Russian Case System Acquisition among Russian–Hebrew Speaking Children

Mila Schwartz and Miriam Minkov

Abstract: The aim of this exploratory study is to examine bilingual Russian–Hebrew-speaking children's performance on the complex Case System in Russian. The speech of six early sequential bilinguals and three simultaneous bilinguals is analyzed for the quality and quantity of errors. Monolingual data came from two sources. The first source was the error rate of case and number by two normally developing monolingual Russian-speaking children, collected recently in the former Soviet Union. The second source was qualitative reports on error types made by monolingual children in the course of Case System acquisition. The following research questions were examined: (i) Are there differences between bilingual children and age-matched monolingual Russian-speaking children in Russian Case System acquisition? (ii) Are there differences between simultaneous and early sequential bilinguals in Russian Case System acquisition? Speech of bilingual children was recorded individually and monthly over a seven-month period, 20 minutes per month per child. Error analysis of the bilingual speech was conducted regarding the following target variables: noun oblique cases (Genitive, Dative, Accusative, Instrumental, and Prepositional), noun number (singular and plural), and the three declensions. The results show quantitative differences between simultaneous bilinguals, early sequential bilinguals, and monolinguals in Russian Case System acquisition.

1. Introduction

The present exploratory study focused on examining the inflectional morphology aspect of Russian Case System (hereafter CS) acquisition among simultaneous and early sequential Russian–Hebrew speaking bilinguals at the age of 36 to 42 months. The purpose of this exploratory study was twofold. First, we aimed to examine CS production among Russian (L1)-speaking bilingual children in comparison to age-matched monolingual Russian-speaking children. Second, we sought to compare the Russian CS production of early sequential and simultaneous Russian–Hebrew-speaking bilinguals. We addressed these aims by investigating the following target variables: noun oblique

Journal of Slavic Linguistics 22(1): 51–92, 2014.

cases (Genitive, Dative, Accusative, Instrumental, and Prepositional), noun number (singular and plural), and the three declensions. Note that the semantic and syntactic aspects of this system acquisition were beyond the scope of the present study.

Concerning the first aim, we investigated whether the bilingual Russian (L1)-speaking children exhibit differences in their errors in complex CS in comparison to their monolingual Russian speaking peers. Our assumption of possible differences in acquisition patterns of this domain of Russian inflectional morphology stemmed from the finding that bilingual children generally receive reduced input of each of their languages (see Gathercole 2006, Paradis, Nicoladis, and Crago 2007). In this case, our question was about the nature of these differences: quantitative (number of errors), or qualitative (different types of errors), or both. In the case of quantitative differences, one could infer that the bilingual patterns of acquisition are similar to the monolingual peers, while qualitative differences suggest that bilingual acquisition follows a qualitatively different path of development of the target inflectional morphology category than monolingual acquisition.

The second aim of the study focused on examining whether Russian–Hebrew speaking bilingual children with different ages of onset of Hebrew (L2) show similar/different patterns of CS production. In this context, it is notable that within the wide population of bilingual children one can distinguish between simultaneous learners of two languages with Age of Acquisition of L2 (AoA) from birth to the age of approximately one year (De Houwer 1995, Döpke 1992) and early sequential L2 learners whose age of exposure to L2 was between one and four years (Meisel 2008, 2009, Rothweiler 2008, Unsworth and Hulk 2009). Early sequential bilinguals are characterized by the sequence of L2 acquisition and acquisition of some grammatical knowledge in L1 before L2. This situation is frequent among immigrant families where children are exposed to the second and dominant language of the host society only after entering a preschool educational setting. In this case, the minority language is acquired first (Montrul 2008).

1.1. Inflectional Morphology Acquisition in L1 among Bilingual Children

In recent years the typological complexity of inflectional morphology among monolingual children has been extensively studied (Laaha and

Gillis 2007). As has been observed, children are extremely good at learning inflection (Wexler 1998). This early development of inflectional morphology systems is partly a result of the consistency and transparency of regular inflection forms (Brown 1973). Full control of these systems, however, takes years to accomplish, due to the presence of irregular and non-transparent inflectional forms (Berman 1985, Ravid 1995a, b).

Several researchers have noted that the acquisition of domains of inflectional morphology which are rich in irregular, non-transparent and non-salient forms seems to be especially challenging for bilingual children during L1 acquisition (Gathercole 2006, Dieser 2007). Transparency is defined as the extent of clarity of a stem or a suffix (Dressler 2007). For example, the English regular plural *-s* is transparent, whereas the shape of such plural forms as *children* is opaque. Phonological saliency can be illustrated by differences in the word's final position (Dressler 2007, Gillis 2003). A stressed vowel can be quite prominent; an unstressed one is less identifiable. It has been suggested, therefore, that some delays (quantitative differences in error production in L1 between bilingual and monolingual children) may appear in bilingual children's development of certain complex structures because their exposure in each language is only a portion of that of monolingual children.

For example, Dieser (2007) studied gender acquisition among bilingual and tri-lingual children, following their speech production. She collected longitudinal data from a Russian–German speaking bilingual child, Alex, from birth to around age 6. She found clear similarities to the monolingual patterns of acquisition but with quantitative differences that resulted in higher rates of errors. For example, Alex had a tendency to overuse feminine nouns with the salient ending *-a/-ja* up to age two because he incorrectly interpreted masculine nouns ending in *-a/-ja* as feminine, based on the surface similarity to the large body of feminine nouns ending in *-a/-ja.*

1.2. Simultaneous versus Early Sequential L2 Acquisition

Both early sequential and simultaneous bilingual children receive a reduced amount of input in one language (L1/L2). However, they differ in the length of time in which they are almost exclusively exposed to L1 or in the age of onset of L2.

Up to now, relatively few studies have addressed the link between acquisition of inflectional morphology in L1 and L2 AoA among children. Limited evidence has been produced mostly from the Spanish (L1) and English (L2) context (Anderson 1999, 2001, Silva-Corvalán 2003). In a cross-sectional study, Silva-Corvalán (2003) investigated acquisition of the Spanish verbal inflection system (tense-mood-aspect morphemes). The study compared seven simultaneous and early sequential bilingual children with English-dominant bilingual adults, who were examined in an earlier study (Silva-Corvalán 1996). These seven children differed in terms of their dominant language, home language, and school language. All of them acquired Spanish from birth and English either from birth or sequentially. Two of the seven children were examined longitudinally from eleven months to six years of age and their speech was recorded in their homes. The other five children's natural speech was recorded in their schools, in Spanish, in three different sessions. The simultaneous bilinguals were found to show less knowledge of specific aspects of the Spanish verbal inflection system which are less frequent and more complex (e.g., in the tense system, Future Perfect, past of future) than the early sequential bilingual children. This pattern of data was interpreted as an effect of limited Spanish input among the simultaneous bilingual children who could not reach the "critical mass" of verbs needed to develop productivity of more complex forms (Silva-Corvalán 2003).

In another study, Anderson (1999) examined gender agreement in the nominal phrase in Spanish between two early sequential bilingual siblings with different AoA of L2: 3;6 and 1;6. The girls had immigrated to the United States from Puerto Rico, and data collection began three years later. Their natural speech was videotaped during play sessions every one to two months over a 22-month period. In the first recording, the older sibling used gender agreement correctly. Two years later, at the end of the study, the child made 5.8% errors. The situation was different with the younger sibling with earlier L2 AoA. This sibling made 8% errors at the beginning of the study and approximately 20% errors by the end of the study. Finally, it was found that both siblings showed similar types of errors which are also evident among monolingual Spanish-speaking children only up to 3 years of age. It was concluded that after just two years of exposure to English (L2), gender agreement in Spanish (L1) was affected more in the

child with earlier L2 AoA (age 1;6) than in the child with later L2 AoA (age 3;6).

To sum up, the limited existing data indicate that exposure to L2 at an age when basic inflectional morphology skills are still being acquired might result in a high rate of errors in the production of inflections. While qualitatively these types of errors are similar to those of monolingual children, their quantity is not age-appropriate relative to the monolingual data. In addition, the degree of errors appeared to be more dramatic in simultaneous than in sequential bilinguals. In this context, it is crucial to extend our knowledge of the subject, particularly in view of the growing interest in early sequential bilinguals and in how they differ from simultaneous bilinguals (Unsworth and Hulk 2009). In examining the link between the production of the Russian CS and AoA of L2 (Hebrew), the present study focused on two groups of young Russian–Hebrew speaking bilinguals: simultaneous (with AoA near age one) and sequential (with AoA between one and four years).

