# LINGUISTIC COMPETENCE OF FIVE AND SIX YEAR OLDS: ANALYSIS OF NARRATIVE SAMPLES OF RUSSIAN, ENGLISH AND RUSSIANENGLISH BILINGUAL SPEAKERS <br> > by <br> <br> by 

 <br> <br> by}

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## ABSTRACT OF THE DISSERTATION

Linguistic competence of five and six year olds: analysis of narrative samples of Russian, English and Russian-English bilingual speakers by ELLINA D. CHERNOBILSKY

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To what extent do children developing bilingually show similar grammatical development to their monolingual peers? This study considers overall grammatical development in Russian and English for Russian and English monolingual children and bilingual children at entry to school. The Index of Productive Syntax (IPSyn) was revised and piloted in preparation for this crosslinguistic project. The study evaluates the utility of the revised IPSyn and its potential for studying larger samples of children.

The main question of the study is whether bilingual speakers, exposed to both languages from an early age, are as competent users of their two languages as are their peers who speak a single language at the time they are entering school. The results indicated that statistically, there was no difference between the monolingual and bilingual speakers in their common language as measured by the IPSyn proportionate scores. When examining various categories in the IPSyn measure, the comparison results indicated that in general, bilingual children, as a group, perform as well, and in some categories, better that the monolingual
children in either language. The results of the analysis of mixed utterances indicated that bilingual children, overall, were very careful to speak in a language requested to be spoken during storytelling. Most of the instances of mixing came from one child, Vera, when she was engaged in telling the story in English $(22.45 \%)$. The few instances of mixing produced by other bilingual children were predominantly utterances where the nouns in a different language were inserted.

The current study offers a new way to examine grammatical competencies in English and Russian monolingual and Russian-English bilingual five year olds. The proposed assessment methodology can be useful in tracing the microdevelopment of language in the ages between 5 and 7 leading to better understanding of the linguistic skills and knowledge children acquire at that age.

## Dedication

This work is dedicated to my children, Simon, Isaac and Sitora who are learning two languages and who master them with ease.

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## List of abbreviations

| $1 s t p$. | first person | masc. | Masculine gender |
| :---: | :---: | :---: | :---: |
| $2 n d p$. | second person | MLU | mean Length of Utterances |
| $3 r d p$. | third person | MLU-m | Mean Length of Utterances calculated in morphemes |
| $a c c$. | accusative case | MLU-w | Mean Length of Utterances calculated in words |
| adj. | adjective | $n$. | noun |
| adj. part. | adjectival participle | neut. | neuter gender |
| $a d v$. | adverb | nom. | nominative case |
| c.d. | comparative degree | NP | noun phrase |
| CHI | child utterance | num. | numeral |
| dat. | dative case | p.p.t. | perfective past tense |
| dim. | diminutive noun | p.t. | past tense |
| emph. | emphatic particle | perf. | Perfective aspect |
| f.t. | future tense | pl. | plural |
| fem. | Feminine gender | posess. | posessive pronoun |
| gen. | genitive case | pr.t. | present tense |
| imp. | imperative | prep. | prepositional case |
| impf. | Imperfective aspect | prepos. | Preposition |
| inf. | infinitive | refl. | reflexive |
| inst. | instrumental case | sing. | singular |
| INV | investigator's utterance | $v$. | verb |
| IPSyn | Index of Productive | $V P$ | verb phrase |
| L2 | Syntax second language |  |  |

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## Chapter 1

Introduction
Language researchers have been interested in learning more about the grammatical knowledge of bilingual speakers for a long time. Serious studies of bilinguals began in the early $20^{\text {th }}$ century with the studies of Ronjat (1913) and Pavlovitch (1920). The researchers who study bilingual language acquisition are generally interested in how children acquire and then later on maintain their languages, how language mixing happens and what influences it. Researchers also show a substantial interest in the acquisition of grammars by those who acquire or learn more than one language at the same time. It is important to study bilingualism as it sheds light not only on how people master a second language; it also helps us understand human language ability and the human mind since this research allows us to examine the capacity of humans to acquire and use more than one language (Cenoz and Genesee, 2001).

Although extensive research has been conducted in the area of bilingual language acquisition, not much is known about general bilingual language development and how closely the overall development of bilingual grammar matches the development of grammar in monolingual children at any given point in time. The goal of this dissertation is to examine to what extent the grammar of bilingual Russian-English children in a U.S. context matches the development of grammar in Russian and English monolingual children at entry to school.

Today, many of the studies of child grammar tend to study one issue or one dimension of grammar acquisition at a time. While this approach is helpful in
providing a deeper understanding about how each feature of language develops in a child's speech, it does not provide an understanding of how the various features work together and how children use them in their speech. The current study takes a broader approach by examining multiple grammatical features simultaneously. The Index of Productive Syntax (Scarborough, 1990) is the instrument used to do so. Scarborough (1990, Scarborough, Rescorla, Tager-Flusberb, Fowler, Sudhalter, 1991) argued that the Index of Productive Syntax (IPSyn) provides a quick and accurate look at children's emergent grammars. The measure was designed to examine the grammars of two year old children at risk for language delays. However, the fact that the instrument has many categories that older children are still mastering suggests that this methodology of assessing children's language can be successfully used when attempting to understand the development of language in normally developing older children.

In this research, the IPSyn was adapted for use with bilingual children, specifically for comparison between the English and Russian languages. The revised IPSyn, designed as a part of this dissertation, allows the measurement of the two languages on comparable scales. One can then determine whether the development of the two languages progresses similarly. The study evaluates the utility of the adapted IPSyn and its potential for studying larger samples of children.

The main question the study answers is whether bilingual speakers at the time they are entering school are as competent users of their two languages as their monolingual peers. This is important to understand for both the practitioners
and the researchers. In case discrepancies in the competencies of the child's two languages are found using the IPSyn, the practitioners will be able to see exactly what grammatical categories need special attention and focus their efforts on helping children conquer the deficits in their language development. For the researchers, such findings help move forward discussions regarding language dominance and language proficiency that have been the subjects of debate in the linguistic community for years. However, if bilingual children are found to have equal grammatical competence in their two languages, such findings should reassure the practitioners regarding multiple language use. For the researchers, such findings may mean that the development of bilingual grammatical competence matches monolingual competence despite great differences in the grammatical features each language involves. Regardless of the findings, however, this research opens new doors in cross-linguistic and bilingual research as it offers new ways of looking at children's language acquisition processes.

The present chapter reviews literature relevant to the issues addressed above, including the studies in the development of monolingual Russian and English grammars and the information from the pilot studies conducted by the researcher. The chapter concludes with a statement of the specific questions to be addressed in this study.

## Features of the English language

English is a member of the West Germanic subgroup of the Indo-
European family (O'Grady, Archibald, Aronoff and Rees-Miller, 2001). Although English evolved into its modern form after the $15^{\text {th }}$ century, its vocabulary is
heavily influenced by the Latin and French borrowings that occurred in the Middle English period of the $11^{\text {th }}-14^{\text {th }}$ centuries during the time of the Norman invasion and settlement in England (Crystal, 1992).

