpected referents than monolingual speakers (Kisselev, 2019; Laleko & Dubinina, 2018).

The difference between the two speaker groups regarding the frequency of *new* before *given* referents can be explained in the context of the Interface Hypothesis. The Interface Hypothesis originally aimed to describe highly proficient L2 learners and bilingual first language (L1) acquisition, but it was extended to other groups of bilinguals, namely HSs (e.g., Van Osch et al., 2014; Montrul & Polinsky, 2011; Montrul, 2010; Pascual y Cabo et al., 2012; Hoot, 2017). The Interface Hypothesis draws on the difference between two types of interfaces: (Sorace & Serratrice, 2009, p. 197 referring to Chomsky, 1995 and Jackendoff, 2002):

- Those between the sub-modules of language (e.g., syntax-semantics interface that "involves formal features and operations within syntax and Logical Form")
  (Sorace & Serratrice, 2009, p. 197 citing Tsimpli & Sorace, 2006)
- Those between language and non-linguistic cognitive systems (e.g., syntax-discourse interface that "involves pragmatic conditions that determine appropriateness in context")
  (Sorace & Serratrice, 2009, p. 197 citing Tsimpli & Sorace, 2006)

The interfaces between the sub-modules of language are referred to as internal interfaces while the interfaces between language and non-linguistic cognitive systems are referred to as external interfaces. According to the Interface Hypothesis, phenomena that lie at the external interface are predicted to have an increased variability under language contact. Such variability can arise as a result of contact-induced developments (i.e., bilingualism itself) or a result of processing differences between monolingual and bilingual speakers. Transfer is not assumed to explain the variability between monolingual and HSs (Sorace, 2011, p. 14). External interfaces might be more challenging than internal interfaces since the former require integration of information from different domains of grammar (e.g., syntax and information structure), and such integration involves more processing efforts than phenomena at the internal interfaces involve (Sorace & Serratrice, 2009). Processing differences between monolingual and bilingual speakers manifest themselves in the latter speaker group having fewer processing resources than the former group. The reason why bilingual speakers may have fewer processing resources than monolingual speakers has to do with the process of language inhibiting. Bilinguals need to constantly inhibit one of their languages and inhibition requires great processing costs. As a result, bilingual speakers may have fewer attentional resources for linguistic tasks (Sorace, 2011).

Some studies prove the predictions of the Interface Hypothesis reporting that external interfaces are more challenging for bilingual speakers than internal interfaces (e.g., Van Osch et al., 2014 on gender agreement in HSs of Spanish in the Netherlands and the differences between morpho-syntax and syntax-discourse interface; Montrul, 2010 on clitics, clitic left dislocations, and differential object marking by HSs of Spanish in the US; Sorace & Filiaci, 2006 on the interpretation of anaphora by advanced L2 learners of Italian with L1 English; Sorace & Serratrice, 2009 on the acceptability of different constructions at the syntax-semantics and syntax-discourse interface by bilingual children; Pascual y Cabo et al., 2012 on Spanish mood by HSs of Spanish with the ML English).

Other studies, however, challenge the assumptions of the Interface Hypothesis (Slabakova et al., 2012 on the successful acquisition of syntax-discourse interface by near-native L2 learners of Spanish with L1 English; Slabakova & Ivanov, 2011 on the question of whether internal and external interfaces are different; Méndez et al., 2015 on sensitivity to the discourse appropriateness of Clitic Left Dislocation and Fronted Focus by bilingual speakers of Spanish of different groups residing in the US, L2 learners and HSs, who did not differ from monolingual speakers; Leal et al., 2014 on the successful acquisition of clitic right dislocation in HSs of Spanish; Jin et al., 2022 on the successful acquisition of nominal reference in heritage Mandarin Chinese).

Some research reports that internal interfaces might be more challenging for bilingual speakers than external interfaces (Zubizarreta & Nava, 2011). Zubizarreta and Nava (2011) found that it was more challenging for L2 learners of English with L1 Spanish to acquire English prosody in thetic sentences (i.e., at the internal interface of syntax-prosody) than in sentences that involved narrow focus (i.e., at the external interface of prosody and information structure). At the same time, Zubizarreta and Nava (2011) found a different pattern for L2 learners of Spanish with L1 English that confirms the predictions of the Interface Hypothesis about the external interfaces being more challenging for bilingual speakers than the internal ones.

The results of the frequency of *new-given* referents in the narrations of HSs and monolinguals confirm the predictions of the Interface Hypothesis. The phenomenon discussed so far lies at the external interface of syntax (i.e., word order) and discourse (information status), and it was found that this interface was challenging for HSs. The Interface Hypothesis offers two explanations of the HSs' outcomes, namely contact-induced developments and differences in processing between HSs and monolinguals.

The performance of HSs may have to do with the extra processing costs that are required for the integration of syntactic knowledge (i.e., word order) and knowledge from other domains (here information status). Such integration may be more challenging for HSs than for monolinguals since the former speakers need to inhibit one of their languages all the time, and as a result may be less attentive to linguistic tasks (Sorace & Serratrice, 2009, p. 199).

It is possible that the results can be also explained with reference to contact-induced developments that stem from the general feature of being bilingual. The idea is that the constant exposure of bilingual speakers to the various linguistic structures of their ML and HL as well as different quantity and quality of input in the HLs may lead to the outcomes of HSs that differ from the ones of monolingual speakers (see Zuban et al., 2023; Sorace & Serratrice, 2009 for similar conclusions).

In line with the Interface Hypothesis, transfer from the ML does not seem to be a plausible explanation of the results of the current thesis since English also follows the *given-new* principle (Haviland & Clark, 1974; Arnold et al., 2000; Chen & Lei, 2012; Junge et al., 2015; Bock & Irwin, 1980;). Thus, it is difficult to predict a direct transfer of the *new-given* form English.

A general remark about the frequency of *new-given* referents is necessary. The instances of *new-given* referents were counted in all four productions of HSs and monolinguals, i.e., in spoken and written as well as in formal and informal situations. One of the reasons for the occurrence of *new-given* referents could be related to the task in which participants had to describe a car accident four times, and every time they had to describe an accident, they became more and more familiar

with the story. As a result, they might have neglected the addressee's perspective who was not familiar with the story. However, such an assumption is doubtful due to the following reasons. First, situations that involved the difference in formality were always separated by a break (either an informal chit-chat or a more formal conversation) to ensure that participants did not retell what they saw four times in a row. Second, in written productions, (both formal and informal) participants had time to formulate their message without any time pressure, i.e., participants could reread what they wrote paying attention to the text organization. Thus, the frequency of *new-given* referents produced by both speaker groups cannot be solely influenced by the experimental setup.

The third research question focused on whether the frequency of *new-given* referents is influenced by different communicative situations in the narrations of HSs and monolinguals. The results of this thesis reject Hypothesis 3.1, which stated that monolingual speakers would produce *new-given* referents in informal situations but not in formal ones. Monolingual speakers, contrary to the expectations, did not only produce *new-given* referents in informal situations, but they also did so in formal spoken situations. The only situation where monolinguals almost did not produce such combinations was the formal written one (only 1 instance attested in the data).