1.3. The Focus on the Russian Case System

The Russian CS is a fascinating phenomenon that brings together inflectional morphology, syntax, simple semantic structures, and phonology. In addition, its complexity is increased by the existence of non-transparent and non-salient forms (Zaliznjak 1967), interactions between gender (three gender systems: masculine, feminine, and neuter), number (singular and plural), declension (three declensional types), and word order variation.

It is important to note also that focusing on CS acquisition in Russian as the L1 is particularly interesting in the context of the Russian–Hebrew dyad. Modern Hebrew is a synthetic-analytical language which is characterized by rich inflectional morphology (Ravid 2012). However, the grammatical role of nouns in dative, possessive, and accusative cases in a sentence is generally specified by word order or by prepositional particles (Glinert 1989), and not by means of inflections as in Russian. Consequently, as in a case of a Russian–English dyad, a focus on the Russian–Hebrew dyad might extend our understanding of case inflection acquisition in L1 in the context of grammatically caseless L2.

In the following section we provide a brief description of the Russian CS. We then address Russian CS development among mono-

lingual children and research on Russian CS competence among bilinguals.

1.4. Brief Description of the Russian Case System

The following description of the Russian CS is brief and has been reduced to the necessary minimum for the present study. The whole Russian CS includes multiple declensional sub-distinctions, additional cases, and prepositional structures (Belošapkova 1989, Timberlake 2004, Zaliznjak 1967, 1977).

Russian has six basic cases. Nearly every noun, every adjective, every numeral, and every pronoun has to be put in one of six different cases: Nominative, Genitive, Dative, Accusative, Instrumental, and Prepositional. Each of the cases has its core and peripheral functions. For example, the core function of the Instrumental case is instrument. In addition, this case has some supplementary functions, such as agent, temporal adverbial, and path.

Russian nouns have three possible types of inflection changes (declensions). The first declension includes all feminine nouns, except for those with a zero ending spelled with a soft sign (’), and masculine nouns ending in *-a/-ja*, for example: *mama* ‘mommy’, *papa* ‘daddy’. Declension 2 includes almost all masculine nouns, except for those nouns ending in *-a/-ja*, and almost all neuter nouns, for example, *stol* ‘table’, *okno* ‘window’. Declension 3 includes the feminine nouns ending in a soft sign, for example: *dver’* ‘door’. Each declension has different typical inflections. Inflection of the case in a given declension may differ depending on the grammatical gender of the noun, its animacy, and consonant palatalization at the end of the word stem (Zaliznjak 1967, 1977).

As noted above, Russian has three grammatical genders: masculine, feminine, and neuter. In all inanimate nouns, the gender function is grammatical rather than semantic (Dieser 2007). Table 1 summarizes the basic noun CS in Russian for singular nouns.

Table 1. Basic noun CS in Russian, singular

Case	Declension 1 (fem., masc.)	Declension 2 (masc., neuter)	Declension 3 (fem.)
Nominative	*p**a**p-a*[1] 'father' *zeml-j**a*** 'earth' *m**i**šk-a* 'teddy'	*st**o**l* 'table' (inanimate) *okn-**o*** 'window' (inanimate) *sl**o**n* 'elephant' (animate)	*dv**e**r-'* 'door' *m**y**š-'* 'mouse'
Genitive	*p**a**p-y* *zeml-**i*** *m**i**šk-i*	*stol-**a*** *okn-**a*** *slon-**a***	*dv**e**r-i* *m**y**š-i*
Dative	*p**a**p-e* *zeml-**e*** *m**i**šk-e*	*stol-**u*** *okn-**u*** *slon-**u***	*dv**e**r-i* *m**y**š-i*
Accusative	*p**a**p-u* *z**e**ml-ju* *m**i**šk-u*	*stol* (=Nom) *okn-**o***(=Nom) *slon-**a*** (=Gen)	*dv**e**r-'* *m**y**š*
Instrumental	*p**a**p-oj* *zeml-**ej*** *m**i**šk-oj*	*stol-**o**m* *okn-**o**m* *slon-**o**m*	*dv**e**r-ju* *m**y**š-ju*
Prepositional	*p**a**p-e* *zeml-**e*** *m**i**šk-e*	*stol-**e*** *okn-**e*** *slon-**e***	*dv**e**r-i* *m**y**š-i*

In addition, there is no distinction between declensions in the plural. At the same time, in Nominative, Accusative, and Genitive cases, inflections in the plural are multifarious, i.e., there are a number of possible endings in contrast with other cases.

The standard paradigm of plural noun declension is summarized in Table 2.

[1] Hereafter, bold font in examples refers to stress placement.

Table 2. Basic noun CS in Russian, plural

Case	Declension 1 (fem., masc.)	Declension 2 (masc., neuter)	Declension 3 (fem.)
Nominative	*p**a**p-y* 'fathers' (animate) *z**e**ml-i* 'land' (inanimate) *mi**š**k-i* 'teddy' (animate)	*stol-**y*** 'tables' (inanimate) ***o**kn-a* 'windows' (inanimate) *slon-**y*** 'elephants' (animate)	*dv**e**r-i* 'doors' (inanimate) *m**y**š-i* 'mouses' (animate)
Genitive	*p**a**p* *zem**e**l-'* *mi**š**-ek*	*stol-**ov*** ***o**kon* *slon-**ov***	*dver-**ej*** *myš-**ej***
Dative	*p**a**p-am* *z**e**ml'-am* *mi**š**k-am*	*stol-**am*** ***o**kn-am* *slon-**am***	*dver-**am*** *myš-**am***
Accusative	*pap* (=Gen) *z**e**ml-i* (=Nom) *mi**š**-ek* (=Gen)	*stol-**y*** (=Nom) ***o**kn-a* (=Nom) *slon-**ov*** (=Gen)	*dv**e**r-i* (=Nom) *myš-**ej*** (=Gen)
Instrumental	*p**a**p-ami* *z**e**ml'-jami* *mi**š**k-ami*	*stol-**a**mi* ***o**kn-ami* *slon-**a**m*i	*dver-**ja**mi* *myš-**a**mi*
Prepositional	*p**a**p-ax* *z**e**ml'-jax* *mi**š**k-ax*	*stol-**ax*** *okn-**ax*** *slon-**ax***	*dver'-**jax*** *myš-**ax***

1.4.1. Inflectional Homophony

Most case inflections in Russian are not stressed. Unstressed vowels are phonetically reduced, i.e., non-salient. For example, unstressed /o/ may be reduced to [a] and unstressed /e/ may be reduced to [i]. The consequence of this phenomenon is the high homophony and, as a result, non-transparency of different case forms. For example, the noun form pronounced as [mišk-i] of the lexeme *miška* 'teddy' may refer to *miške* 'teddy$_{DAT.SG}$', to *miške* 'teddy$_{PREP.SG}$', to *miški* 'teddy$_{GEN.SG}$', or to

miški 'teddies$_{NOM.PL}$'. In addition, the ending vowel /i/ by itself occurs in the different case forms of all three declensions.[2]

In the course of acquisition, this non-transparency of homophony makes the differentiation of cases and declensions very difficult, since the endings [a] or [i] the child hears may refer to more than one case and more than one declension.

1.4.2. Animacy

The non-transparency of the Russian CS is expressed also in the inflectional forms of animate nouns. For Declension 2, the Accusative of animate nouns that are masculine singular coincides with the Genitive, i.e., is marked, while the Accusative of inanimate masculine and neuter nouns coincides with the Nominative, for example: *slon* 'elephant$_{NOM}$' ~ *slon-a* 'elephant$_{ACC}$', but *stul* 'chair$_{NOM}$' ~ *stul* 'chair$_{ACC}$'. For Declension 1 and Declension 3 singular nouns there is no inflectional difference for animacy.

In the plural, the Accusative of all animate nouns coincides with the Genitive, while the Accusative of all inanimate nouns coincides with the Nominative.

1.5. Development of the Russian Case System among Monolingual Children

Russian CS acquisition in monolingual children was elucidated and systematized in fundamental investigations by Gvozdev (1945, 1961), Ufimceva (1974), Cejtlin (1998, 2000, 2005, 2007), Ionova (2007), and Sizova (2009). It should be noted that there is considerable variability in the research concerning the age of case-use onset and when the cases emerge, as well as their acquisition, order, and pace. For example, Axapkina (2007) noticed that the first case use in her son's speech was manifested at the age of 1;4 (cited in Cejtlin 2009). At the same time, Gagarina and Voeikova (2009) analyzed the speech of a child who started using case oppositions at the age of 2;2.