Modern English lacks grammatical gender and adjective-noun agreement. In addition, English has very limited inflectional structure, with only seven obligatory endings (Goodluck, 1991). Instead, English relies on modal and auxiliary verbs, as well as word order, to give grammatical information such as voice, negation, mood and aspect among others.

Contemporary English has only one case, the possessive or genitive case, expressed either with 's, the preposition of or by using pronouns like my or mine (Crystal, 1992). Also, English employs a large number of prepositions that often express the grammatical meaning that cases encode in other languages.

English verb morphology is quite complex. It has three tense options present, past and future. On top of that, the English verb system has an additional layer that denotes continuity of action, thus resulting in a complex system of tense-aspect relationship that is expressed grammatically through continuous, perfect, and indefinite tenses.

Although the English language does have a notion of reflexivity (denoted by the pronoun oneself in an appropriate form to agree with a subject, e.g., he dressed himself), it is rarely used. Instead, English speakers often use passive constructions to denote that an action is referred back onto a speaker. The sentence he got dressed is an example of such use of passive voice to denote the reflexivity.

## Brown's (1973) study of child English language acquisition

One of the most comprehensive longitudinal studies is a study by Brown (1973), who tracked the language development of three children, Adam, Eve and Sarah. Brown and his team began studying the children when they were just beginning their multi-word utterance phase. Eve was studied for a year; however, Sarah and Adam were studied for five years. The results of this work were multifold. First of all, Brown came up with a measure, Mean Length of Utterance (MLU), that gained popularity with researchers for its ease of calculation. Second, Brown was able to delineate five stages of the development of children's speech, based on the length of utterances children produced in each stage. Third, based on the data from the three children studied, Brown delineated the order of acquisition of 14 English morphemes.

MLU. Brown (1973) identified MLU as an easy and simple measure of grammatical development since "almost every new kind of knowledge increases length" (p. 53). MLU is calculated by dividing the total number of utterances into the total number of morphemes. To calculate MLU, Brown proposed a set of rules that take into account child language development and the basic rules of English grammar. These rules are given in Appendix A. Brown stated that although no claim could be made that these rules were the only right rules, he believed that these rules served his team well as a way to compare the data from different children. He also believed that these rules may work well for various other research projects as well as for different languages.

The main argument in favor of MLU is that it is easy to use and that it provides the necessary mechanism for grouping children for research purposes. Another argument in favor of the measure is that it is a better predictor of language development than chronological age. According to Brown (1973), children of different ages who have similar MLU values have more in common, as far as language development goes, than children who have the same chronological age but who differ in MLU.

From the time it was proposed by Brown, MLU has been a controversial measure in language research and had been subjected to fierce criticism (Crystal, 1974; Klee \& Fitzgerald, 1985; Smoczynska, 1981). Many different studies have been conducted to examine the validity, reliability and usefulness of MLU in research on English language acquisition (see, for example, Klee \& Fitzgerald, 1985; Miller \& Chapman, 1981; Rondal, Ghiotto, Bredart, \& Bachelet, 1987). However, no single study was definitive in either proving or refuting the validity of the use of MLU. One argument researchers have made against MLU is that there are many different ways that children may achieve similar MLU values. According to Rollins, Snow and Willett (1996), researchers need to be aware of this issue and always exercise caution in deciding what it is we are trying to investigate, measure and understand and what is the most efficient and correct way of doing so. As it stands now, too much value may be placed on a single language index and it may be the case that MLU does not show much beyond what it really intends to measure which is the length of utterance. Thus, although MLU may be a useful global index of language development up to a certain stage
of development (MLU of about 3.0), it should not be used as the sole indicator of language proficiency. A better way to use MLU may be in a combination with some other measures that would be more indicative of language development (Rollins et al., 1996).

Nevertheless, MLU remains the single most popular measure of success of child's language acquisition not only in research of English acquisition, but for researchers who deal with other languages as well. Brown (1973) proposed that MLU is a valid universal description of the early language development stages. At the same time, many researchers who study languages other than English caution that the rules Brown laid out for calculating MLU were designed for English only. Other languages have different structure and cultural norms of use, which may make the original rules unusable in other languages (Dromi \& Berman, 1982; Hickey, 1991). Thus, when using MLU for research on languages other than English, researchers caution that adapting MLU to use in those languages may not be easy. Even after the adaptation process is complete, the adapted MLU may yield inflated values due to the many inflections in synthetic languages (Allen \& Crago, 1996; Fortescue, 1984).

Many researchers also reported that MLU in morphemes (MLU-m) and MLU in words (MLU-w) are highly correlated, thus suggesting that it may be simpler and more efficient to use MLU-w as a global index of language development (Arlman-Rupp, Van Niekerk de Haan, \& Van de SandtKoenderman, 1976; Hickey, 1991). However, even if researchers opt to do so,
they need to be careful as languages have different structures and the index may still not be comparable in different languages.

One issue for the researchers to be aware of is that using MLU-m assumes that the morphemes are part of the child's system. In many cases, especially in synthetic languages, it is hard to say whether it is true in the case of young children as they might learn morphemic variants as separate lexical items. Many researchers believe that in order to credit a morpheme as acquired, one would need independent examples of the use of the morpheme in several different lexical items (Thordardottir \& Weismer, 1998). When Brown (1973) published his work, he addressed the issue of morpheme acquisition and proposed the stages that each English speaking child goes through when acquiring certain morphemes.

Stages of language development. Brown (1973) identified five stages that children go though when acquiring English. Each stage is characterized by an approximate age in months, range and mean MLU, Lower and Upper Bounds of morpheme counts and certain morphological structures.

The stages and the list of morphemes Brown identified are listed in Appendix B. Stage I is the stage with the lowest MLU range of 1.50 to 2.00 , with the mean MLU of 1.75 and the Upper Bound (or the highest number of morphemes in a set) of 5.00 . Most of the utterances in this stage are two to three words long. Stage II occurs when the child is between the ages 28 to 36 months. It is characterized by the MLU range of 2.00 and 2.50 morphemes, with mean MLU being at 2.25. At that stage, Brown says, the children begin using a morpheme that indicates a continuous action (-ing), as well as prepositions. Stage

III is the stage with MLU of 2.75 and Upper Bound of 9.00. Three morphemes were identified as occurring at this stage. Stage IV is the stage where the articles, regular past tense and third person present tense morphemes emerged. The MLU at this stage ranged between 3.00 and 3.70 with mean at 3.50 . Finally, Stage V was the stage with the largest - for Brown's data - MLU of 4.00 with the Upper Bound of 13.00. The rest of the morphemes that Brown identified were acquired at this stage.

Brown (1973) identified 14 morphemes that English learning children acquire within the period of approximately 52 months during the five stages in their speech development. These 14 morphemes included five out of the seven obligatory morphemes that English language has. The two obligatory morphemes that were not studied were the morphemes -er and -est that are used in the formation of the comparative and superlative adjectives.

Brown further proposed that these fourteen morphemes were acquired in a set order by the majority of the English learning children. To confirm this, deVilliers and deVilliers (1973) studied the use of Brown's morphemes in the speech of 21 children. They found that at any given MLU stage as defined by Brown, the morphemes show similar ordering for all children involved in the study, which confirmed the order of acquisition identified in Brown's work.