The results of the thesis confirm Hypothesis 3.2 according to which HSs were expected to produce *new-given* referents in every communicative situation. Indeed, HSs in this thesis produced *new-given* referents in every communicative situation roughly equally in frequency (although they did so slightly less frequently in the formal spoken situation).

The results showed that HSs produced contextually unexpected *new-given* referents in every situation and such outcome points to register-leveling processes in productions of HSs that would mean that HSs expand the use of *new-given* combinations, which are permissible in informal situations in monolingual Russian, to formal situations. Such expansion may be caused by the lack of formal education in the HL as well as by the fact that HSs do not usually need to communicate in Russian in official situations. These results support the studies on register-leveling by HSs. For instance, Schroeder et al. (in press, on *new* postverbal referents in Turkish), Wiese et al. (2022, on bare NPs and V3 structures in German) and Alexiadou et al. (2022, on a plural indefinite article *kati* in Greek) found that the patterns typical for informal speech in productions of monolingual speakers were generalized to formal speech in a HL of HSs, leading to register leveling.

Interestingly, the results of this thesis showed that monolingual speakers produced *new* before *given* combinations not only in informal situations but also in formal spoken ones. These findings refute the findings of the abovementioned studies (Schroeder et al., in press; Wiese et al., 2022 on bare NPs and V3 structures in German; Alexiadou et al., 2022) regarding the behavior of monolingual speakers who were found to produce unexpected linguistic patterns in informal

situations but not in formal ones. The results of this thesis support the results of one of the studies described in Wiese et al. (2022) on monolingual and heritage Greek. In Standard Greek, restrictive relative clauses introduced by a complementizer *pu* are claimed to appear in colloquial speech. It was found that, contrary to the previous claims on monolingual Greek, monolingual speakers in this study use *pu* not only in informal but also in formal situations. These results are interpreted as a process of register leveling in the monolingual group.

The results of this thesis regarding the behavior of monolingual speakers of Russian can be also viewed as a process of register leveling, i.e., the pattern that is acceptable in the informal speech started to extend to the formal spoken situation. The formal written situation stayed intact since this is the most conservative situation in Standard Russian (e.g., Sirotinina, 2003 for Russian; Labov, 1972, Ortíz-Lo´pez, 2000 cited by Flores, 2015, p. 254 on formal and written language that is less prone to variation than colloquial language). Such an ongoing process of language change in monolingual Russian may have to do with the quality of the input that monolinguals receive in spoken Russian. Nowadays both adolescent and adult speakers' input frequently comes from social media or YouTube channels where a rather informal language is used (dialogues, blogs with short sentences, recipes, etc). This could lead to the extension of informal language to formal spoken situations.

It is also possible that the combinations of *new-given* already existed in formal situations in Standard Russian, but were not clearly reported in the literature. Alternatively, the type of formal speech elicited in this thesis differs from the formal speech that is usually described in the literature on Standard Russian. The literature on monolingual Standard Russian reports the formal spoken situations to be close to the formal written ones (e.g., Sirotinina, 2003). For instance, Zorina (2018) describes formal speech as the one from scripted scientific presentations and lectures that are read out loud and thus closely adhere to the principles of formal written Russian. Sirotinina (2003) also analyzed scientific formal speech in lectures.

Unlike scripted speech discussed in Zorina (2018) formal speech in this study is spontaneous. Furthermore, unlike both Zorina (2018) and Sirotinina (2003) formal speech in this study is not scientific, but speech about everyday topics used in a more formal situation with a policeman. It is plausible that scientific spoken language closely follows the principles of formal written speech since scientific topics are in general quite difficult to understand and if information structure does not adhere to the standard, most conservative principles, such speech will be even more difficult to understand. In a police report, it is easier to identify what is meant since the topics of such reports refer to real-life situations, and such speech probably relies less extensively on the conservative principles of discourse organization. Thus, the formal spoken speech elicited in this

thesis seems to be less formal than the one presented by Zorina (2018) and Sirotinina (2003). In this case, it is possible that monolingual speakers did not consider a spoken police report to be formal.

If monolingual Russian undergoes internal change, then heritage Russian in the US shows similar processes that are amplified in language contact (and are thus already visible in both formal spoken and written situations by HSs but are only visible in the formal spoken situations by monolinguals) (Flores, 2015, p. 254 citing Salazar, 2007; Silva-Corvalán, 1986). If no internal language change is taking place in monolingual Russian, the register-leveling found in HSs can be explained by the lack of formal education. In this case, if HSs had had formal instruction in Russian, they probably would not have produced the instances of *new -given* in the formal written situation since they would have known that this situation is pretty conservative in Standard Russian. These results potentially mirror the results of the use of the OVS order where it was found that HSs produced fewer OVS utterances, but they only did so in formal situations and not in informal ones.

The fourth research question focused on whether there is an age effect regarding the occurrences of *new-given* referents across the two speaker groups. The data did not give evidence for Hypotheses 4.1-9.4 according to which either adolescent or adult HSs were predicted to differ from adolescent or adult monolingual speakers. The results of the thesis confirm Hypothesis 4.3 which predicted that HSs of different age groups would not differ from monolingual speakers of different age groups. It was found that adult monolingual and HSs (monos: 60%; HSs: 52% of all *new-given)* as well as adolescent monolingual and HSs (monos: 40%; HSs: 48% of all *new-given)* produced *new-given* referents at a similar rate.

Since it was found that both HSs and monolingual speakers do not always employ syntactic means to express the information status of referents, the next interesting question is to see whether and how the two speaker groups employ other strategies, namely intonation to express the information status of *new* referents. The next subchapter will focus on the intonation pattern of S_{new} and O_{given} utterances in narrations of heritage and monolingual speakers. The restriction to the SVO utterances is due to their most frequent occurrence in the data of both speaker groups.

7.9 Prosodic expression of *new* subjects: Research questions and hypotheses

Taking the previous studies on prosody in monolingual and heritage Russian into account, the current thesis aims to answer the following research question:

RQ1:

If the information status of S_{new} in $S_{new}VO_{given}$ utterances is not marked syntactically how are *new* subjects expressed prosodically regarding their pitch accent placement, type, and other prominence cues (i.e., boundary insertion and a decrease of the prominence of the verb and/or object)?

Prediction 1.1:

Monolingual speakers will place a pitch accent on S_{new} due to its information status, and a frequent pitch accent type will be a rising one (Janko, 2001, p. 26; Alter & Junghanns, 2002, pp. 85-86; Jasinskaja, 2016, p. 711).

Prediction 1.2:

HSs will place a pitch accent on S_{new} due to its information status either following the pattern in their ML or in their HL (Kügler & Calhoun, 2020; Jasinskaja, 2016). As for the pitch accent type, if there are traces of cross-linguistic influence from the ML, HSs will frequently place an H* accent on S_{new} (Pierrehumbert & Hirschberg, 1990; Katz & Selkirk, 2011; Sityaev & House, 2003).