[2] We use the following abbreviations: NOM – nominative; GEN – Genitive; DAT – Dative; ACC – Accusative; INST – Instrumental; PREP – Prepositional; DC1 – Declension 1; DC2 – Declension 2; DC3 – Declension 3; PL – Plural; SG – Singular; F – Feminine; M – Masculine.

The first inflectional oppositions tend to appear in children's speech approximately at the end of the second year of life. As a rule, the first case to emerge is either the Nominative or the Accusative (Ufimceva 1974). For a short period (up to three months), these two cases compete in children's speech, i.e., there is erroneous use of Nominative instead of Accusative. Within this period, or one to two months later, there is a spurt of oblique cases, when all remaining oblique cases appear within two or three weeks (Gagarina and Voeikova 2009, Lepskaja 1997, Voejkova 2004). Prepositional and Instrumental cases often emerge after Dative and Genitive. Around age two most children can accurately use the correct case. There is almost no case confusion in the speech of monolingual children in this period. However, children may use incorrect inflection with the correct case (Gvozdev 1945, 1961, Cejtlin 2000, Ionova 2007).

In this prime CS, each case is usually presented by one predominant inflection. Slobin (1973) named this phenomenon "inflectional imperialism." For example, a child uses the inflection belonging to Declension 2 of the Instrumental case (*-em*/*-om***)** for the nouns of Declensions 1 and 2 in the Instrumental case: **sumk-om* (instead of *sumk-oj* 'bag$_{INST.SG.DC1}$'); **dver'-em* (instead of *dver'-ju* 'door$_{INST.SG.DC3}$').

Around age three, this prime CS gives way to the more accurate second system, which consists of only two grammatical genders, masculine and feminine, and their corresponding two declensional types (Cejtlin 2000). In this period, the child accurately produces the oblique cases of Declensions 1 and 2. On the other hand, he/she still tends to treat Declension 3 nouns as belonging to Declension 1 or 2, for example, producing the form **dver'-em or *dver'-ej* (instead of *dver'-ju* 'door$_{INST.SG}$'). In addition, because of ambiguity of masculine nouns ending in *-a*/*-ja* in Declension 1, the child might treat these nouns (*papa* 'dad$_{NOM.SG}$', *djadja* 'uncle$_{NOM.SG}$', *miška* 'teddy$_{NOM.SG}$') as masculine nouns of Declension 2, occasionally producing forms such as **papom* (instead of *papoj* 'dad$_{INST.SG}$'). This type of error normally disappears from monolingual speech by the age of 3.

The last stage of acquisition results in enlargement and improvement of the existing CS, when children acquire the neuter gender, plural noun declension, and Declension 3. By the age of six or seven, children usually possess the completely normative CS (Gvozdev 1945, 1961, Ufimceva 1974, Cejtlin 2005). As noted above, this relatively late AoA might be attributed to the complexity of the whole CS in Russian,

which is related to non-transparency and non-saliency of some of its forms, and depends on children's progress in multiple grammar domains such as inflectional morphology, syntax, simple semantic structures, and phonology. The Appendix provides a summary of tendencies among monolingual Russian-speaking children based on the sequence of linguistic development.

1.6. Russian Case System Acquisition and Competence among Bilinguals

To date, bilingual competence in the Russian CS has been studied mostly for Russian–English speaking children (Modyanova 2006, Turian and Altenberg 1991, Bar-Shalom and Zaretsky 2008) and adults (Polinsky 2006, 2008). Regarding adult Russian (L1) speakers with different AoA of the L2 (English) (from 3 to 11 years), Polinsky's studies (2006, 2008b) found a tendency to use only two cases, Nominative and Accusative, producing a grammatically simplified and reduced CS, whereas native Russian speakers use the six case markings.

Concerning CS mastery among bilingual children, a recent study done by Modyanova (2006) only focused on the Genitive case in its function of negation by Russian–English bilingual children. The study investigated differences between younger (ages 5;2 to 7;5) and older (ages 8;9 to 10;6) children, and differences between bilinguals and Russian (L1) monolinguals (ages 3 to 6), previously studied by Babyonyshev (1993). With respect to AoA, Modyanova (2006) found that negation with the Genitive case was not acquired by those who were in a bilingual Russian–English environment from birth or before the age of three and a half and was preserved by those who had monolingual exposure to Russian at least for the first four years of life. This pattern of data supports a possible link between early AoA of the caseless L2 and the Russian (L1) CS acquisition.

It is notable that several methodological restrictions in the existing research limit the conclusions that can be drawn. First, the exclusive focus on English as L2 limits our conclusions concerning Russian CS acquisition by bilingual children. Compared to Russian, English is characterized by a restricted inflectional morphology system. In contrast, our study focuses on children who were exposed to Hebrew (L2), a Semitic language, which, on the one hand, is similar to Russian as it

is characterized by morphological richness, but, on the other hand, like English is a caseless language.

In addition, the previous studies were cross-sectional; as a result, we cannot observe a certain linguistic phenomenon (e.g., error pattern) several times. Consequently, we cannot judge the relative frequency of this phenomenon (Yip and Matthews 2007). Several data collection points during the six-month design of the present study make it possible to observe the relative frequency of various phenomena, as well as to arrive at conclusions concerning the stability of this phenomenon (Montrul 2008).

Finally, in the aforementioned studies the Russian CS among bilingual children has not been fully and systematically examined. Modyanova (2006) focused only on negation in a single case, whereas Bar-Shalom and Zaretzky (2008) analyzed the overall number of errors in case production without conducting typological error analysis.

In this study we produced data by applying a systematic approach to the study of the Russian CS. We investigated whether quantitative (frequency of phenomenon) and/or qualitative (types of errors which are non-reported among Russian-speaking monolingual children) differences exist between bilingual and monolingual children. In addition, we considered whether there are quantitative and/or qualitative differences in case production between simultaneous and early sequential bilinguals which were due to the differences in AoA between the target groups.

The following research questions were asked:

(i) Are there quantitative and/or qualitative differences between bilingual children and age-matched monolingual Russian-speaking children in Russian CS acquisition?

(ii) Are there quantitative and/or qualitative differences between simultaneous and early sequential bilinguals in Russian CS acquisition?

We focused on the following target variables: noun oblique cases (Genitive, Dative, Accusative, Instrumental, and Prepositional), noun number (singular and plural), and the three declensions.

2. Method

2.1. Participants

Command of the Russian CS was studied during two academic years from 2008 to 2010. Our participants were divided into two groups: three simultaneous and six early sequential bilinguals. At the start of the study all the children were approximately three years old (*M* age in months = 42.22, *SD* = 2.7) with mean lengths of utterances (MLUs) in Russian (L1) ranging between 3.65 and 5.71 (see Table 3 on the next page).

All participants were Israeli-born children, living in the northern part of the country, whose parents (aged 30–42) had immigrated to Israel from the former Soviet Union. Russian was the first language of all of the children and their parents as well as the dominant language of communication between all family members and language enrichment (books, TV, video, and other language-related cultural activities). Judging by the parents' reports, all children received a similar amount of Russian input at home. As such, our participants provide a set of highly comparable multiple case studies of simultaneous and early sequential bilinguals.

In all of the families, both parents were bilingual and reported relatively high language competence in Russian and Hebrew. They had been living in Israel for a considerable number of years (*M* = 13.31, *SD* = 4.8), with a high level of education reported by the children's mothers (*M* in years = 16.87, *SD* = 3.4).

The early sequential bilinguals were enrolled in a bilingual Russian–Hebrew preschool where children came mostly from immigrant families from the former Soviet Union. The explicit aim of this educational setting is to maintain the L1 (Russian) as the heritage language and to acquire Hebrew as the L2. It is important to note that this particular preschool adheres to the first-language-first approach until the age of three, so that a native Russian-speaking teacher conducts all teacher-child communication in Russian (L1). From the age of three to five the children have intensive immersion in Hebrew with a native Hebrew-speaking teacher, who is responsible for the Hebrew language instruction and provides the language input in approximately 70% of preschool time, with Russian (L1) instruction and teacher-child communication for approximately 30% of the daily classroom time.

The simultaneous bilinguals attended a monolingual Hebrew-speaking preschool where teacher-child communication was conducted in Hebrew. The percentage of Russian–Hebrew speaking children in this monolingual preschool was around 40%. It is noteworthy that the preschool teachers in both bilingual and monolingual programs used the same curriculum in Hebrew, provided and supervised by the Israeli Ministry of Education.