Brown's (1973) work is considered to be seminal in English acquisition research due to the large amount of data collected, detailed analyses and multiple conclusions that followed these analyses. To this day, researchers use the data collected by Brown and his team to answer new research questions. At the same
time, despite its status, some limitations may be identified. One limitation is that Brown studied only 14 morphemes, although the children had used others. Brown gives his reasons for doing so, stating that his team focused specifically on these morphemes because it was possible to identify obligatory contexts for these morphemes (p. 269-270). Another reason for narrowing his research to the 14 morphemes was that they were frequent enough in the speech of children to yield data that were continuous. It is necessary to remember, however, that the English language offers many more morphemes than Brown chose to study and some children do use some of them early, as Brown acknowledges.

Next, Brown identified five stages of language development. The reason he identified only five stages and not more is that, in Brown's words, after stage V what a child says begins to depend more on the character of the interaction and not on what the child knows. Thus, Brown asserts, using such values as MLU or Upper Bound becomes meaningless (p. 54).

Brown was concerned with the consistency of use of grammatical morphemes. To ensure this, his team considered a morpheme to be acquired if it was used correctly in $90 \%$ of obligatory contexts. However, to become a competent user, on top of the morphemic knowledge and use, the child must have certain communicative knowledge and be able to combine the knowledge of acquired morphemes together with other grammatical knowledge. For example, the morpheme -ing is used to convey the continuity of an action, but this is not the only task this suffix performs. Another task is conveying the grammatical notion of gerund, or a noun that is made out of a verb (e.g., He is walking (v). vs.

Walking (n) is a difficult task.). Thus, the child needs to employ the differences as well as understand that the same suffix plays two different roles in the language. It is quite possible that this kind of knowledge develops after the last stage identified by Brown.

Other researchers continued studies of the development of grammar. However, none of the researchers looked at the grammar as comprehensively as Brown (1973) had. After the publication of Brown's work, researchers investigated various phenomena in language acquisition but without looking at the larger picture of grammar acquisition. Although it is known that a child's grammar develops more than one feature at a time, the focus of today's researchers seems to have shifted to specific competencies in grammar. As Schaeffer (2000) put it, it is important to shed light on the logical problem of language acquisition as well as on the developmental problem. Therefore, she states, there is a need to study particular phenomena in child's language. Schaeffer adds that "only a detailed and principled description of particular aspects of the intermediate grammar can reveal the true nature of language development" (p. 2).

## Other studies of English acquisition

Studies of English acquisition since Brown (1973) have focused on many different aspects of grammar - verbs and verbal inflections, including the development and use of present and past tenses, development of negatives in child's speech, and the acquisition of comparative adjectives among others. A list of such studies is provided in Table 1.

Table 1
List of English language studies reviewed

| Author(s) | Year | What was studied |  |  |  |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: |
|  |  | Verb | Noun | Adjectives/ | Auxiliaries | Other |
|  |  | Morpho | Morpho | adverbs | /copulas |  |
|  |  | -logy | -logy |  |  |  |
| Bybee and |  | Past |  |  |  |  |
| Slobin | 1982 | tense |  |  |  |  |
| Wilson | 2003 |  |  |  | To be |  |
| Theakston |  |  |  |  | To be and |  |
| and |  |  |  |  | to have |  |
| Lieven | 2005 |  |  |  |  |  |
| Grasiano- |  |  |  | Comparativ |  |  |
| King and |  |  |  | es |  |  |
| Carins | 2005 |  |  |  |  |  |
| Valian | 2006 |  |  |  | To be |  |
| Cameron- |  |  |  |  |  | Negat |
| Faulkner |  |  |  |  |  | ors |
| et al. | 2007 |  |  |  |  |  |

Despite the differences in scope, methodologies, and designs, all of the studies reviewed below can, to various degrees, be considered as to be extensions of Brown (1973) work. For example, out of 14 morphemes that Brown identified
in his work, eight had to do with verbs, and of these eight, four had to do with the auxiliaries and/or copulas. Most of these morphemes are identified as emerging starting at Stage III (where children are between ages 36 and 42 months). However, further studies of verb morphology indicate that children as young as two years of age use verbs to be and to have as auxiliaries and copulas (Valian, 2006; Wilson, 2003). However, as seen from Valian's study, two-year-old children have a hard time using the verb to be as an auxiliary with the progressive tense, whereas, they have no problem using the same verb as a copula. Three-year-olds, on the other hand, do well with both auxiliaries and copulas, with expert performance emerging at around age four, since the four-year-olds clearly understand the significance of tense and aspect and verb use in present and past tenses (Valian). Wilson's (2003) study validated these results. He examined existing CHILDES transcripts of children's speech to find that between ages 18 and 41 months children use the copula be significantly more frequently that the auxiliary be. Wilson's results also indicate that the use of third person present agreement varies from child to child. Some children use the copula significantly more than the third person agreement, whereas for some children the reverse is true.

Theakston and Lieven (2005), who also studied the development and use of the inflections of to be and to have, found that there were differences in the correct use of these auxiliaries in declaratives and questions in the speech of children between ages 32 and 45 months. Children used the various forms of be
correctly more often than those of have. Moreover, various forms of have (i.e., has and have) had different rates of correct use in declarative sentences.

Theakston and Lieven (2005) also performed an error analysis to see what contributed to the errors of use of these two verbs in children's speech. They found that errors of commission rather than omission were more frequent. Of those, agreement errors were more evident in questions than in statements, whereas substitution errors were more common in declarative sentences than in questions. Furthermore, lexical errors in the verb forms were common with the auxiliary have, but had a different form in the declarative vs. question constructions - when using the auxiliary in declarative statements, children tended to overgeneralize the use of inflections -en and -ed, whereas in questions they tended to use the stem forms of the verbs.

Bybee and Slobin (1982) examined the development and use of the English past tense in children's speech, focusing on irregular verb use. This was a cross-sectional study of three groups: preschool children, 8-10 year olds and adults. Breaking the verbs into eight different classes, the researchers found that the percentage of regularizations of irregular verbs declines between preschool and the third grade for most verb classes. The authors believe that such a decrease indicates the presence of rote, not rule-based learning of irregular verbs during the pre-school years. The researchers also found that the frequency of input is an important variable in learning and correct usage of irregular verbs. This was clearly the case in the pre-school and third grade data, as the more the irregular verb was used by adults, the less likely it was to be used with the regular ending.

The adult data also indicated that the maintenance of irregular forms of verbs was important, especially in use under pressure.

Although Brown (1973) identified that negation emerges early in the child's speech (Stage I, MLU of 1.75), he did not study what happens with negators once the child reaches the multiword utterance stage(s). To fill this gap, Cameron-Faulkner, Lieven and Theakston (2007) studied the development of negators in multiword utterances. They studied the speech of one child and his mother from age 27-40 months. The researchers delineated three stages of development of negators. During the first stage, the use of no is prevalent, at the second stage the use of not $X$ becomes predominant, and finally, during Stage 3, the use of contraction $n^{\prime} t$ emerges and becomes stable and prevalent. The authors also looked at the development of negation for specific functions and found that the child used negations to express four out of eight delineated functions productively from age 27 months onward. The four functions were failure, rejection, prohibition and inability. Comparing these findings with the input from the child's mother, the researchers found that the negations that expressed these functions were frequent in the speech of the mother. The researchers conclude that frequency of input is essential in the development of negators in the child's speech, which supports the usage-based approach to language development (Langacker, 1987).