Prediction 1.3:

As for the boundary insertion after S_{new}, HSs may employ this strategy together with a pitch accent of a particular type as reported by Ivashchyk (2019, p. 81). As for the monolinguals, they may also use phrasing as a strategy to mark S_{new}, but whether they apply phrasing more frequently than HSs remains to be investigated.

Prediction 1.4:

HSs will employ pitch range modification, namely, downstep on the verb or object to increase the prominence of S_{new}, and they will do so more often than monolingual speakers (Zuban et al., 2023).

In addition to pitch range modification, the prominence of S_{new} can be also increased if the following pitch accents are less prominent compared to the one on S_{new}. For instance, if S_{new} is produced with an H* accent, the verb and/or the object may receive an L* accent or no accent at all. HSs in the US may increase the prominence of S_{new} by deaccenting the verb and/or the object (Ivashchyk, 2019). As for monolingual speakers, they may also decrease the prominence of the verb and/or the object, but how frequently this strategy is used compared to HSs remains to be examined.

7.10 Results

This section will present the results on the intonational patterns of *new* subjects in $S_{new}VO_{given}$ utterances. $S_{new}VO_{given}$ utterances were investigated regarding different prosodic phenomena to mark S_{new}, such as pitch accent placement and type, phrasing, and an increase of S_{new} prominence by decreasing the verb/object prominence. The speaker groups produced the following number of $S_{new}VO_{given}$ spoken narrations: HSs (N = 18) and monolingual speakers (N = 10). Overall, S_{new} was always accented by all speakers.

7.10.1 Intonation of $S_{new}VO_{given}$ utterances

The intonation of $S_{new}VO_{given}$ utterances will be presented. 10 monolingual speakers (six adolescents, four females, and four adults, all females) and 14 HSs (five adolescents, four females, and nine adults, eight females) produced $S_{new}VO_{given}$ utterances. Every monolingual speaker produced one $S_{new}VO_{given}$ utterance while three HSs produced two or three $S_{new}VO_{given}$ utterances. Overall, HSs produced 18 $S_{new}VO_{given}$ utterances (six in the formal spoken context and 12 in the informal spoken context) while monolingual speakers produced 10 $S_{new}VO_{given}$ utterances (seven in the formal spoken context and three in the informal spoken context).

7.10.1.1 Heritage speakers

The intonation of *new* subjects was compared to the intonation of *given* subjects in $S_{given}VO_{given/new}$ utterances.[60] First, the narrations of HSs will be presented. Overall, the data inspection shows that HSs do not clearly use any of the investigated prosodic means to mark S_{new}. However, some speaker-specific strategies to highlight S_{new} emerge in the data (see Table 48 for different prosodic cues in the data of HSs).

[60] Initially, only the instances of $S_{given}VO_{new}$ should have been included, but due to the lack of data from both speaker groups the instances with $S_{given}VO_{given}$ were also included. Also, three HSs in the US did not have any narrations of SVO suitable for the analysis, so their data are missing. S_{given} and $O_{given/new}$ are both full NPs in the data of both speaker groups.

Table 48 Prosodic patterns of $S_{new}VO_{given}$ and in $S_{given}VO_{new/given}$ by heritage speakers

Speaker ID	S_{new}	V	O_{given}	S_{given}	V	$O_{new/given}$
1	L+H* L%	L*+H	!H*+L L%	-	-	-
2	H*	!H*	L*+^H H%	-	-	-
2	L+H*	!H*	H* L%	-	-	-
2	L+H* L%	H*	L* L%	-	-	-
3	H*	No	L* L%	H*	No	L+^H* H%
4	L*+H	!H*	No L%	L+H*	H*	!H+L* ^H%
5	L+H* !H%	L+H*	H+L* L%	L+H*	!H* H%	H+L* L%
6	L+H*	!H*	L*+^H H%	L+^H* L%	L*+H	!H* L%
7	L+H*	L+H*	H+L* L%	L*+H H%	L+H*	H+L* H%
7	L+H*	L+H* L%	H+L* L%	No	H*	H+L* L%
8	H* H%	H*+L	H+L* L%	H*+L L%	No	L+H* !H%
9	L+^H*[61] H%	H* !H%	L*+H H%	L+^H* L%	No	H* L%
10	!H+L* H%	H+L*	L+^H* !H%	H*	No	L* H%
11	H*	H* L%	L+H* H%	H*	H* L%	L*+H ^H%
12	H* H%	H* H%	L+^H* L%	H* H%	H* H%	L+H* L%
12	H*	L*+H L%	H* H%	H* L%	H*	L*+^H H%
13	L+H* H%	L+H*	!H+L* L%	L+^H*	No	!H+L* L%
14	L*+H	L*+H L%	L*+H H%	-	-	-

With respect to the pitch accent type, both S_{new} and S_{given} were frequently produced with a rising (L+H* or L*+H) or with an H* accent by HSs. Furthermore, four HSs produced an accent on S_{given} that differed from the one on S_{new} (speakers 4, 7, 8, and 10) while 7 HSs (speakers 3, 5, 6, 9, 11, 12, 13) produced the same accent on both S_{given} and S_{new}.

With respect to phrasing, there were four options for producing $S_{new}VO_{given}$ utterances:

- (SVO): all three constituents are located in one IP
- S+VO: S forms its own IP while VO belongs to a different IP
- SV+O: SV forms their own IP while O belongs to a different IP
- S+V+O: every constituent forms their own IP

Phrasing was found to be roughly similar for $S_{given}VO_{new/given}$ and $S_{new}VO_{given}$ utterances. Specifically, $S_{new}VO_{given}$ utterances were produced by HSs in the US as (SVO) or S+VO equally frequently, i.e., six times each. The phrasing SV+O was produced four times, followed by S+V+O (two times). $S_{given}VO_{new/given}$ utterances were produced by HSs as (SVO) or S+VO equally frequently, i.e., five times each. The phrasing SV+O was produced two times, followed by S+V+O (one time).

A particularly interesting phrasing is S+VO in $S_{new}VO_{given}$ utterances since a boundary insertion might be a strategy to highlight S_{new}. The data examination reveals that three (5, 10, 13)

[61] Here a pitch accent on the subject is upstepped (i.e., it has a pitch range expansion) relative to the preceding high target. In this instance, there was another word that preceded the subject and was located in the same IP (e.g., a linking word). If a word before the subject received a pitch accent with a high target (e.g., H* or L+H*) it could happen that the pitch accent on the subject was upstepped compared to the previous accent. The same holds for downstepped accents (i.e., pitch range compression).

out of four speakers who produced S_{new} as S+VO (speakers 5, 8, 10, 13)[62] produced S_{given} with a different phrasing ((SVO) or SV+O). Thus, for these speakers phrasing may signal the difference between S_{new} and S_{given}.