Age of onset of L2 (Hebrew) acquisition was different for all participants and ranged from 6 to 42 months (see Table 3). As reported above, within this continuum, we distinguished between three children (a boy, FIM, and 2 girls, UMK and MIC) who were simultaneous bilinguals with AoA ranging from 6 to 13 months and 6 children who were early sequential bilinguals (3 boys, JON, BAN, and YIR, and 3 girls, UMA, AVI, and MAS). It is notable also that, according to the parents' report, JON was exposed to L2 (Hebrew) in the home environment while communicating with L2-speaking neighbors and friends before L2 instructional exposure in the bilingual preschool around age 3. The parents reported no case of delay in Russian acquisition.

2.2. Materials and Procedure

2.2.1. Bilingual Data

As reported above, data on the bilingual children were collected once a month for six months. During this period the speech of each individual bilingual child was recorded for 20 minutes each month. The overall time of recording was approximately 20 hours. The recording took place in a natural preschool setting in a separate room.

We used elicitation of natural speech as a research tool to collect the child's speech. This choice was grounded in Yip and Matthews's (2007) claim that the data on grammar acquisition may be affected by the choice of tools (structural measuring versus partly elicited collection of natural speech). Accordingly, natural speech collection avoids "the artificiality induced by experimental methods such as elicited production tasks" (2007: 58). At the beginning of a session, children were asked to describe their previous evening or weekend activities (spontaneous speech). This usually took about five minutes. The corpus of spontaneous speech together with incidental sentences uttered

by the child was used for both MLU calculations and CS-related statistics.

Later on in the session, an activity was organized in such a way as to elicit from the children answers to the investigator's questions using given nouns in the target cases. The activities included playing hide and seek, playing with soft toys, spontaneous games, and looking at images in books. For example, for an elicitation of the Prepositional case, the investigator put some toy animals before the child and asked: "Tell me, which animal is the doll riding on?" The child took the doll for "a ride" on different animals, and then she completed the investigator's phrase: "Now the doll is riding on…." Another example: for the elicitation of the Genitive case, the investigator put some items before the child and said: "Let's play. I'll hide something and you'll guess what is missing. What is missing now?" The target case in this construction is Genitive, thus: *net ručki* '(there is) no pen$_{GEN.SG}$'.

2.2.2. Monolingual Data

Monolingual data came from two sources. The first was the speech of two normally developing monolingual Russian-speaking children, Kira and Dasha, collected recently in the former Soviet Union. Their speech was recorded once a week over two months. Both girls were 3;4 years old at the beginning of the study. Miranovyč's MA thesis (2011) provided quantitative analysis of data in his MA thesis. The reported data addressed error rates by case and number only; consequently, we used these data only for the quantitative comparison between monolinguals and bilinguals on the CS production in Russian.

The second source was reports by Gvozdev (1945), Cejtlin (1998, 2000, 2005), and Sizova (2009) on error types made by monolingual children in the course of CS acquisition. As these researchers focused only on qualitative analysis of child speech, these data were used only as a basis for the qualitative comparison between monolingual and bilingual CS production.

2.2.3. Data Processing and Analysis

The speech of the bilingual children was transcribed, coded, and analyzed by a computer program similar to CHILDES (MacWhinney 2000). Analysis of our data called for the input of a large amount of

Cyrillic text. Since CHILDES cannot process Cyrillic text, lacking the needed characters, software was specifically developed for coding and analyzing the data.

The target-case noun forms produced by a child were used for qualitative and quantitative analysis of the CS with regard to three target variables: gender (masculine, feminine, and neuter), number (singular and plural), and declension (Declension 1, Declension 2, and Declension 3). Further coding included correctness of the given noun forms. Transcriptions and coding were double-checked by one of the authors and by a senior research assistant. Disagreements were discussed and resolved.

2.2.4. Scoring

To perform the general assessment of CS attainment, we calculated the overall proportion of correct oblique-case noun forms (i.e., all case noun forms apart from Nominative forms) out of all oblique case noun lemmas collected during the research. We included only marked forms (i.e., inflected forms not coinciding with the Nominative) in the analysis of Accusative case, since the erroneous use of Nominative in oblique cases was highly characteristic for our sample. Consequently, we could not confidently conclude whether the unmarked form used in Accusative was a matter of correct production or of Nominative substitution. Nominative case was beyond the scope of our study, since these forms are basic and their formation is not associated with inflection. The cases of noun stem preservation, such as *videl *bob**e**ra* (instead of *videl bobra* 'saw the beaver$_{ACC.SG}$'), *dva *serd**e**ca* (instead of *dva s**e**rdca* 'two hearts$_{GEN.SG}$'), *ne xoču *sl**o**na* (instead of *ne xoču slon**a*** 'don't want an elephant$_{GEN.SG}$') were treated as correct as they bearing the correct case inflection.

To analyze ambiguous forms, we examined the whole paradigm of the lexeme and/or the whole syntagma, as was used by the child. For example, *dve jabločki* 'two apples$_{GEN.SG}$' may be analyzed as an error of Declension (a word belonging to Declension 2 was declined as a word belonging to Declension 1) or as an error of case (Nominative plural instead of Genitive singular). Where the erroneous production was consistent, i.e., a child consistently used the word *jabločko* 'apple$_{NOM.SG}$' as a feminine gender (*jabločkoj* 'apple$_{INST.SG}$', *k jabločke* 'to the apple$_{DAT.SG}$') instead of neuter gender, we classified this error as a de-

clension error, a word belonging to Declension 2 being declined as a word belonging to Declension 1. Whereas in a case of a child's consistent production of the Nominative plural in the syntagma *dva stol**y*** 'two tables$_{NOM.PL}$', *dva cvet**y*** 'two flowers$_{NOM.PL}$', we classified this as a case error, giving the Nominative plural instead of the Genitive singular. In the case of inconsistency in the erroneous production, the ambiguous form was assigned to the category Miscellaneous.

To obtain a more detailed assessment of CS mastery, we calculated the overall proportion of incorrect oblique case noun forms out of all oblique case noun lemmas for each case. The case error rates were calculated separately for singular and plural.

We also identified different categories of productions for further analysis:

(i) Correct inflection, except for the correct use of Nominative form in Accusative case, since this accuracy was potentially accidental.

(ii) Case substitution: the use of the inflection belonging to the correct declension but to the wrong oblique case; in light of the monolingual data, this type of error is not expected in singular forms. Inter-case inflection substitutions usually disappear from monolingual speech by the age of 2;6, however, the use of the predominant inflection in GEN.PL and PREP.PL may be seen in child speech until the age of 5;5.

(iii) Declension substitution: the use of the predominant inflection belonging to the correct case but possibly to the wrong declension; this error type usually disappears from monolingual speech by the age of 3; however, the predominant inflection in GEN.PL and PREP.PL may be preserved until the age of 5;5.

(iv) Erroneous Nominative: the use of the Nominative instead of the correct oblique case, except for errors of animacy, when an animate noun was placed in Nominative form instead of Genitive form in Accusative case; in light of monolingual data, this type of error disappears at the very beginning of CS acquisition and is not expected after the age of 2;6.

(v) Miscellaneous: animacy errors (see the detailed description in the Results section), errors of both declension and case, or errors which could not be confidently attributed to one of the defined

categories. Animacy errors are expected up to the age of 4; consequently, these errors are age-appropriate for our sample.

The proportion of errors for each category was calculated for each bilingual group and each oblique case separately. The errors in singular and plural in each case were summed up.

3. Results

In order to examine both the differences between monolingual and bilingual children and differences between simultaneous versus early sequential bilinguals, quantitative assessment was provided for each of the five oblique cases. To assess mastery of these cases, we calculated error rates for each oblique case separately and for singular and plural numbers.

In this section, first we present the results of the analysis of the bilingual versus monolingual production with regard to overall success as well as success regarding each oblique case. Then we show the results of the analysis of bilingual production with regard to the five following categories: correct inflection, case substitution, declension substitution, erroneous Nominative, and miscellaneous, which are described in detail in the Method section. Overall, the results show that both groups of bilinguals produce the same types of errors as are found in the monolingual CS development.

3.1. Overall Success

It can be seen that bilingual children do not usually reach the monolingual level of mastery, and early AoA seems to be associated with especially high error rates. The production of plural forms entailed higher error rates in comparison with the production of singular forms. Finally, the Accusative case was characterized by relatively low error rates, and the plural forms of the Prepositional case were the most problematic for the children in the sample.

The following section presents the separate quantitative analysis of errors by each oblique case and by types of errors.

3.2. Analysis by Oblique Cases

Chart 1 (on pp. 70–71) presents the proportion of errors in case and number according to bilingual group.