Another study that took Brown's (1973) work further was the study by Grasiano-King and Carins (2005), who studied the acquisition of comparative adjectives, the morphemes Brown did not identify in his five stages. Grasiano-

King and Carins studied children as young as four years old (Brown's stage V) to track the trajectory of development of comparative forms of adjectives in young children acquiring English as their first language. The researchers propose that the development of comparatives in English progresses in three broadly defined stages. In stage 1, there is no preference between the periphrastic (endings -er and -est) and synthetic (using words more, most) comparatives. In Stage 2, the suffixation rule is developed by children. In this period, the children tend to overuse the -er form of comparatives, extending it to the adjectives they are not familiar with. As children experience more input, they begin identifying the comparative forms that do not fit the suffixation rule and thus enter stage 3 , where children will develop an adult-like comparative system of adjectives.

The literature reviewed above, including the work of Brown (1973), shows that all seven obligatory morphemes that are present in the English language have been studied for child acquisition in the past 40 years. In addition, the development and use of auxiliaries and irregular verb formation in past tense has been given some attention. Many of these studies point to the idea that the development of morphemic features follows stage-like development (Brown; Cameron-Faulkner et al, 2007; Grasiano-King and Carins, 2005). Thus, it is possible to quickly summarize what is known about the acquisition of English language by young children. First, the development of morphemes is stage-like. Second, the 14 morphemes that Brown identified emerge at the time Brown identified them but their use keeps evolving and developing until it is mastered. Third, auxiliaries keep developing. Although Brown's work did not include to
have as an auxiliary, it is present at an early age and children do learn to use it correctly early (Theakston and Lieven, 2005). Finally, acquisition of other grammatical categories takes place at the same time that of the morphemes that Brown identified in his research. For example, irregular past tense is seen as used in the speech of young children (Bybee and Slobin, 1982); comparative degrees of adjectives begin to develop at about the same time (Graziano-King and Carins). However, some morphemes are mastered faster than others. That is because frequency of input is important, as Bybee and Slobin maintain.

Brown (1973) argued that what he found in terms of MLU and stages of acquisition may be a universal acquisition pattern, particularly if one characterized the acquired morphemes "semantically rather than grammatically" (p. 296). However, most of the 14 morphemes that he outlined as developing in his five stages do not exist in many other languages, including Russian. For example, articles $a$ and the are acquired, according to Brown, in Stage IV. In the Russian language, however, the grammatical marker for articles does not exist.

It is of interest to see whether the acquisition of the Russian language is similar or different from what Brown (1973) proposes and what the obligatory morphemes that develop first in Russian are. A review of Russian as a language and of the research in Russian acquisition studies follows.

## Features of the Russian language

Russian belongs to the Slavic subgroup of the Indo-European family of languages (Akmajian, Demers \& Harnish, 1984). It has a complex syntheticinflectional structure, i.e. it has lots of prefixes, suffixes, and infixes that can be
combined together to form derivatives of a word. The Russian language has three grammatical genders (masculine, feminine and neuter); each noun and adjective is marked for gender by a special ending. Russian has six cases that are denoted by the endings of nouns and NPs, as modifying adjectives must agree with nouns in gender, number and case (Wade, 1992). Because of the extensive case system and the high number of inflections that preserve the meaning of a sentence, Russian word order is rather flexible. At the same time, this flexibility of word order in Russian is not arbitrary. Some restrictions apply as a change in the word order can lead to changes in meaning or render a sentence ungrammatical (Krylova \& Khavronina, 1988).

Russian has grammatical conjugation, i.e. the verb endings change depending on the person (first, second or third), the number (singular or plural) and tense. The Russian language has three tenses (present, past and future) as well as imperative form of verbs. Russian utilizes reflexive verbs heavily. Reflexives are formed by a reflexive morpheme $c b / c s$ that is attached to the end of a verb in any tense. For example, он ударился (he bumped himself, masc. perf. past tense); я ударюсь (I will hurt myself, f.t. perf.); я ударяюсь (I keep hurting myself, pr.t., impf.).

What makes Russian difficult to learn for the speakers of other languages is the fact that verbs have two aspects - perfective and imperfective, a feature that does not have direct equivalents in many languages (Comrie, 1976). There are also some verbs that have only one aspect, imperfective. Both aspects have past and future tense, however only imperfective aspect verbs can be used in present
tense. One can broadly define aspect as an attitude towards an action in time (Cruise, 1993). In the past tense the imperfective aspect would simply indicate an action as a process that occurred in the past. The perfective aspect would indicate that action is not only past but achieved some specific end point even if the end point is not mentioned. In the future tense, the perfective aspect implies a stronger intent to complete the action. For example, Я буду читать книгу (ya budu chitat' knigu, I will be reading a book) indicates that the action is taking place sometime in the future with no indication of the intent of finishing or reading at any point soon. Я прочту книгу (ya prochtu knigu, I will read a book) implies that the speaker is intending not only read but also finish the book in question. The difficulty comes in with the formation of these aspects, as they can be formed in a number of ways - by prefixation, by derivation from different roots, by stress or by internal modification (Wade, 1992).

Russian has passive and active voice, just like English does. However, passive voice is rarely used in Russian. Special passive participles are used when passive voice sentences are constructed. Russian has two types of participles adjectival and adverbial ones. Unlike in English, they do not form combinations with auxiliary verbs to form tense. Adverbial participles have perfective and imperfective forms, whereas adjectival participles have tense and voice, i.e. they can be used in present or past tense with active or passive voice (Cruise, 1993).

Modern Russian does not use copulas in the present tense. The verb to be is used for linking only in the past or in the future tense. In addition, Russian has only one auxiliary verb, and that is the verb to be which is only present to help
form the future tense in the imperfective aspect. A more detailed survey of Russian grammatical features is provided in Appendix C.

## Russian acquisition research

Russian acquisition research followed similar patterns as English child language research: there was one seminal study (Gvozdev, 1949; 1961) that mapped language development, taking into consideration lexicon, grammar and phonetics. This was followed by a number of smaller scale studies that focus on one or two aspects of acquisition at a time.

Gvozdev's work $(1949,1961)$ is considered to be one of the most important monographs on child acquisition of Russian. In his work, Gvozdev studied the language development of his son, Zhenya, by keeping detailed diaries (in the 1920s and 1930s). His 1949 and 1961 publications were the analyses of his diaries in terms of Zhenya's phonological, grammatical, and lexical development. Slobin (1966) summarized Gvozdev's work for non-Russian researchers and provided additional analyses in his summary. In particular, Slobin indicated that grammatical development of language becomes evident through the use of morphological markers when the length of utterances increases from two to three or four words. In his summary, Slobin also reported that there was a rapid emergence of various grammatical elements in Zhenya's speech, starting at age $1 ; 11$. Slobin stated that at that time the markers for number, diminutive, and nominative, accusative and genitive cases appear in nouns, while markers for infinitive, imperative, past and present tense appeared in verbs.