As for another possible strategy to mark S_{new}, the verb and object were examined regarding their decreasing prominence relative to the S_{new} in the utterances which did not have a phrasing S+VO or S+V+O. A decrease in the prominence of the verb was found five times (speakers 2, 3, 4, and 6). The verb was produced with a downstepped accent four times and did not carry an accent one time. However, in two cases the object received an upstepped accent (speakers 2 and 6). Speaker 2 showed an F0 on the object that was higher than on S_{new}, i.e., O_{given} was highlighted even more than S_{new}. Speaker 6 produced an F0 on the object that was lower than on S_{new}, i.e., S_{new} was highlighted more than O_{given}. In the other two instances (speakers 3 and 4), the object received an L* accent or was not accented at all while in one case (speaker 2) it received an H* accent whose F0 was lower than that of S_{new}. Since speaker 2 produced two utterances with a downstepped verb, one of which had an upstepped object which was higher than S_{new}, the downstep on the verb cannot be seen as a strategy for highlighting S_{new} in the case of this speaker.

As for the increasing prominence of the verb or object in $S_{given}VO_{new/given}$ utterances, no special strategies to highlight the verb were used by the speakers. As for the object, it received an upstepped accent two times (speakers 3 and 12), but speaker 12 decreased the prominence of the verb and not S_{given} since S_{given} was placed in a separate IP. Speaker 3 showed a clear decrease of prominence on the verb (no accent) and object (L* accent) in the case of S_{new}, and in the case of S_{given} the same speaker again showed a decrease of prominence on the verb (no accent), but an increase of prominence on the object by producing an upstepped accent. Thus, it seems that this speaker increases the prominence of the S_{new} and decreases the prominence of S_{given}. Next, speaker 4, who also showed a clear decrease of prominence on the verb (!H*) and object (no accent) in the case of S_{new}, also decreased the prominence of S_{given} by placing a prenuclear accent on the subject and a nuclear pitch accent on the object. Finally, speaker 6, who decreased the prominence of the verb (!H*) in the case of S_{new}, did not use a strategy to decrease the prominence of S_{given}. On the contrary, this speaker highlighted S_{given} by producing it with an upstepped accent in a separate IP.

To sum up, none of the investigated intonational patterns were used as a general strategy by HSs to mark S_{new}. However, HSs used speaker-specific strategies to express S_{new} such as S+VO

[62] Two other HSs in the US produced S_{new} as S+VO, namely speakers 1 and 2, but these speakers have no data on the production of S_{given}.

phrasing (speakers 5, 10, and 13), a decrease of prominence on the verb or object (speakers 3 and 4), and a pitch accent type different from the one on S_{given} (speaker 4, 7, 8 and 10).

7.10.1.2 Monolingual speakers

Next, the prosodic patterns of $S_{new}VO_{given}$ and $S_{given}VO_{new/given}$ will be examined in the narrations of monolingual speakers (see Table 49 for different prosodic cues in the data of monolingual speakers).

Table 49 Prosodic patterns of $S_{new}VO_{given}$ and in $S_{given}VO_{new/given}$ by monolingual speakers

Speaker ID	S_{new}	V	O_{given}	S_{given}	V	$O_{new/given}$
15	H* H%	H+L* L%	H* ^H%	L*+H ^H%	H*	L+^H* H%
16	L+H*	!H*	L*+^H H%	H*	No	L+^H* !H%
17	H* H%	H* ^H%	L*+H H%	No	H*	L*+^H ^H%
18	L*+H	No	L+^H* H%	H*	No	L*+^H ^H%
19	L+H*	H* L%	H* L%	H*	No	L*+^H ^H%
20	H*	No	No H%	L+H* H%	H*	H+L* ^H%
21	L*+H ^H%	H*	L+^H* H%	H*	H* H%	L+^H* L%
22	!H* H%	H*	L*+^H ^H%	^H* H%	L+H*	H+L* L%
23	L*+!H L%	H*	No L%	H* H%	L*+H	!H* L%
24	H*	L*+H L%	H+L* L%	H+L* L%	H*	!H* L%

Overall, monolingual speakers, like HSs, did not use any of the investigated prosodic strategies to mark S_{new} at a group level. However, contrary HSs, monolinguals almost never employed speaker-specific strategies such as phrasing or decrease of prominence on the verb or object. Furthermore, at a group level, monolingual speakers used a strategy to mark S_{new} that emerged during data analysis and was not set to be explicitly tested.

Monolingual speakers either produced S_{new} with a rising or with an H* accent, similar HSs. S_{given} was either produced with an H* accent, with accents of different types, or was not marked with an accent. The majority of monolingual speakers (9 out of 10) produced different pitch accents on S_{given} and S_{new}, and only one speaker produced an H* accent on both S_{given} and S_{new} (speaker 22).

As for phrasing, monolinguals produced $S_{new}VO_{given}$ as (SVO) and S+VO three times each. Phrasing SV+O and S+V+O was produced two times each. $S_{given}VO_{new/given}$ utterances were produced as S+VO five times, followed by (SVO) (four times), and SV+O (1 time). Despite some slight differences in phrasing between the two abovedescribed utterances (e.g., more frequent S+VO phrasing in $S_{given}VO_{new/given}$), in general, similar to both HS groups, there was no clear preference for a particular phrasing that would set $S_{new}VO_{given}$ and $S_{given}VO_{new/given}$ apart.

As mentioned previously, the phrasing of S+VO can be used as a possible strategy to mark S_{new}. The data examination reveals that out of three monolingual speakers who produced S_{new} as

S+VO (speakers 21, 22, 23) two speakers (22, 23) used the same phrasing with S_{given} and S_{new} while one speaker (21) used different phrasing in these two cases.

Another possible strategy to express S_{new} is a decreasing prominence of the verb and/or object in the (SVO) and SV+O utterances. Out of five HSs (16, 18, 19, 20, 24) who produced the aforementioned phrasing, decreasing prominence of the verb and object was found only in one instance with both being unaccented (speaker 20). In two instances, although the verb was produced with a downstepped accent or no accent (speakers 16 and 18), the object was produced with an upstepped accent whose F0 was higher than that of S_{new}; thus, the prominence of the S_{new} was generally not increased. In two cases S_{new} was produced in one IP with a verb, carried a prenuclear accent while the verb received an NPA (speakers 19 and 24). Thus, in these cases, the verb was more prominent than the S_{new}.

As for increasing the prominence of the verb or object in $S_{given}VO_{new/given}$ utterances, no special strategies to highlight the verb were used by monolingual speakers. As for the object, it received an upstepped accent six times (speakers 15, 16, 17, 18, 19, 21), but speakers 15 and 21 decreased the prominence of the verb or some other constituent but not S_{given} which was in a separate IP. Even though some speakers decreased the prominence of S_{given} by placing an upstepped accent on the object (speakers 16, 18, 19) or by deaccenting S_{given} (speaker 17), these speakers did not use any strategies to increase the prominence of S_{new}.

Speaker 20 who showed a clear decrease of prominence on the verb and object (no accent) in the case of S_{new} did not show a decrease of prominence on S_{given}. On the contrary, this speaker placed S_{given} in a separate IP, increasing its prominence.