3.2.1. Genitive Case

Most Genitive forms were produced in constructions such as *ne vidno* 'cannot be seen,' *mnogo* 'a lot of', *dva/dve* 'two', or *net* 'there is no'. In monolingual acquisition, these constructions appear around the age of two and are acquired by the age of 2;10 (Gvozdev 1945, 1961, Cejtlin 2000, Ionova 2007). The analysis of bilingual data revealed a low level of mastery (error rate over 50%) that characterized simultaneous bilinguals (see Chart 1). The sequential bilinguals showed an intermediate level of mastery (error rate of 25%–35%). For plural nouns, it can be seen that the simultaneous bilinguals did not produce any correct forms while the sequential bilinguals produced around 40% of the forms accurately. Both bilingual groups lagged behind monolingual children, who showed about a 5% error rate in singular and about a 15% error rate in plural.

3.2.2. Dative Case

Dative inflections are regular: there is a single inflection for the Dative for each declension and a single inflection for all plural forms. In monolingual acquisition, Dative is acquired rapidly with low error rates. The case is normally acquired completely by the age of 2;6 (Gvozdev 1961, Cejtlin 2005, Ionova 2007). Accordingly, monolingual children in Miranovyč's (2011) study showed complete acquisition of both singular and plural Dative forms (100% success).

In our research, the bilingual children produced forms such as 'to give' + DAT, 'to go to' + DAT (see Chart 1). Unlike monolinguals, all bilingual children showed relatively high error rates. Thus for singular nouns, simultaneous bilinguals (FIM, UMK, and MIC) showed poor mastery of the case (50%–100% errors). Error rates of sequential bilinguals were also far above the norm (18.5%–44.4%). Regarding the plural forms, the simultaneous bilinguals showed 100% errors. Sequential bilinguals as a group performed near the monolingual level, while early sequential bilingual with the latest AoA (UMA, AVI, and YAI)

demonstrated complete mastery of the Dative plural form, similar to the monolingual children.

3.2.3. Accusative Case

For the singular forms simultaneous bilinguals showed higher error rates (around 45%) than early sequential bilinguals (20%). It is notable that four out of six sequential bilinguals acquired full mastery of the domain.

For the plural forms simultaneous bilinguals failed completely owing to difficulties in the animacy category. At the same time, five out of six early sequential bilinguals performed at the monolingual or near-monolingual level. As with the Genitive case, monolinguals' error rates were much lower than bilinguals' (1% for singular and 5% for plural).

3.2.4. Instrumental Case

Forms of the Instrumental case were produced by children mostly in sentences describing playmates (such as "A teddy is playing with a doll$_{INST.SG}$"). In monolingual acquisition this function of Instrumental case is mastered by age two. The error rate for the Instrumental case is typically low (Ionova 2007). Cases of over-generalized inflection occur up to age 2;6. Incorrect inflections in feminine nouns of Declension 3, however, may occur up to the age of six.

For singular nouns all simultaneous bilinguals showed high error rates (around 75%). At the same time, early sequential bilinguals showed from intermediate (around 30% errors) to nativelike (around 4% errors) mastery of the case. For plural nouns, simultaneous bilinguals showed a 100% error rate. Sequential bilinguals, however, showed a lower error rate (about 35% errors). Monolinguals' error rate was 13% for INST.PL forms.

3.2.5. Prepositional Case

In the course of acquisition for monolinguals, the Prepositional case is mastered by the age of two. Later on, age-appropriate errors occur, mostly associated with preposition confusion and with the use of the inflection *-e* instead of the inflection *-u* for several nouns that have

both inflections in the Prepositional case, such as *v les-**u*** 'in the forest$_{PREP.SG}$' ~ *o l**e**s-e* 'about forest$_{PREP.SG}$'. In our study the Prepositional case was produced by children in its core locative function (marking place) and mediative (Prepositional case after verbs such as 'to ride', 'to drive').

For singular nouns, it was found that simultaneous bilinguals showed rather high error rates (around 70%). At the same time, most of the early sequential bilingual error rates were midway between those of simultaneous bilinguals and those of monolinguals (around 40%). For plural, it can be seen that for both bilinguals and monolinguals these forms were challenging and are still in the process of acquisition. It can be seen from the monolingual data that the acquisition of the Prepositional case is challenging also for this group and that the error rates for this case were higher than for other oblique cases, 15% for singular and 50% for plural forms.

3.2.6. Summary of Analysis by Cases

Regarding the analysis by cases, it can be concluded that there was a clear association between AoA and the degree of mastery for both singular and plural forms. In the plural forms, the simultaneous bilinguals showed a significant delay in acquisition in comparison to the monolinguals. At the same time, the sequential bilinguals had rates of success similar to the monolinguals but still apparently lagged behind them.

To check how error-prone bilinguals were for various cases relative to monolinguals, we calculated average error rates for each, which are presented in a Table 4 on the next page.

Overall, it can be seen that some cases are more error-prone than others. For each group the rate of errors in the Prepositional case is usually higher than in the other cases. In addition, it is notable that in both bilingual groups, the error rates observed for singular forms of the Genitive, Accusative, and Instrumental cases were relatively similar. Finally, while the monolinguals showed a lack of errors in the production of the Dative case, for both bilingual groups this case appeared to be very challenging.

3.3. Analysis of Bilingual Production by Types of Errors

Erroneous bilingual production was classified into four types of errors: case substitution, declension substitution, erroneous Nominative, and miscellaneous, which were described in detail in the Methods section. Chart 2 (on pp. 76–77) presents the proportion of the different error types by bilingual group and by case.

3.3.1. Nominative Substitution

Since production of Nominative instead of an oblique case form, an omission error, disappears from the speech of monolingual children by the age of 2;6, this kind of error is not age appropriate. However, this type of error comprised a considerable part of the total number of errors for both bilingual groups and all oblique cases (see Chart 2). Here are some examples: in the Genitive case, *ne xvataet *sok* 'there is no juice$_{NOM.SG}$' (instead of ne *xvataet sok-a* 'there is no juice$_{GEN.SG}$'); in the Instrumental case, *igraet so zv**e**zdočk-i* '(he) is playing with the stars$_{NOM.PL}$' (instead of *igraet so zv**e**zdočk-ami* '(he) is playing with the stars$_{INST.PL}$') and *družit s m**i**šk-a* '(he) is a friend of the teddy$_{NOM.SG}$' (instead of *družit s m**i**šk-oj* '(he) is a friend of the teddy$_{INST.SG}$').

For both simultaneous and sequential bilinguals, the neuter gender and Declension 3 remained the most error-prone domains with regard to Nominative substitution, for example, *paket *moloko* 'a carton of milk$_{NOM.SG}$' (instead of *paket molok-a* 'a carton of milk$_{GEN.SG}$'), *net *sol'* 'there is no salt$_{NOM.SG}$' (instead of *net sol-i* 'there is no salt$_{GEN.SG}$'), *zalez v *s**u**mk-a* 'climbed into the bag$_{NOM.SG}$' (instead of *zalez v s**u**mk-u* 'climbed into the bag$_{ACC.SG}$').

In addition, we found some differences between simultaneous and sequential bilinguals' profiles (see Chart 2). First, the proportion of this type of error was higher in the simultaneous bilinguals in comparison with the sequential bilinguals. Moreover, in contrast to sequential bilinguals, the simultaneous bilinguals demonstrated the wide use of Nominative forms in all oblique cases. Concerning the sequential bilinguals, their errors were mostly in the Genitive and Prepositional cases, especially in the plural (see Chart 2). These forms are very complex, and even among monolingual children errors in the plural of the Genitive and Prepositional cases can occur up to age 5;6.

3.3.2. Case Substitution

In light of the monolingual data, case substitution is not expected (exceptions are the forms of GEN.PL and PREP.PL); however, these errors were made by both bilingual groups. In general, our analyses showed that the proportion of this error was similar for both bilingual groups. The errors were found mostly in the Prepositional (age appropriate) and Dative (not age appropriate) cases, e.g., *na *kač**e**l'-ej* 'on the swing$_{GEN.PL}$' (instead of *na kač**e**l'-ax* 'on the swing$_{PREP.PL}$'), *na *list**o**čk-om* 'on the leaf$_{INST.SG}$' (instead of *na list**o**čk-e* 'on the leaf$_{PREP.SG}$'), *dala mork**o**vku *slon-**a*** 'I gave the carrot to the elephant$_{GEN.SG}$' (instead of *dala mork**o**vku *slon-**u*** 'I gave the carrot to the elephant$_{DAT.SG}$'). This type of error might be attributed to the relatively low frequency of these cases (Kopotev 2008).