Reading the original work of Gvozdev (1961), it is evident that by the time the child is around 5 years old, basic competencies in word formation (using prefixes, infixes and suffixes), use of the case system in nouns and adjectives, and verb conjugation are largely in place. However, there are many overregulations that may be evident in the speech of the child. For example, Gvozdev points out that Zhenya had used the past tense feminine ending in verbs for quite a long time (e.g. a boy saying 'ja poshla' (I am gone, fem.) instead of 'ja poshel' (I am gone, masc.) to indicate that he was going someplace). Similar results were also reported by Popova (1958) who stated that the feminine past tense suffix was prevalent in the speech of young children of either gender and was the first stage in a multistage process of tense acquisition. Despite the evidence from the two studies, it is still unclear, however, whether this feature of the child's speech was due to a large maternal input or is a standard overgeneralization all Russian children go through when acquiring past tense morphology.

Gvozdev (1961) reports that by the time the child was five he used many compound sentences with such conjunctions as when, where, in order to, if and many others correctly. At the same time, the child was still mastering the use of many suffixes, especially those that require a shift in consonants ${ }^{1}$ or that have a vowel that sometimes disappears from the root of the word, depending on the declension form.

Around age five Zhenya was fully engrossed in experimenting with his language inventing neologisms, playing with stress and sometimes with suffixes.

[^0]Furthermore, the child was still mastering the use of stress as it frequently shifts in word formation. Gvozdev also reports that the use of adjectival and adverbial participles is just emerging at age five, which means that some of the more complex parts of speech in Russian are then being learned.

Gvozdev's diaries are still being used in general language research and his study remains influential, even though this study was a case study of one child. Gvozdev's goal was to describe how the language of the child changes as the child grows and matures, but some might argue that generalizing from a case study may be difficult.

## Other work in Russian acquisition

Most of the literature on the Russian language acquisition that has been published in Russia recently is focused on three general aspects: (1) language development of cognitively and linguistically impaired children; (2) competencies that children develop when learning a second language in elementary school settings; and (3) methods and principles of teaching Russian in schools. Despite the fact that research focus was heavy on the above mentioned areas, some language acquisition research of typically developing young Russian children was carried on by several other researchers. The list of the studies reviewed here is given in Table 2.

What Russian language researchers have learned since Gvozdev (1961) focused mainly on the acquisition of nouns and verbs. Just as in the English language studies, the results in the Russian language research literature seem

Table 2
List of relevant studies conducted in Russian language acquisition

| Author(s) | Year | Noun morphology |  |  |  |  |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
|  |  | Tense <br> /aspect | Case <br> system | Agree <br> ments | Diminutives | In-flections | Adjec- <br> tives/ <br> adverbs |
| Bogoyavlensky | 1957 |  |  |  |  | X |  |
| Popova | 1957 |  |  | X |  |  |  |
| Zakharova | 1957 |  | X |  |  |  |  |
| Babyonyshev | 1993 |  | X |  |  |  |  |
| Bar-Shalom | 2002 | X |  |  |  |  |  |
| Vinnitskaya | 2003 | X |  |  |  |  |  |
| and Wexler |  |  |  |  |  |  |  |
| Kempe et al | 2003 |  |  |  | X |  |  |
| Kazarina and | 2003 | X |  |  |  |  |  |
| Phillips |  |  |  |  |  |  |  |
| Gordievsky | 2004 |  | X |  |  |  |  |
| and Schaeffer |  |  |  |  |  |  |  |
| Stoll | 2005 | X |  |  |  |  |  |
| Kuznetsova et | 2007 |  |  |  |  |  | X |
| al |  |  |  |  |  |  |  |

to indicate that much of language development of young children has stage-like pattern (Zakharova, 1958, Bogoyavlensky, 1957, Popova, 1958, Kempe, Brooks, Mironova, and Fedorova, 2003). In particular, although young children use a great number of inflections appropriately, as late as age seven children still cannot correctly identify whether a particular suffix should be used with animate vs. inanimate object. In addition, children have difficulty using derivational inflections that are restricted to the abstract nouns, for example, suffix -ota- in words dobrota -- kindness, krasota -- beauty, teplota -- warmth (Bogoyavlensky).

Babyonyshev's (1993) study focused on the development of case inflections in Russian. The researcher found that the use of cases varies widely in child speech. The results of Babyonyshev's analyses indicated that nominative, accusative, and to a large degree, dative cases are the earliest to be used correctly by children ages $1 ; 6$ to $2 ; 7$. At the same time, the genitive case was not yet used productively at that age range. The weakness of this study was that Babyonyshev made no distinction between the acquisition of singular vs. plural nouns in various cases. Gordishevsky and Schaeffer (2004) looked at three participants ages $1 ; 8$ to $2 ; 0$ in an attempt to distinguish between singular and plural case acquisition. They found that all three children had a high percentage of correct production of all cases in the singular. The results for plural nouns indicated that nominative plurals were used with high accuracy. However, children had a low percentage of correct use in the instrumental plural, zero percent accuracy in accusative and genitive cases, no use of dative plural case. As a result of these findings, the
researchers suggest that plural forms, especially those in the nominative case, are learned by rote at this stage.

One clear and cultural linguistic difference that exists between the Russian and English languages is the use of diminutives in speech. While English does have diminutive suffixes (e.g., dog - doggie, diner - dinette), the use of some of these suffixes may change the connotation of the words, and even, their literal meaning. This is not the case in Russian (and other Slavic languages).

Diminutives are used widely by Russian speakers, especially if the speech is child-directed. To understand how diminutives may help Russian speaking children identify noun genders, Kempe et al. (2003) studied the speech of children ages $2 ; 9$ to $4 ; 8$. The researchers found that sixteen children were at ceiling in identifying nouns from diminutive endings. The rest had a small rate of error on the task and that rate was weakly correlated with age. When mistakes were made, children made more errors with feminine than masculine nouns. Children also tended to make more errors when using nouns with adjectives, but not when using nouns with personal pronouns. This led the researchers to conclude that this difference in accuracy may be due to the earlier acquisition of noun-pronoun type of agreement in children's speech.

In the research concerning adverbs and adjectives, a recent cross-sectional experimental study by Kuznetsova, Babyonyshev, Reich, Hart, and Grigorenko (2007) examined the understanding and use of universal quantifiers in children's speech. Forty-two children ages $4 ; 00$ to $12 ; 00$ and eleven adults participated in the study. The researchers found that children performed as well as adults in
identifying sentences with quantified subjects as well as sentences with unmodified plural conditions. Children made significantly more errors in identifying sentences where the object was quantified. The researchers speculate that this may be due to the fact that the children may interpret such sentences in more than one way, whereas adults interpret these types of sentences as unambiguous.