To sum up, monolingual speakers, like HS, did not use any of the investigated prosodic patterns as a general group strategy to highlight S_{new}. Furthermore, strategies such as phrasing (S+VO) or decrease of prominence on the verb or object that were used by some HSs were almost never used by monolingual speakers (only monolingual speaker 21 used phrasing to mark S_{new} while none of the monolinguals used prominence reduction on the verb or object). However, the majority of monolingual speakers produced S_{new} and S_{given} with a different accent, e.g., those speakers who produced S_{new} with a rising accent produced S_{given} with an H* accent. The last strategy can be seen as a more general group strategy to mark S_{new} by monolinguals that was not used by HSs.

7.11 Summary of the results and discussion

This subchapter aimed to investigate the prosodic expression of *new* subjects in $S_{new}VO_{given}$ utterances.

Both speaker groups were found to place a pitch accent on S_{new} confirming the respective parts of Prediction 1.1 and 1.2. As for the other predictions (the other parts of 1.1 and 1.2; Prediction 1.3 and 1.4), none of them were confirmed since none of the speaker groups clearly used any of the investigated prosodic cues to mark S_{new} at a group level. On the one hand, such results are surprising because *new* subjects in $S_{new}VO_{given}$ utterances were not expressed syntactically a clearer role of prosody was expected for their marking. On the other hand, *new* subjects were frequently pronounced differently from *given* subjects on a speaker-specific level, i.e., *new* subjects were often marked prosodically, but the exact prosodic cues varied a lot across different speakers.

The absence of an effect of a particular pitch accent type on *new* and *given* subjects in this thesis is not entirely surprising since some previous studies found a weak association between referent type and a particular pitch accent (e.g., Im et al., 2018; De Ruiter, 2015 for spontaneous speech).

The absence of an effect of phrasing refutes the findings by Ivashchyk (2019) who reports that there is a link between a PA of a particular type and phrasing in the data of HSs. Specifically, she found that when *new* subjects did not form their own IP, they usually received an H* PA while when *new* subjects were placed in a separate IP, they either received an L+H* accent or an H* accent. HSs and monolingual speakers of this thesis did not show a tendency to place a particular PA depending on phrasing.

Furthermore, Ivashchyk (2019) reports that HSs used strategies to enhance the prominence of *new* subjects by reducing the prominence of the *given* objects through their frequent deaccentuation. The results of this thesis do not support the findings by Ivashchyk (2019) since deaccentuation of the verb or object in $S_{new}VO_{given}$ utterances was very rare in both speaker groups.

The discrepancy in the results by Ivashchyk (2019) and this thesis can be explained by the differences in data and speaker samples. First, Ivashchyk (2019) considered all discourse-*new* referents (i.e., *new*, *bridging*, *unused-unknown*) that appeared before the *given* ones as unexpected while I only examined the clauses with *new* referents (i.e., without *bridging* and *unused-unknown*) before the *given* ones. The reason behind a stricter selection of referents is motivated by the fact that *bridging* and *unused-unknown* referents are not necessarily unexpected in monolingual Russian since they can be either inferred from the previous context (*bridging*) or come with sufficient descriptive material to ensure their identifiability (*unused-unknown*). Furthermore,

Ivashchyk (2019) and I examine different HSs, and it is plausible that there is a high variation across different speakers often reported for HSs (e.g., see Polinsky, 2018).

Next, HSs were not found to actively use pitch modulations on the verb or objects (i.e., downstep) to increase the prominence of *new* subjects in $S_{new}VO_{given}$ utterances. It seems that such results go against the findings by Zuban et al. (2023) who found that HSs of Russian frequently used pitch modulations to increase the prominence of a verb that received an NPA. However, Zuban et al. (2023) found that HSs of Russian frequently produced upstepped accents. As for downstepped accents, they were very rare in productions of HSs and were absent in productions of monolingual speakers. In this thesis, it was also found that HSs and monolinguals rarely produced downstepped accents. It is possible that downstepped accents are produced less frequently than upstepped accents in general due to a clearer prominence of the latter ones.

However, contrary to Zuban et al. (2023), not only did HSs of this thesis almost never produce upstepped accents on the verb or object in $S_{given}VO_{new/given}$ utterances, they did so less frequently than monolingual speakers. The difference between the results of this thesis and Zuban et al. (2023) may be due to different types of speech - prepared in Zuban et al. (2023) and semi-spontaneous in this thesis.

Next, the two speaker groups will be discussed in comparison to each other. It was found that HSs and monolinguals used different prosodic cues to mark *new* subjects. Specifically, HSs used some speaker-specific strategies such as phrasing, a decrease of prominence on the verb or object, or a pitch accent of a different type on S_{new} and S_{given} to express *new* subjects while monolingual speakers almost did not use the first two strategies. Furthermore, monolinguals, contrary to HSs, used a strategy to distinguish *new* and *given* subjects on a group level. Specifically, monolingual speakers marked S_{new} with an accent that differed from the one on S_{given}, but neither S_{new} nor S_{given} was marked with any single particular pitch accent type (e.g., five speakers placed a rising accent on S_{new} and an H* accent on S_{given}, two speakers placed an H* on S_{new} and a rising accent on S_{given}).

The abovedescribed results between the two speaker groups are in line with the studies that report on the differences between HSs and monolinguals regarding their prosodic patterns (e.g., Zerbian et al., 2022; Zuban et al., 2023; Bullock, 2009; Gries & Miglio, 2014; Kim, 2019).

Furthermore, the results showed a high variation of intonational patterns within the speaker groups. Even though monolingual speakers as a group used different PA types on *new* and *given* subjects, the exact PAs differed between speakers. Such high variation points towards an unexpected status of $S_{new}VO_{given}$ utterances that manifest itself not only in the syntactic form but also in the prosodic expression. Furthermore, such high inter-speaker prosodic variation points

towards a complex relationship between prosody and information status, and this complexity should be considered for the theories of meaning (in line with Tonhauser, 2019).

A question for further research is whether there are other cues to highlight S_{new} (e.g., duration or voice quality). Another interesting question is how the *new-given* referents are perceived by monolingual and HSs. It is possible that if they are perceived as highly typical they are also not marked by any clear prosodic means at a group level.

7.12 Conclusion of this chapter

Summing up the results of the syntactic expression of information status in heritage and monolingual Russian, HSs and monolingual speakers were similar to each other regarding their preference for the three most frequent referent combinations (g-g, g-n, and n-n) in the three most frequent word orders (SVO, OVS, and SOV). Also, HSs were found to produce the three aforementioned word orders according to the underlying discourse principles that govern word order variation in Standard Russian (e.g., OVS was frequent for the introduction of *new* referents, SOV was frequent with both subject and object being *given*; SVO was frequent with both subject and object being *given,* with *given* subject and *new* object or with *all-new* contexts).

As for the *new-given* referents that are not expected to occur in Standard formal Russian, HSs produced significantly more of such referents than monolingual speakers across different word orders. Such results are in line with the predictions of the Interface Hypothesis. Furthermore, HSs were found to produce *new-given* referents in every communicative situation. Such results point to the register-leveling processes taking place in the narrations of HSs possibly due to the lack of formal instruction in Russian. Monolingual speakers, however, were found to produce *new-given* combinations not only in informal situations where the use of such referents is generally permissible but also in formal spoken situations. These results may point to register-leveling processes in monolingual Russian that are amplified under language contact. If no register-leveling is taking place in monolingual Russian, the results of the monolingual group show that the elicited formal spoken situation was not "formal enough."