Finally, we found a prominent tendency for place and direction confusion, i.e., use of the Accusative case, identifying direction, instead of contextually correct Prepositional case, identifying place. Interestingly, in making this error, the children used a grammatically correct construction for the preposition. Some prepositions marking location, such as *na* 'on', *v* 'in', *za* 'behind' take Prepositional/Instrumental or Accusative depending on whether they identify place or direction. The children in our sample clearly tended to use the Accusative case instead of the contextually correct Prepositional/Instrumental case. For example, the child would answer the question *Gde sprjatalsja miška?* 'Where is the teddy hidden?' by **na polku* 'on the shelf$_{ACC.SG}$' (instead of *na polke* 'on the shelf$_{PREP.SG}$').

3.3.3. Declension Substitution

Concerning the monolingual data, the commission error of declension substitution usually is not evident as a developmental error after age 3. Similar to the younger monolinguals at the period of the transition from proto-morphology to full normative morphology, all our bilinguals showed this type of error (see Chart 2). It occurred mostly with masculine nouns of Declension 1, nouns of Declension 3, and the neuter gender: *s *m**i**šk-om* (instead of *s m**i**šk-oj* 'with the teddy$_{INST.SG}$); *za *dv**e**r'-ej* (instead of *za dv**e**r'-ju* 'behind the door$_{INST.SG}$'); *dve *j**a**bločki* (instead of *dva j**a**bločka* 'two apples$_{GEN.SG}$'); *pod *krov**a**t-em* (instead of *pod krov**a**t'-ju* 'under the bed$_{INST.SG}$'). The early sequential bilinguals pro-

duced a lower proportion of this kind of error. In addition, we found that the declension substitution of common nouns of Declensions 1 and 2 occurred more with the simultaneous bilinguals: *s *knižk-om* (instead of *s knižk-oj* 'with the book$_{INST.SG}$'); *iz *domik-i* (instead of *iz domik-a* 'from the house$_{GEN.SG}$'); *sumk-om* (instead of *sumk-oj* 'bag$_{INST.SG}$').

3.3.4. Miscellaneous

The Miscellaneous group included errors which could not be confidently attributed to any of the defined categories:

(i) *Animacy Errors*. Animacy errors took up a considerable part of the Miscellaneous category in Accusative; nevertheless, we did not identify them as a different category. The reason was that the vast majority of animacy errors stemmed from the use of the Nominative form instead of the correct Genitive form (error of omission) for animate nouns, for example: *kormlju *tigr* (instead of *kormlju tigr-a* 'I'm feeding the tiger$_{ACC.SG}$'). We could not confidently attribute this use to animacy error, since the erroneous use of Nominative was quite frequent for the majority of the participants in all oblique cases. Moreover, only two children made obvious animacy errors (using the Genitive form instead of the Nominative form). Generally, animacy errors are expected up to the age of 4; consequently, those errors are age appropriate for our sample. In addition, it was found that the children with AoA above 36 months mostly showed a nativelike attainment of animacy.

2. *Errors of Both Declension and Case* (commission error), for example: *o *pap-om* 'about Dad$_{INST.SG.DC2}$' (instead of *o pap-e* 'about Dad$_{PREP.SG.DC1}$').
3. *Inflection -ax /ax/ in Genitive* (commission error): children with a high rate of overall success substituted three kinds of GEN.PL inflections (*-ov*/*-ev*, *-ej*, and zero inflection) by the inflection *-ax*, for example: *mnogo *slon-ax* (instead of *mnogo slon-ov*) 'a lot of elephants$_{GEN.PL}$'. There is a strong tendency among Russian-speaking children to make such substitutions even after the age

of five. Usually, this tendency is explained by phonetic similarity of the ending *-ax* to the target ending *-ov* (pronounced in Russian as [ʌf]) (Cejtlin, 2005) or by priming or influence of adjective, ending with *-ix/-yx* in the Genitive plural (Sizova 2009).

In addition, we found that the variety of inflections used by the bilingual children was dependent on AoA. The later the AoA of the child, the greater diversity of inflections he/she produced in GEN.PL. Table 5 on the previous page presents these data.

4. *Ambiguous Forms* which included errors of unclear origin / multiple origins: **dve glaz* 'two$_{FEM}$ eye$_{NOM.SG/GEN.PL}$ (instead of *dva glaza* 'two$_{MAS}$ eye$_{GEN.SG}$', *o *jablokama* (instead of *o *jabloke* 'about the apple$_{PREP.SG}$', *net *obezjankij* (instead of *net *obezjanki* '(there is) no monkey').

4. Discussion

This exploratory study was motivated by the desire to extend our knowledge of Russian (L1) CS mastery among bilingual children with different L2 AoA. In light of the existing data on the trajectory of monolingual CS acquisition, our study contributes to research in this area in a number of ways. First, we found that substitution of Nominative case and errors in oblique cases, declension, and animacy among bilingual children were similar to those described for Russian-speaking monolingual children. However, these errors were more frequent and stable than the monolinguals' errors (Gvozdev 1945, 1961, Cejtlin 2000). Second, our results pointed out quantitative differences in acquisition of basic inflectional morphology domains among bilingual children with different AoA.

4.1. Differences between Simultaneous and Early Sequential Bilinguals and Monolingual Russian-Speaking Children

From a qualitative point of view, both of our bilingual groups showed the same types of errors that were evident in monolingual acquisition. The following two tendencies were observed regarding quantitative differences between monolinguals and bilinguals. First, for the vast majority of CS domains, bilingual children did not reach the monolingual level. As a rule, bilingual success rates were considerably lower

than those of monolingual children at the same age. This observation is consistent with the case study of Gagarina (2011) on bilingual Russian CS acquisition and might be attributed to three competing explanations: the particular complexity of the Russian CS (rich in non-transparent non-salient forms), relatively limited input of L1 among bilingual children, and lack of case inflections in the Hebrew L2.

Second, the monolinguals' error rates in oblique case production were usually less variable than those of the bilinguals. For example, for GEN.SG, the difference between possible outcomes (i.e., the difference between the highest and the lowest results) was approximately 69% in bilingual versus 0.7% in monolingual children. For DAT.SG, the difference was 81.5% versus 0%, respectively; for INST.SG, 83.3% versus 3.13%; for PREP.SG, 69.3% versus 11%. This high rate of variation among bilingual children was also found to be a characteristic by Bar-Shalom and Zaretsky (2008) and Polinsky (2008).

In addition, we observed that error rates were different in the different cases. Concerning singular forms, the most challenging cases for the bilingual children were Prepositional and Dative. This pattern of data might be attributed to the fact that these cases are less frequent in the monolingual child's and adult's production (Kopotev 2008). In addition, acquisition of Prepositional case is related to the mastery of the Russian prepositions. As a result, this case is challenging for both monolingual and bilingual acquisition.

Concerning the Dative case, the data about bilinguals' striking difficulties in its production in both singular and plural forms were intriguing. Our proposed explanation followed from the fact that this case is, on the one hand, rather regular but, on the other hand, relatively rare in input (Kopotev 2008). In this case, the difficulties of the bilingual children might be attributed to the sparsity of the input rather than the effect of regularity.

Regarding plural forms, a relatively high level of errors occurred in the Genitive and Prepositional cases. The Genitive case data might be explained by high variability of possible plural inflections. This may explain the reduced amount of possible input of each inflection alongside overall relatively limited input of L1 among our bilingual children. For the Prepositional case, as was noted above, the high level of errors might be attributed to the relatively low frequency of its output in both monolingual adults' and children's speech.

Finally, although the bilingual children showed the same types of errors as the monolingual children, it must be said that these errors are seen only at the very early stages of monolingual CS development. For instance, bilingual production was characterized by use of Nominative substitution, inter-case inflection substitution, and place versus direction case confusion. These errors have not been described as a characteristic of the monolingual child's speech after the age of 2;6 (Cejtlin 2000, Ionova 2007), but among bilinguals we see repeated cases of these errors.

4.2. Differences between Simultaneous and Early Sequential Bilinguals

Our results indicate quantitative differences between the simultaneous and early sequential bilinguals in Russian CS acquisition. In line with Montrul's (2008) claim that "linguistic control of the L1 varies dramatically depending on age of L2 acquisition and the circumstances surrounding acquisition" (2008: 4) and Modyanova's (2006) findings, it was evident that simultaneous bilinguals in our sample consistently showed lower rates of success than sequential bilinguals. It appeared that none of our simultaneous bilinguals showed a native-like production in any domain. Moreover, in such domains as plural forms of Genitive, Dative, Instrumental, and Prepositional cases, as well as the forms of Declension 3, the simultaneous bilinguals showed 100% errors. On the other hand, in some cases the sequential bilinguals reached mastery similar to the monolingual level.