In the past decade, much of the interest in language acquisition research centered on tense and aspect acquisition in various languages. Some literature concerning Russian tense/aspect acquisition has appeared in recent years as well (e.g., Stoll, 2001, 2005). Because the Russian verb system is so complex, different researchers tackle different types of verbs in studying tense and aspect acquisition. For example, Bar-Shalom (2002) studied four children ages $1 ; 6$ to $2 ; 11$ years to see how they mastered tense and aspect acquisition and how they use telic (i.e. those that indicate clear results) and atelic (i.e. those that do not clearly point to a result) verbs in past tense. Bar-Shalom found that children have already mastered tense relations by the age studied. Another finding was that children used both telic and atelic verbs in the past tense, which means that young children do not restrict the use of past tense to just those verbs that indicate clear results. In addition, there was limited evidence in the results of Bar-Shalom's study that Russian children learn to use past tense with achievement verbs first, then with accomplishment verbs and only after that verbs of state, as proposed for the acquisition of English by Shirai and Anderson (1995). Most importantly, BarShalom found that children used both perfective and imperfective verbs early and
correctly, a finding confirmed by the results of Vinnitskaya and Wexler (2001) and Stoll (2005) studies. Stoll, while confirming the findings in Bar-Shalom, stipulated that the correct use of aspect is restricted to narratives. In isolated utterances (elicited by various elicitation or production tasks) the correct use of perfective aspect of ingressive verbs (those verbs that indicate the beginning of the situation) in particular, goes down in the speech of children as old as nine years old. Stoll argues that ingressive verbs must have a clear context in order for them to be meaningful. In order for children to master the perfective aspect, three factors are necessary: (a) understanding of a lexical aspect (Actionsart), (b) understanding the complexity of the context, and (c) narrative competence of a child.

To echo Stoll’s findings, Kazarina and Phillips (2003), who studied the acquisition and use of aspect in the speech of children between 36 and 40 months (3-5 year olds), found that understanding of aspectual differences increases with age, since younger children make more non-adult like responses in the story comprehension and truth-value judgment tasks that Kazarina and Phillips employed in their study. At the same time, Kazarina and Phillips found that children make mistakes in production tasks that require the choice of aspect because they may need a better reference frame in order to associate incomplete events with the use of imperfective aspect.

To summarize what we have learned about Russian language acquisition from these studies five main points can be made. First, as in English, the acquisition of Russian has a stage-like pattern (Babyonyshev, 1993; Popova,
1958). Second, by age five, although children are still mastering many complex features of the language, they are competent users of the language. They can understand how different features in the language work and can be creative in using language (Bar-Shalom, 2002; Gvozdev, 1949, 1961; Kazarina and Phillips, 2003; Kempe et al, 2003; Kuznetsova et al, 2007; Stoll, 2005). Next, diminutives are utilized heavily and appear to help in the acquisition of gender (Kempe et al, 2003). This may have to do with the diminutive suffixes that make the gender marking more apparent. Fourth, inflections are still being mastered (Bogoyavlensky, 1957; Zakharova, 1958). Finally, meaning, saliency, and context are important in the acquisition of Russian inflection morphology (Bogoyavlensky, 1957; Stoll, 2005).

## Studies of bilingual Russian-English acquisition

Both Brown $(1973)$ and $\operatorname{Gvozdev}(1949,1961)$ concerned themselves with one language. Although Brown devotes considerable space in his work to some other languages (Russian among them) in arguing that MLU-m may be a universal index of language development, he offered no cross-linguistic theories or ideas. As Brown put it, the difficulties of looking at languages other than English are always the same -- in the studies that deal with early acquisition of languages there is no explicit criterion of acquisition and there is insufficient information about the grammatical or semantic characteristics of morphemes (p. 298). Despite these difficulties, researchers do engage in cross-linguistic research, although those who engage in multilingual research consistently state that the
morphological, grammatical and semantic differences may prevent the researchers from easily comparing languages to one another.

Although there are many studies of cross linguistic acquisition, there are only a few studies that would attempt to map the two languages that bilinguals might speak. In-depth studies of bilingual grammars, studies that would examine the development of multiple grammatical features at the same time are difficult to conduct due to the inherent differences between the two grammars in different languages. Those researchers who do venture out into cross-linguistic grammar research use global indices (like MLU-m or MLU-w) to examine the differences and similarities between the two grammars (see for example, Allen and Crago, 1996; Fortescue, 1984; Paradis, Crago, Genesee and Rice, 2003; Yip and Matthews, 2006). This, however, does not give a comprehensive picture. In order to be able to say that children know and competently use certain grammatical features of their two languages MLU is not enough. A more detailed, more comprehensive instrument is, therefore, necessary in order to try to examine what exactly bilingual children can do with their two grammars. Bilingual research that addresses questions of grammatical competency is scarce and studies of RussianEnglish acquisition by children are also rare. To date, there are only two studies that focus on the acquisition of Russian and English and both deal with the acquisition of verb morphology in the second language (L2) English, not with the simultaneous acquisition.

In one of these studies Gavruseva (2002) studied one eight year old child acquiring English as L2 for a period of six months. The child was acquiring

English in the United States. Gavruseva reports that the development of progressive -ing precedes the development of past tense and that the use of the ending -ing grows quickly across aspectual verb classes. Gavruseva also reports that auxiliary be was missing from many child utterances. In addition, Gavruseva's findings state that the past tense inflection and irregular past tense morphology appear simultaneously but that irregular past morphology is dominant in the data. The use of past tense first appears to be used with the verbs denoting achievements. Finally, Gavruseva reports that overgeneralizations of past tense inflections are rare. Gavruseva states that this course of development is similar to monolingual English acquisition, where emergence of -ing and past tense is restricted to specific aspectual verb classes - achievement verbs in the case of past tense and activities verbs in the case of progressive -ing. Although these findings mirror Brown's (1973) findings on the order of acquisition, it would not be accurate to state that the order of L2 English acquisition by a Russian child mirrors the acquisition of the 14 morphemes outlined in Brown's work. This is because (a) not all 14 morphemes Brown studies were examined in Gavruseva's research and (b) the age of acquisition of L2 may have an influence on the order of acquisition.

Ionin (2003) reported on a study of fourteen Russian-speaking L2 English learners with focus on the verb morphology acquisition. The children in the study were between $5 ; 3$ and $13 ; 10$ years old. Ionin's results indicate that the children had a high rate of production of bare forms of verbs instead of inflected forms for both $3^{\text {rd }}$ person singular, present and past tense verbs. In the future tense contexts,
the use of bare forms was lower, even though children still made a high use of bare forms (48\%) when speaking about the future without the use of will/shall.

Unlike the studies discussed above, the current study looks at the two languages bilingual children are acquiring on a broader scale. The question of interest is not limited to verb morphology. Rather, the study attempts to understand two larger questions. The first question to grapple with is how much bilingual children know in each of their two languages in terms of broad linguistic categories. The second question is how that compares with what monolingual children know and do with their language.

## The current study

The insights that are offered by the studies reviewed above are not enough to make a definite statement about the linguistic competences of young bilingual children at the time they are ready to begin formal schooling. While Gvozdev (1949, 1961) and Brown (1973) mapped the development of grammatical competencies of monolingual children, it is not known whether bilingual RussianEnglish speaking children develop these same competencies simultaneously and at the same age as monolingual children do, as no work has been done in this area to date.

In addition, Brown's (1973) and Gvozdev's $(1949,1961)$ studies closely tracked the acquisition of language till about age five. Although Gvozdev's data goes further, after Zhenya reaches age five, Gvozdev increases the interval of analysis from one month to six months, which is a large span; and thus, his observations and analyses become more general in nature. Finally, although some
studies have been conducted in language acquisition since Brown's and Gvozdev's work, few researchers have ventured to see what a child knows on more than one language feature, the way Brown and Gvozdev did.