In addition to the frequency of *new-given* referents, the prosodic patterns of *new* subjects in $S_{new}VO_{given}$ utterances were investigated. The results showed that neither HSs nor monolingual speakers used the investigated prosodic patterns at a group level (i.e., PA type, phrasing, and decrease of prominence on the verb and/or object). However, *new* subjects were often pronounced differently from *given* subjects at a speaker-specific level, but the exact prosodic cues varied a lot across different speakers. Furthermore, the results showed that HSs and monolinguals used different prosodic cues to mark *new* subjects (e.g., monolinguals, contrary to HSs, almost never

used phrasing and decreased prominence on the verb and/or object while HSs, contrary to monolinguals, did not frequently distinguish *new* and *given* subjects by a PA of a different type).

Overall, HSs and monolingual speakers showed high variation of intonational patterns in $S_{new}VO_{given}$ utterances, both within and across the groups. Such variation likely points towards an unexpected status of the investigated utterances.

Overall, the results of Chapters 6 and 7 on the word order choice, syntactic expression of information status, and prosodic expression of *new* subjects in $S_{new}VO_{given}$ utterances give valuable insights into the linguistic systems of HSs of Russian in the US.

It was found that HSs were similar to monolingual speakers regarding linguistic patterns such as word order repertoire, preference for the particular word orders in main and embedded clauses, preference for some word orders in different communicative situations (e.g., SOV in the informal and spoken) and the pragmatic knowledge of underlying discourse principles that govern word order variation in Standard Russian.

The results showed that HSs typically differed from monolingual speakers regarding linguistic patterns that required knowledge of the formal or written language (OVS in formal situations, SVO in written situations, *new-given* referents in formal written situations). It is noteworthy that HSs usually did not differ from monolinguals in informal situations (e.g., distribution of SOV order) since these were the situations they mainly received their input. Thus, the results of this thesis showed that it is important to elicit productions of HSs that are present in their input rather than solely elicit written productions or phenomena that are typically found in formal situations in their HL.

Finally, the investigation of the prosodic pattern of *new* subjects in $S_{new}VO_{given}$ utterances showed that speakers of both groups often produced *new* subjects differently from *given* subjects at a speaker-specific level.

8 Overall summary and general outlook

This chapter will summarize all the results of the current thesis starting with the results on global intonation patterns and moving to the results on word order choice and the syntactic and prosodic expression of information status.

8.1 Short overview of the results

In all the tables, the columns "HSs" and "Monolinguals" show the in-group results while the column "HSs vs. Monos" shows the results across the two speaker groups. Further, ">" stands for "more frequently" while "<" stands for "less frequently." For instance, monolingual speakers produced more pitch accents in formal situations compared to informal ones (formal>informal) while there was no effect of formality on pitch accent placement for HSs. Furthermore, HSs produced more pitch accents than monolinguals in informal situations (informal: HSs>monos) while the two speaker groups were similar to each other in formal situations. Table 50 provides an overview of the results pertaining to global intonation patterns by HSs and monolingual speakers.

Table 50 Comparing the results of the two speaker groups: Global intonation patterns

	HSs	Monolinguals	HSs vs. Monos
Pitch accent type: H*			
formality	no effect	no effect	no difference
age	adolescents>adults	adolescents>adults	adolescent HSs & monos > adult HSs & monos
gender	no effect	no effect	HSs_female>mono_female
Pitch accent type: rising			
formality	no effect	no effect	no difference
age	no effect	no effect	no difference
gender	no effect	no effect	HSs_female<mono_female
Pitch accent type: falling			
formality	no effect	no effect	no difference
age	no effect	no effect	no difference
gender	female>male	female>male	female HSs & monos > male HSs & monos
Pitch accent type: L*			
formality	no effect	no effect	no difference
age	adolescents<adults	adolescents<adults	adolescent HSs & monos < adult HSs & monos
gender	no effect	no effect	no difference
High final boundary tone			
formality	no effect	formal>informal	no difference
age	adolescents>adults	adolescents>adults	adolescent HSs & monos > adult HSs & monos
gender	female>male	female>male	female HSs & monos > male HSs & monos
Pitch accent placement			
formality	no effect	formal>informal	formal: no difference informal: HSs>monos
age	no effect	no effect	no difference
gender	no effect	no effect	no difference

Table 51 displays the results on word order choice by HSs and monolingual speakers.

Table 51 Comparing the results of the two speaker groups: Word order choice

	HSs	Monolinguals	HSs vs. Monos
SVO			
formality	formal>informal	formal>informal	no difference
mode	written>spoken	no effect	spoken: no difference written: HSs>monos
clause type	main>embedded	main>embedded	no difference
OVS			
formality	no effect	formal>informal	informal: no difference formal: HSs<monos
mode	no effect	no effect	no difference
clause type	main<embedded	main<embedded	no difference
SOV			
formality	informal>formal	informal>formal	no difference
mode	spoken>written	spoken>written	no difference
clause type	main<embedded	main<embedded	no difference

Table 52 provides an overview of the results pertaining to the syntactic expression of information status by HSs and monolingual speakers as well as the prosodic expression of *new* subjects in $S_{new}VO_{given}$ utterances.

Table 52 Comparing the results of the two speaker groups: Expression of information status

	HSs	Monolinguals	HSs vs. Monos
Syntactic expression			
SVO, OVS, SOV	pragmatically determined	pragmatically determined	no difference
new-given	appeared in the data	appeared in the data	HSs>monos
new-given: formality and mode	across all formalities and modes	almost across all formalities and modes except for formal written	formal written: HSs>monos
Prosodic expression of *new* subjects in $S_{new}VO_{given}$: group level			
pitch accent placement	all *new* subjects are accented	all *new* subjects are accented	no difference
pitch accent type	no pitch accent of a specific type	no pitch accent of a specific type	no difference
phrasing	no specific phrasing	no specific phrasing	no difference
decrease of prominence of V and/or O_{given}	prominence of V and/or O_{given} is not systematically decreased	prominence of V and/or O_{given} is not systematically decreased	no difference
Prosodic expression of *new* subjects in $S_{new}VO_{given}$: speaker level			
pitch accent type	different PAs on *new* and *given* subjects by some HSs	different PAs on *new* and *given* subjects by most monos	monos>HSs
phrasing	use of phrasing by some HSs	use of phrasing by one mono speaker	HSs>monos
decrease of prominence of V and/or O_{given}	use of this strategy by some HSs	prominence of V and/or O_{given} is not systematically decreased	HSs>monos

The present thesis aimed to contribute to the understanding of heritage grammar by answering research questions pertaining to the domain of global intonation, word order and information

status. Semi-sponteneous productions of HSs of Russian in the US and monolingual speakers of Russian have been investigated with respect to the different linguistic phenomena in different communicative situations. Most of the research questions of the thesis were answered using the generalized binomial linear mixed-effects modeling since this method allows one to investigate multiple fixed effects and their interactions at the same time. Further, the generalized linear mixed-effect models are especially attractive when the data of each participant are not independent, which was the case in the current data sample (see Winter, 2020, chapter 14.4). Some research questions were approached with a different statistical methodology (e.g., word order repertoire, distribution of *new-given* referents) since the linear mixed-effects modeling was not always necessary or applicable (e.g., due to the low number of data points).