In addition, we found that the simultaneous bilinguals had a considerably higher level of errors even in the most frequent words belonging to Declensions 1 and 2, (e.g., *mašina* 'car', *ruka* 'hand', *nos* 'nose', *dom* 'house') than their sequential peers.

It was also evident that the simultaneous bilinguals' production was characterized by an especially high level of Nominative substitutions compared to that of sequential bilinguals. More specifically, in four cases out of five—Genitive, Dative, Instrumental, and Prepositional—this error comprised over 50% of the erroneous production. Bearing in mind the monolingual patterns of acquisition, such levels of errors in the Nominative substitution indicate about a two-year gap.

How can we explain this link between AoA and CS mastery among bilingual children? First, it seems that the early massive educational input of caseless Hebrew in the monolingual Hebrew-speaking

preschools interrupts the course of Russian CS acquisition before its basics are mastered. This is also the case of English, another caseless language (Polinsky 2008). The impact of the Hebrew (L2) seems to be particularly evident in the high level of Nominative substitution among the simultaneous bilinguals. As noted above, nouns in Hebrew are inflected for number, definiteness, and state, but not for case. Different grammatical functions are usually expressed by means of prepositions or syntactically, i.e., the noun is usually placed in its basic (singular or plural) form in the phrase the child constructs. Thus, we suppose that the high frequency of erroneous use of the Nominative can be partially explained as a grammatical loan from Hebrew.

In addition, even though all our bilinguals acquired Russian at home from birth, as the language of communication with their parents, this context did not provide the same systematic and structural support that was given to sequential bilinguals within the framework of Russian lessons in a bilingual preschool.

To sum up, the bilingual children with AoA near one year showed a more significant delay in the development of the Russian CS with regard to the current intermediate stage of acquisition than the sequential bilinguals.

5. Conclusions and Implications

This study shows that the tendencies of bilingual CS acquisition are qualitatively similar to the monolingual patterns. That is, bilingual children made the same types of errors as those described by researchers of monolingual CS acquisition. However, while these types of errors disappeared from speech among monolingual children at the very beginning of the CS acquisition process, they were persistent among both bilingual groups with different levels of frequency.

As presented above, Russian CS production is a complex phenomenon that brings together inflectional morphology, syntax, simple semantic structures, and phonology. Yet, this system is basic and crucial for Russian language acquisition. Since its intensive acquisition occurs during the first three years of a child's life, restricted daily access to the Russian language (in terms of frequency of exposure and use) in limited contexts (home and non-educational) might be one of the main reasons behind the delay in its acquisition.

6. Further Research Directions and Research Limitations

The results of this multiple-case study need to be viewed as preliminary, as so many of the factors studied were novel (the Russian CS, Hebrew as the L2, early sequential bilinguals versus simultaneous bilinguals). Several directions for further research could strengthen and extend these results. First, further research on the CS acquisition process among bilingual children with different AoA of the L2 should focus on older children and adolescents. This future study could show whether the phenomenon of incompleteness is stable and whether differences between early sequential and simultaneous bilinguals still exist.

Second, in the present study, all early sequential bilinguals were enrolled in bilingual education and the simultaneous bilinguals were enrolled in monolingual education settings. As examining the effect of bilingual education was beyond the scope of our multiple-case study, we cannot conclude whether there was an additional effect of the educational system on CS acquisition in L1. Consequently, further quantitative research is necessary to determine the role of the educational and environmental L1 input in the CS acquisition in addition to the role of AoA. Thus, the study would include the following four groups: (i) simultaneous bilinguals attending bilingual preschool; (ii) simultaneous bilinguals attending Hebrew-speaking monolingual preschool; (iii) early sequential bilingual children attending bilingual preschool; (iv) early sequential bilingual children attending Hebrew-speaking monolingual preschool.

Third, no single study should be expected to provide a full investigation of CS acquisition. The present study performed an in-depth exploration of the basic functions of cases. Further research is necessary to focus on the vulnerability of different case functions.

Finally, concerning the monolingual data, early fundamental studies of Russian inflectional morphology development focused on describing errors and ignored the frequency of these errors. Future research must collect monolingual data on the frequency of these phenomena.

References

Axapkina, Jana E. (2007) "Tipy vremennoj lokalizovannosti na rannix ètapax rečevogo ontogeneza". Stella N. Ceytlin, ed. *Semantičeskie kategorii v detskoj reči*. Saint Petersburg: Nestor-Istorija, 49–77.

Anderson, Raquel T. (1999) "Noun phrase gender agreement in language attrition: Preliminary results". *Bilingual research journal* 23: 318–37.

———. (2001) "Lexical morphology and verb use in child first language lost: A preliminary case study investigation". *International journal of bilingualism* 5: 377–401.

Anstatt, Tanja. (2006) "Leksičeskie i grammatičeskie osobennosti russkoj reči detej bilingvov v Germanii (na primere rasskazov v kartinkax)". Stella N. Cejtlin, Marina B. Eliseeva, and Tatjana A. Krugljakova, eds. *Ontolingvistika: Nekotorye itogi i perspektivy.* St. Petersburg: Sankt-Peterburgskij institut rannego vmešatel'stva, 19–25.

Babyonyshev, Maria. (1993) "Acquisition of the Russian CS". Colin Phillips, ed. *MIT working papers in linguistics: Papers on case and agreement*. Vol. 2. Cambridge, MA: MIT Press, 1–43.

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

Belošapkova, Vera A. (1989) "Imja suščestvitel'noe". Vera A. Belošapkova, Elena A. Bryzgunova, and Elena A. Zemskaja, eds. *Sovremennyj russkij jazyk*. Moscow: Vyssaja škola, 402–42.

Berman, Ruth A. (1985). "Acquisition of Hebrew". Dan I. Slobin, ed. *The crosslinguistic study of language acquisition*. Hillsdale, NJ: Erlbaum, 255–371.

Brown, Roger. (1973) *A first language: The early stages.* Cambridge, MA: Harvard University Press.

Cejtlin, Stella N. (1998) "U-shaped development pri usvoenii rebenkom rodnogo jazyka (analiz slučaev mnimogo regressa)". *Materialy XXVII mežvuzovskoj naučno-metodičeskoj konferencii prepodavatelej i aspirantov. Vypusk 13*. St. Petersburg: University of St Petersburg, 76–80.

———. (2000) *Jazyk i rebenok: Lingvistika detskoj reči*. Moscow: Vlados.

———. (2005) "Kategorija roda v detskoj reči". A. V. Bondarenko, S. A. Šubik, J. E. Axapkina, M. D. Voeikova, M. J. Dymarskij, V. V.

Kazakovskaja, and S. N. Ceytlin, eds. *Problemy funkcional'noj grammatiki*. St. Petersburg: Rossijskaja Akademija Nauk, 346–75.

De Houwer, Annick. (1995) "Bilingual language acquisition". Paul Fletcher and Brian McWhinney, eds. *The handbook of child language*. Oxford: Blackwell, 219–50.

Dieser, Elena. (2007) "Osvoenije kategorii roda v ramkax detskogo dvu–trexjazyčija: Semantičeskie kategorii detskoj reči". Stella N. Cejtlin, ed. *Semantičeskije kategorii v detskoj reči*. St. Petersburg: Nestor-Istorija, 244–63.

Döpke, Susanne. (1992) *One parent, one language: An interactional approach*. Amsterdam: John Benjamins.

Gagarina, Natalia. (2011). "Acquisition and loss of L1 in a Russian–German bilingual child: A case study". Stella N. Tsejtlin, ed. *Monolingual and bilingual path to language*. Moscow: Jazyki slavjanskoj kul'tury, 137–63.

Gagarina, Natalia, Sharon Armon-Lotem, and Olga Gupol. (2007) "Developmental variation in the acquisition of L1 Russian verb inflection by monolinguals and bilinguals". Heather Caunt-Nulton, Samantha Kulatilake, and I-Hao Woo, eds. *BUCLD 31 online proceedings supplement*. Somerville, MA: Cascadilla Press, 1–11.

Gagarina, Natalia and Maria Voeikova. (2009) "The acquisition of case and number in Russian". Ursula Stephany and Maria Voeikova, eds. *Development of nominal inflection in first language acquisition*. Berlin: Mouton de Gruyter, 179–215.