The current study is different from all the studies reviewed above in several respects. First of all, the study proposes to begin where Gvozdev (1949, 1961) and Brown (1973) left off, i.e. the study proposes to look at the development of language at the time children are required to begin using the language in formal settings (school). Secondly, unlike more recent work in language acquisition and very much like Brown's or Gvozdev's work, the study proposes to examine multiple linguistic features at the same time. The differences between the current study and either Brown or Gvozdev's work is the data collection methodology. Instead of diaries or observations as a data collection method, the study uses a method of direct engagement, asking children to engage in story-telling and using toys to help them along. The data analysis procedures are also different. Instead of analyzing by specific inflections or morphemes, the current study examines language production by linguistic categories defined a priori in an instrument adapted for these purposes and discussed below. Next, unlike the work of Gvozdev or Brown, this study examines a larger sample of participants. Finally, and most importantly, in order to make certain conclusions about language development in multiple linguistic groups, three different groups of children - two monolingual (Russian and English groups) and one bilingual (Russian-English group) were studied.

One of the most difficult questions the researchers of language have to answer is how to organize and show their data effectively. Mapping what a child knows in a descriptive form is a long and costly undertaking which becomes even harder if the research involves multiple participants. Such descriptions may also be hard to interpret by the readers. Thus, in order to arrange the data effectively, in a way that could be then quantified, plotted or graphed, new analysis techniques have to be developed. In looking for an instrument that would help in creating such a map, an instrument that was originally created for a "study of individual differences in language abilities in relation to later reading abilities" (Scarborough, 1990, p. 1) was considered. This instrument is called the Index of Productive Syntax (IPSyn) and was developed by Scarborough (1990).

## The Index of Productive Syntax (IPSyn)

Scarborough (1990) developed the IPSyn to serve as a quickly obtained summary measure of grammatical complexity. This measure is appropriate to use in studies of individual differences in language acquisition. The IPSyn features 56 syntactic and morphological forms for NPs, verb phrases (VPs), negations and questions, and sentence structures. All 14 grammatical morphemes outlined by Brown (1973) as well as other grammatical features that were the subject of other investigations are accounted for in the IPSyn. Thus, when a speech sample is mapped out using the IPSyn, one can easily see which of the multiple language features that could be considered mastered, emergent or non-existent in each of the four broad groups identified in the instrument were used at the time the sample was collected. The original IPSyn items are listed in Appendix D.

The advantages of the IPSyn are that it provides a quick look at the children's language and allows for estimation of the level of their language development. The IPSyn is concerned with the emergence of grammatical structures in the language of children, not their mastery. Thus, unlike typical clinical measures of language deficiency, the IPSyn seeks to examine the use and not misuse of the children's language and concentrates on types (i.e., distinct forms) and not tokens (i.e., frequency of occurrences of word forms) of children's speech. The focus on use rather than misuse of language is important as it re-focuses the attention of the researchers on what the child is capable of producing rather than on the production failures that so many measures emphasize.

Scarborough (1990) also states that this Index is easily adapted to the needs of the researcher and the population studied. For example, she notes that children rarely use questions in narratives, and so the categories dealing with questions can be removed from the analysis. At the same time, if the investigations concentrate on older preschoolers who may produce additional structures, not captured by the original IPSyn, other categories of language can be included to accommodate later-emergent language.

The IPSyn is designed to be applicable to any corpus of natural child language. In this test, utterances are evaluated for syntactic and morphological complexity. The language is analyzed using a worksheet (or a computer file) with the listed items in four broad groups: Nouns, Verbs, Questions/Negations and Sentence Structures. Each utterance is evaluated and relevant portions are
recorded in the appropriate category. In the original use of the instrument, once two instances of an item are recorded, no further examples were necessary. In the end, points were summed within each category and recorded; the category scores were summed to yield the total IPSyn score.

Although the original intended use of the IPSyn was for working with young children, the instrument is comprehensive, and since language develops and emerges over time, some believe that it is possible to use this measure for older children as well. For example, Hewitt and her colleagues (2005) studied the language of 54 children: 27 normally developing and 27 with specific Language Impairment, as defined by multiple measures. The purpose was to evaluate whether the IPSyn among other measures would work for older children. The researchers state that the sentence structure category, in particular, may prove to be an important indicator of older children's language development.

Previous studies of bilingual language acquisition have not used the IPSyn. However, examination of the instrument shows that it captures many universal categories (e.g., nouns, verbs, questions) that children must perfect in order to become proficient in a language. The fact that the IPSyn was designed to be a flexible measure that emphasized language emergence and not mis-use is also to its advantage. Since the measure was to be used analyzing the language of bilingual children, some adaptations and the development of parallel measures for each language were necessary. On the basis of pilot data (Chernobilsky and McCune, 2004) we examined the IPSyn to determine the adequacy of the English
language categories for our needs and began developing a Russian language version as described below.

English adaptations to the IPSyn. Differences between the two languages posed a challenge for the adaptation of the IPSyn. To adapt the measure a few decisions had to be made. One of the initial decisions in the adaptation process was to extend the analysis from using two exemplars in each category as Scarborough (1990) had to the analysis of frequencies Having these frequencies provided us with numerical data that could be used in statistical analyses.

After working with the IPSyn and some sample data, it became clear that the original IPSyn does not provide a full account of the syntactic and morphological structures of English. For example, we noticed that both children used some categories the IPSyn did not account for (e.g., diminutive nouns). It was then necessary to add those to the IPSyn to ensure that the data were coded appropriately. Some but not all of these same categories were found to be important in Russian.

The Russian IPSyn. In constructing the IPSyn measure for Russian, we found that most of the categories in the English version of the measure could account for Russian features as well. There were, however, some aspects of Russian syntax and morphology not covered by the existing measures (e.g. reflexive verbs, noun/adjective agreement). These categories were added to the revised IPSyn.

Finally, the items that existed in Russian but did not exist in English and vice versa were considered. At first, the mark "N/A" (not applicable) was placed
beside each item not found in one of the two languages. As a result, quite a long list of categories labeled "N/A" in both languages was compiled. However, it seemed unlikely that each language would lack so many features, so we evaluated the way each language handles complex situations for which it does not have specific, defined words or grammatical structures. For example, Russian uses a suffix ending that marks verbs as reflexive. How does English handle the notion of reflexivity? It does it in two different ways. English speakers can use the form of pronoun oneself. Another way English handles reflexivity is by using passive constructions. Thus, where English has a choice of using a lexical unit or a morphological change to indicate a reflexive action, Russian uses only morphological change to indicate the same action. Realizing this, we went through the list of items labeled N/A in the adapted IPSyn version and compared the ways English and Russian handle those categories. Careful reflection on these items revealed that only eight categories could be truly labeled N/A - four in Russian and four in English. All others had some type of equivalent in the other language. The revised English version of the IPSyn and the Russian IPSyn are provided in Appendix E.