The current thesis presented the data of fluent HSs of Russian in the US (determined by speech rate) who reported high engagement with Russian (e.g., media use, the ability to write in Cyrillic) and who demonstrated high performance in Russian (according to my observations from the different areas of grammar).

8.2 Summary

The first group of results of this thesis pertains to global intonation patterns of HSs and monolinguals regarding the speakers' preference for four pitch accent types (H*, L*, rising and falling accents), final boundary tones (H%, L%) and pitch accent placement. The analysis showed that HSs and monolinguals were similar to each other regarding some of the investigated prosodic patterns (e.g., inventory of pitch accents and boundary tones, preference for particular boundary tones) while the two speaker groups differed regarding some other patterns (e.g., pitch accent placement in informal situations, H* and rising accents by female HSs). Some of the differences between the two speaker groups could be possibly attributed to language transfer from the ML (preference for H* and rising accents by female HSs) and are in accordance with the studies on intonation of HSs that report on the influence of a ML on a HL (e.g., Kim & Repiso-Puigdelliura, 2021; Kim, 2023; Colantoni et al., 2016; Kachkovskaia et al., 2022). Other differences between the two speaker groups could not be attributed to the transfer effects (e.g., pitch accent placement), and such results are also in line with the previous reports (e.g., Zuban et al., 2023; Zerbian et al., 2022).

Furthermore, the prosodic differences attested between HSs and monolinguals could contribute to the perceived overall accent that was found for HSs in perception studies (Flores & Rato, 2016; Kupisch et al., 2014; Polinsky, 2018; Chang & Yao, 2016). These studies report that the speech

of HSs is often perceived as more accented than that of monolingual speakers, but the sources of the accent are unclear.

Next, the results showed the importance of age and gender for the investigation of global prosodic patterns, and these factors were found to play a role in giving further valuable insights not only into productions of HSs but also monolingual speakers (i.e., adolescent speakers of both groups were found to produce more H* and fewer L* accents than adult speakers of both groups; adolescent speakers of both groups, as well as female speakers of both groups, produced more H% boundary tones than adult speakers and male speakers of both groups). These results are in line with previous studies that report adolescent speakers and female speakers to be a driving force of linguistic variation and change (Kerswill, 1996; Tagliamonte, 2016; Nagy, 2017).

Further, the results showed that formality was an important factor for the preference of high and low boundary tones as well as pitch accent placement but only for monolingual speakers. They produced significantly more pitch accents and high final boundary tones in formal situations. Formality was not found to affect any of the investigated global prosodic patterns by HSs. These findings point to the register-leveling processes in the narrations of HSs supporting the studies such as Comstock (2018), Wiese et al. (2022), Schroeder et al. (in press), Alexiadou et al. (2022).

Finally, this thesis contributed to the knowledge of global intonation by monolingual speakers since some of the prosodic phenomena investigated here were not examined in the previous literature on monolingual Russian in detail (e.g., pitch accent placement, distribution of FBTs, an effect of gender). This thesis showed that there might be a process of internal language change that is initiated by younger speakers of Russian (preference for H% and H* and infrequent use of L*).

In addition to general intonational patterns, this thesis investigated word order repertoire and the use of SVO, OVS, and SOV orders in the narrations of HSs and monolinguals. It was found that both HSs and monolinguals were similar to each other regarding their word order repertoire and the general tendency to produce some word orders more frequently (SVO, OVS, SOV) than others (OSV, VSO, VOS). Also, the two speaker groups had a similar effect of clause type by producing more SVO utterances in embedded clauses than in main clauses and more OVS and SOV utterances in main clauses than embedded ones.

Regarding the preference for some word orders and the effect of formality and mode, HSs were in general sensitive to the use of some word orders in some communicative situations. Similar to monolinguals HSs produced more SVO utterances in formal situations and more SOV utterances in informal and spoken situations. However, HSs produced more SVO utterances in written situations compared to monolingual speakers, and the former produced fewer OVS utterances in

formal situations than the latter. These results indicate that HSs differed from monolinguals in situations where they either generally did not have a formal input in Russian (i.e., formal education) or in situations which they were generally exposed to much less than in their ML, i.e., the written productions in Russian.

The results of the preference for different word orders did not show that HSs and monolinguals differed from each other in general, but the two speaker groups did differ from each other in the formal and written situations. Thus, transfer from the ML could not account for these results. It is rather the quality and the quantity of language input that contributed to the differences between HSs and monolinguals with the former group usually exclusively acquiring informal colloquial Russian.

In addition to the word order patterns, the thesis dealt with the syntactic expression of information status since word order variation in Russian is highly influenced by the information status of referents.

It was found that HSs were similar to monolingual speakers regarding their preference for the three most frequent referent combinations (g-g, g-n, and n-n) in the three most frequent word orders (SVO, OVS, and SOV). Also, HSs produced the three aforementioned word orders according to the underlying discourse principles that govern word order variation in Standard Russian (e.g., OVS was frequently for the introduction of *new* referents; SOV was frequent with *given* subject and *given* object).

Combinations in which *new* referents appeared before *given* ones were looked at in detail since a typical scenario reported for Standard Russian is the one in which *given* referents appear before *new* ones (Slioussar, 2007, 2011; Kallestinova, 2007; Luchkina & Cole, 2016). Importantly, the sequence of *new-given* referents is expected to appear in formal situations, but it is permissible in informal situations, especially spoken ones (Sirotinina, 2003).

The analysis showed that both HSs and monolingual speakers produced *new-given* referents, but HSs did so significantly more frequently across different word orders. Further, HSs were found to produce such combinations in every communicative situation showing register-leveling processes (see similar findings on phenomena other than information status by Wiese et al., 2022; Schroeder et al., in press).

According to the Interface Hypothesis (Sorace, 2011; Sorace & Serratrice, 2009), an increase of *new-given* referents in the narrations of HSs could be a result of the extra processing costs that are required for the integration of linguistic information (i.e., word order) and information that is not strictly linguistic (i.e., information status). Such integration may be more challenging for HSs than for monolinguals since the former speakers need to inhibit one of their languages all the time,

and as a result, may be less attentive to the linguistic tasks. Alternatively, these results can be also explained with reference to contact-induced developments that stem from the general feature of being bilingual. Constant exposure of bilingual speakers to the various linguistic structures of their ML and HL may have led to outcomes that differ from the ones of monolingual speakers (see Sorace & Serratrice, 2009; Zuban et al., 2023 for similar conclusions).