Gathercole, Virginia, M. (2006). "Miami and North Wales, so far and yet so near: Morpho-syntactic development in bilingual children". Ms., University of Wales, Bangor.

Gvozdev, A. N. (1961) *Voprosy izučenija detskoj reči*. Moscow: Rossijskaja Akademija Nauk.

———. (1945) *Formirovanie u rebenka grammatičeskogo stroja russkogo jazyka*. Moscow: Akademija pedagogičeskix nauk RSFSR.

Glinert, Lewis. (1989) *The grammar of Modern Hebrew*. Cambridge: Cambridge University Press.

Ionova, Natal'ja. (2007) *Semantičeskie funkcii padežnyx form i predložnopadežnyx konstrukcij imeni sušestvitel'nogo v reči detej doškolnogo vozrasta*. Ph.D. diss., Čerepovez Linguistic Institute.

Kopotev, M. V. (2008) "K postroeniju častotnoj grammatiki russkogo jazyka: Padežnaja sistema po korpusnym dannym". A. Mustajoki, M. V. Kopotev, L. A. Birjulin, and E. J. Protasova, eds. *Instru-*

mentarij rusistiki: korpusnye podxody. Helsinki: University of Helsinki, 136–51. [*Slavica Helsingiensia*, 34.]

Kupisch, Tanja, Natasch Müller, and Katja F. Cantonem. (2002) "Gender in French and Italian: Comparing Italian and French". *Lingue e Linguaggio* 1: 107–49.

Laaha, Sabine and Steven Gillis, eds. (2007). *Typological perspectives on the acquisition of noun and verb morphology.* Antwerp: University of Antwerp. [*Antwerp Papers in Linguistics*, 112.]

Lepskaja, Natal'ja. I. (1997) *Jazyk rebenka (ontogenez rečevoj kommunikacii)*. Moscow: Moscow.

Meisel, Jürgen M. (2008) "Child second language acquisition or successive first language acquisition?" Belma Haznedar and Elena Gavruseva, eds. *Current trends in child second language acquisition*. Amsterdam: John Benjamins, 55–80.

———. (2009) "Second language acquisition in early childhood". *Zeitschrift für Sprachwissenschaft* 28: 5–34.

Miranovyč, Andrej. (2011) *Osvoenie padežnoj sistemy det'mi-monolingvami.* MA thesis, University of Perm.

Modyanova, Nadya. (2006) "The genitive of negation construction in Russian–English bilinguals". D. Bamman, Tatiana Magnitskaia, and Colleen Zaller, eds. *BUCLD 30 online proceedings supplement*. Somerville, MA: Cascadilla Press, 1–12.

Montrul, Silvina A. (2008) *Incomplete acquisition in bilingualism: Re-examining the age factor*. Amsterdam: John Benjamins.

Pearson, Barbara Z. (2007) "Social factors in childhood bilingualism in the United States". *Applied psycholinguistics* 28: 399–410.

Polinsky, Maria. (1997) "American Russian: Language loss meets language acquisition". Wayles Browne, ed. *Formal approaches to Slavic linguistics: The Cornell meeting*. Ann Arbor, MI: Michigan Slavic Publications, 370–407.

———. (2006) "Incomplete acquisition: American Russian". *Journal of Slavic linguistics* 14(2): 192–265.

———. (2008) "Gender under incomplete acquisition: Heritage speakers knowledge of non-categorisation". *Heritage language journal* 6(1): 40–71.

Ravid, Dorit. (1995a) *Language change in child and adult Hebrew: A psycholinguistic perspective.* New York: Oxford University Press.

———. (1995b) "The acquisition of morphological junctions in Modern Hebrew". H. Pishwa and K. Maroldt, eds. *The development of*

morphological systematicity: A crosslinguistic perspective. Tübingen: Gunter Narr, 55–77.

———. (2012) *Spelling morphology: The psycholinguistics of Hebrew spelling*. New York: Springer. [*Literacy Studies*, 3.]

Rolstad, Kellie, Kate Mahoney, and Gene V. Glass. (2005) "The big picture: A meta-analysis of program effectiveness research on English language learners". *Educational policy* 19: 572–94.

Rothweiler, Monika. (2008) "Verbal inflection, case morphology, and the acquisition of sentence structure in early successive bilinguals". Paper presented at the Eleventh Congress of the International Association for the Study of Child Language. Edinburgh, 28 July–1 August, 2008.

Schwartz, Mila. (2013). "Immigrant parents' and teachers' views on bilingual pre-school language policy". *Language and education* 27(1): 22–43.

Schwartz, Mila, Victor Moin, and Mark Leikin. (2012) "Lexical knowledge development in the first and second languages: A role of early bilingual education". *Bilingualism and bilingual education* 15(5): 549–71.

Silva-Corvalán, Carmen. (2003) "Linguistic consequences of reduced input in bilingual first language acquisition". Silvina Montrul and Francisco Ordóñez, eds. *Linguistic theory and language development in Hispanic languages*. Somerville, MA: Cascadilla Press, 375–97.

Sizova, Olga. (2009) *Poroždenie imennyx form v reči detej doškol'nogo vozrasta. Vzaimodejstvie sintagmatičeskogo i paradigmatičeskogo aspektov*. Ph.D. diss., University of St. Petersburg.

Slobin, Dan. I. (1973) "Cognitive prerequisites for the development of grammar". C. A. Ferguson and D. I. Slobin, eds. *Studies of child language development*. New York: Holt, Rinehart, and Winston, 175–208.

Timberlake, Alan. (2004) *A reference grammar of Russian*. Cambridge: Cambridge University Press.

Turian, Donna and Evelyn P. Altenberg. (1991) "Compensatory strategies of child first language attrition". Herbert W. Seliger and Robert M. Vago, eds. *First language attrition.* Cambridge: Cambridge University Press, 207–26.

Ufimceva, A. A. (1974) *Tipy slovesnyx znakov*. Moskow: Nauka.

Unsworth, Sharon, and Aafke Hulk. (2009). "Early successive bilingualism: Disentangling the relevant factors". *Zeitschrift für Sprachwissenschaft* 28: 69–77.

Voejkova, M. D. (2004) *Kvalitativnye semantičeskie kompleksy i ix vyraženie v sovremennom russkom literaturnom jazyke i v detskoj reči.* Ph.D. diss., University of St. Petersburg.

Wexler, Kenneth. (1998) "Very early parameter setting and the unique checking constraint: A new explanation of the optional infinitive stage". *Lingua* 106: 23-79.

Yip, Virginia and Stephen Matthews. (2007) *The bilingual child: Early development and language contact.* Cambridge: Cambridge University Press.

Zaliznjak, A. (1967) *Russkoe imennoe slovoizmenenie*. Moscow: Nauka.

———. (1977) *Grammatičeskij slovar' russkogo jazyka*. Moscow: Russkij jazyk.

Mila Schwartz
Department of Research and Evaluation Authority
Oranim Academic College of Education
Edmond J. Safra Brain Research Center
Haifa University
Haifa, Israel
milasch@bgu.ac.il

Miriam Minkov
Department of Research and Evaluation Authority
Oranim Academic College of Education
Edmond J. Safra Brain Research Center
Haifa University
Haifa, Israel

Received: July 2012
Revised: May 2013

Appendix: Summary of Tendencies among Monolingual Russian-Speaking Children Based on the Sequence of Linguistic Development

Tendencies and phenomena	Age
Appearance of Accusative case, simultaneous use of frozen Nominative forms (up to the age of 2;1)	Appearance: 1 year, 9–10 months
Appearance of Instrumental, Genitive, Dative, and Prepositional cases Production of oblique case forms, using predominant inflection	Appearance: 1 year, 10–11 months
Accurate use of a correct case (not always particular inflection) Use of the erroneous inflection belonging to the correct case Active mastering of prepositions Unification of noun stem Appearance of plural forms of oblique cases in speech, usually with predominant inflection	App. 2–2;6 years
Mostly accurate use of a correct case (in its primary functions) Unification of noun stem Erroneous Accusative forms associated with category of animacy (until age 4) Acquisition of grammatical constructions "two + GEN.SG" and "no + GEN," erroneous Genitive case forms (NOM or ACC) until age 3	App. 2;6–2;11 years
Secondary case function mastery, appearance of sequent innovations: Occasional forms of PREP.PL, GEN.PL, and ACC.PL, intra-case substitutions are possible; Predominant inflection in GEN:PL and PREP:PL (may be preserved until age 5;5); The neuter gender, the plural noun declension and the third declensional type are acquired.	After age 3