Another interesting finding related to the *new-given* referents is the occurrence of such instances in monolingual speakers in every communicative situation except for the formal written one. Such results may point towards an ongoing register-leveling in monolingual Russian with the *new-given* referents spreading from informal situations to formal ones starting with formal spoken (since this situation is less conservative than the formal written one). If the process of register-leveling is taking place in monolingual Russian it may be accelerated under language contact. If no register-leveling is taking place in monolingual Russian, the results rather show that the elicited formal spoken situation was not "formal enough" (i.e., unprepared speech, not a scientific topic).

The difference between HSs and monolinguals regarding their use of *new-given* referents in different communicative situations lies in the formal written scenario. These results go hand in hand with the results on word order choice which showed that HSs mainly differ from monolingual speakers in the formal and written situations. Formal and written situations are the ones that require formal instruction in Russian and experience with Russian in official situations, and these are exactly the situations HSs are typically not exposed to frequently or at all.

In addition to the frequency of *new-given* referents, the intonational patterns of *new* subjects in $S_{new}VO_{given}$ utterances were investigated. The results showed that prosodic cues such as particular pitch accent type, phrasing, or decrease of prominence on the verb and/or *given* object are not used at a group level by HSs and monolinguals. However, *new* subjects often differed from *given* subjects in their prosodic realizations, but the exact prosodic cues varied a lot across different speakers. Furthermore, HSs and monolinguals differed from each other by preferring different prosodic means to mark *new* subjects (e.g., unlike HSs monolinguals almost never used phrasing while, unlike monolinguals, HSs did not frequently produce *new* and *given* subjects with a pitch accent of a different type). Overall, high variation of intonational patterns in $S_{new}VO_{given}$ utterances within and across the two speaker groups likely confirms an unexpected status of the investigated utterances.

To sum up, the investigation of global intonational patterns, different word orders, and information status gives valuable insights into the linguistic systems of HSs of Russian in the US. HSs were found to be similar to monolingual speakers regarding some linguistic patterns (e.g., inventory of pitch accents and boundary tones, word order repertoire, preference for some word

orders depending on a communicative situation, or pragmatic knowledge of underlying discourse principles that govern word order variation in Standard Russian).

HSs were also found to differ from monolingual speakers regarding some phenomena (e.g., preference for H* and rising accents by female HSs, more pitch accents in informal situations, no effect of formality on general prosodic patterns, SVO in the written mode, OVS in formal situations, higher frequency of *new-given* combinations of referents and their occurrence in every communicative situation). Several things stand out.

First, the differences between HSs and monolinguals were usually not found "across the board," but in particular communicative situations. These situations were often those that required extensive formal instruction or exposure to Russian, which was unavailable for most HSs of this thesis. Thus, it is important to elicit productions of HSs that are present in their input rather than elicit solely written productions or phenomena that are typically found in formal situations in their HL (see similar ideas by Flores & Rinke, 2020; Rothman, 2007; Kupisch & Rothman, 2018). Further, the inclusion of different communicative situations helps shed light on the possible source of the differences between HSs and monolinguals. For instance, had I only investigated one type of speech, I might have been led to think that the results of HSs could be explained by the influence of the ML. Since different communicative situations were included and since HSs only differed from monolinguals in some specific situations, the reported results cannot be directly attributed to the influence of the ML.

Second, there are register-leveling processes found in productions of HSs, and these register-leveling processes can again be related to the absence of formal instruction in Russian and lack of experience in communicating in Russian in official situations.

To sum up, the thesis contributed to the general understanding of where the differences between HSs and monolinguals arise and why. Frequently, the differences between the two speaker groups arise in situations that require formal instruction in Russian. Thus, the source of these differences cannot be easily attributed to the transfer from the ML but is rather connected to the lack of formal education in Russian by the majority of HSs of this study. Thus, in line with Wiese et al. (2022), Embick et al. (2020), Flores and Rinke (2020); Rothman and Treffers-Daller (2014), Guijarro-Fuentes and Schmitz (2015), Pascual y Cabo and Rothman (2012) (among others) HSs were found to demonstrate variation within the native grammar.

8.3 Limitations of the study

The study was carried out thoroughly and the data were properly annotated and analyzed. Nonetheless, there are several issues to be addressed here. The first one is related to the proficiency level of participants. The proficiency level of participants was not explicitly measured before the study, thus it was impossible to determine which level of Russian HSs had. Although I measured speech rate (number of words per minute), this measurement gave the reader information about the fluency level of participants rather than their proficiency level.

The next limitation of the present thesis is connected to the statistical methods that were used to answer different research questions. There was no one single statistical method that could be used throughout the whole thesis by itself (e.g., binomial generalized linear mixed-effects models). The reason is the variety of the data and different research questions (limited number of occurrences of an investigated phenomenon or a research question that did not require any statistical test).

Also, this thesis investigated HSs and monolinguals as speaker groups and not as individual speakers; thus, it does not provide information about inter- and intra-individual variation which could explain the results of some phenomena that are rare (i.e., *new-given* referents that were not produced by every speaker) or to explain the results of this thesis that differ from the results of some other studies on a similar phenomenon (e.g., Zerbian et al., 2024 on the distribution of FBTs by HSs and monolingual speakers of Russian).

Finally, the section on global intonational features would benefit from further qualitative analyses to interpret the results better.

8.4 Further research

Further studies could provide a more qualitative investigation of the source behind some of the attested patterns found in this thesis. For instance, adolescent and female populations were found to produce high final boundary tones more frequently than adult and male populations, and future research could examine the exact contexts in which high FBTs occur to see whether speakers of different age groups and genders have different discourse structures.

Another potential area of research includes a more fine-grained analysis of the pitch accent types on different referents since this is an area that has not received a lot of attention in studies on Russian, both monolingual and heritage. To my knowledge studies that looked at the prosodic expression of the different referent types in Russian are scarce, and I am not aware of any study that looked at heritage Russian. As for monolingual Russian, Luchkina and Cole (2016) investigated the influence of structural and referent-based effects on the prosodic expression in

monolingual Russian (such as F0 range, intensity, or duration), but they did not look at the distribution of different accent types. It remains to be seen whether pitch accents of specific types are used by HSs and monolinguals to signal the information status of different referents.

Next, to gain more insights into the prosodic expression of *new* subjects in $S_{new}OV_{given}$ utterances, a follow-up study could test the perception of such utterances by heritage and monolingual speakers using a larger data set.

In the future one can look at the correlation between the data of participants to see which factors are relevant for the results of the word order, information status, and intonation in heritage and monolingual Russian.

Further, further research could be conducted not only with a focus on HSs of Russian, but also on monolingual speakers of Russian in the domain of intonation to investigate the potential current language developments (e.g., the role of age and gender in the distribution of different prosodic patterns, the distribution of some specific pitch accents such as L*+H and L*+H since adolescent and adult monolingual speakers were reported to differ from each other, but it was not proven on a larger data set).

Lastly, one could perform an analysis on inter- and intra-individual variation to shed more light on speaker-specific individual preferences of a particular linguistic phenomenon or structure.

9 Bibliography

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