Once the coding of the data had begun, another difficulty was encountered, namely the exact placement of words into categories. While some words are relatively straightforward and can easily be categorized into nouns or verbs, other words are not so easy to place. Particular difficulty arose as to the correct placement of the words like to, into, down and other similar English words. These English words can be classified as prepositions, adverbs and in
some instances even as adjectives (Webster's Dictionary of the English language, 1989). For example, in the sentence Put the book down, the word down plays the role of an adverb. However, in the sentence Mary fell down the stairs, the word down is a preposition, and in the sentence He is down with cold, down is an adjective. However, in Russian all of these words are classified as adverbs. How then can these words be classified correctly? Two approaches were possible. One approach was to classify all of these words as adverbs, based on "intuitive notions" (Akmajian et al., 1984). Such classification would make the assignment simple and would equate these types of words in English and Russian. Another approach was to look at every instance of such words and check in the dictionary how such instance should be classified. That would mean that the same word could be listed in more than one IPSyn category in English. The first approach seemed simpler and more straight-forward and worked well with a small data set in the pilot study. However, when a larger data set was used during the reliability coding and discussion, the second approach, although more time-consuming, turned out to be more accurate. This is discussed further in Chapter 2 where reliability is discussed.

The two adapted instruments were used to analyze speech samples produced by two bilingual Russian-English children. Children narrated a story from a wordless book (Chernobilsky \& McCune, 2005). MLU indices in morphemes were also calculated to provide a rough measure of comparison for the languages of each child. The results of this study indicated that both children had equal grammatical competency in two languages. However, one of the
children, Jonathan, was English dominant, despite the fact that his English MLU was lower as compared both to his Russian MLU and the English MLU of another child, Lawrence. This conclusion was reached because the detailed analysis of speech indicated that he used more categories in English than he did in Russian and the categories he used indicated greater complexity in English than in Russian. The results also indicated that such analysis was possible and that the instrument could be used successfully in assessing levels of proficiency in bilingual children.

The results of this study also showed that one category, Questions and Negations, was hardly used by the children during their narratives. Following Scarborough's (1990) recommendations, this category was removed from further use in the analysis of narrative data.

An additional study (Chernobilsky \& McCune, 2006) compared small speech corpora of monolingual Russian and English speaking children to the languages of the two bilingual children analyzed previously by Chernobilsky and McCune (2005). We examined the language of three monolingual Russian speaking and three monolingual English speaking children between the ages of $4 ; 11$ and $6 ; 5$ years, all narrating a wordless book. The monolingual corpora came from the CHILDES database (MacWhinney, 2000). Both the IPSyn and MLU-w were used for the data analysis in this study. The results of this study indicated that the IPSyn can, indeed, be used as a data analysis tool for both monolingual and bilingual data, thus making this tool useable for the proposed study. Detailed analysis of children's speech using the IPSyn indicated that although there was
individual variability in language use across cases, some patterns were evident. For example, neither bilingual nor monolingual children used many adjectives or adverbs. In English use of the main speech parts by bilingual children was comparable to monolingual use of the same parts of speech.

The analysis of the sentence structure group of categories indicated that the more complex a sentence structure is, the less frequently it is used in the speech of both bilingual and monolingual children. Both groups of monolingual children as well as bilingual children used many conjunctions. However, close examination of conjoined phrases and sentences, showed that Russian monolingual children employ conjoined phrases and sentences more often than either English monolinguals or bilingual children do. Another result of interest was that Russian speaking children spoke in complete sentences more often than either the bilingual or monolingual children did.

## Research questions

These findings as well as numerous issues of adaptation of this instrument for cross-linguistic work led to a number of new questions. Some questions were methodological in nature, concerning the usability of the IPSyn and MLU as cross-linguistic instruments, especially when using larger numbers of participants. Others were empirical, concerning the linguistic competencies of children and the differences between mono- and bi-lingual children. These questions formed the basis for the current study and are listed below.

Methodological questions. Two methodological questions were identified:

- How can the IPSyn broaden assessment to include more comprehensive assessment i.e. vocabulary, grammatical and sentence structures, when we examine languages in larger samples?
- Which measure, Mean Length of Utterance in words (MLU-w) or in morphemes (MLU-m), might be more useful when comparing Russian and English utterance length without modifying the measure in either language? What is the relation between the two measures when discussing bilingual grammar?

Empirical questions. The empirical questions were as follows:

- What is each bilingual child's competence in their languages?
- Do bilingual speakers differ in either of both of their languages from monolingual speakers of that language? Are there any patterns of language use that are similar or different in these three distinct groups of children?
- When examining individual differences in language use by bilingual children, can we make any general statements about language acquisition and use by these children?


## Chapter 2

## Method

## Participants

The participants in this study were 23 children ages $5-6$ years. Eight of these children were monolingual English speakers, eight children were monolingual Russian speakers and seven were bilingual (Russian-English) speakers.

Monolingual children. Monolingual English-speaking children were recruited in an afterschool care program located at a day care center in Central New Jersey. Only those monolingual English-speaking children who did not have exposure to any other languages prior to the study participated in this study.

Monolingual Russian-speaking children were recruited in a school in Moscow, Russia. Only those monolingual Russian-speaking children who did not have a prior exposure to English or any other languages spoken in Russia were selected for this study.

All monolingual English speakers attended kindergartens or day care centers. All monolingual Russian children attended a kindergarten in Moscow. The mean age of English speaking children was 68.75 months (standard deviation - 10.17); the mean age for Russian speaking children was 68.00 months (standard deviation -10.93 ). All monolingual children were seen for one session.

Monolingual children were matched to bilingual children in their age (see Table 3) and SES as closely as possible. SES considerations were especially important, as previous work (August \& Hakuta, 1997; Hakuta, 1999; Oller,

Pearson and Cobo-Lewis, 2007, among others) indicates that parental education, as a function of SES, may play a role in language acquisition. Thus, a careful consideration of SES was given when selecting children for participation in the study to ensure that SES status of all participants was similar in all three groups. To ensure this, the researcher decided to collect the sample in a public school in Moscow and in the United States rather than going to a private school where SES variations may be wider. Also, during the conversations with the parents, the researcher asked parents to identify their SES status as they perceived it to be in an effort to match the samples as closely as possible.

Table 3
Age and gender comparison by languages spoken

|  | Gender and age in months |  |  |  |  |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: |
|  | English |  | Russian |  | Bilingual |  |
|  | Gender | Age | Gender | Age | Gender | Age |
| 1 | F | 55 | M | 53 |  |  |
| 2 | M | 56 | M | 56 | F | 60 |
| 3 | F | 62 | F | 60 | M | 61 |
| 4 | M | 67 | F | 64 | M | 63 |
| 5 | F | 74 | F | 76 | F | 64 |
| 6 | F | 76 | F | 77 | F | 77 |
| 7 | M | 79 | F | 79 | F | 79 |
| 8 | M | 79 | M | 79 | M | 79 |

Bilingual children. Bilingual children were recruited in a Sunday enrichment school on a university campus in Central New Jersey. This school is designed for children who speak English and Russian and whose families try to
encourage children to remain fluent Russian speakers. A total of seven bilingual children were recruited: four girls and three boys. All children were white, middle class children who were born in the United States and who resided in Central New Jersey. Six children had both parents who were Russian speaking and had a Russian-only speaking policy at home. All six were exposed only to Russian until approximately three years of age, when they entered preschools. The seventh child, Alycia, had a Russian-speaking mother and an Englishspeaking father. The family maintained a one-parent, one-language policy at home.

All the bilingual children attended English-speaking kindergartens or day care centers during the week and Russian language enrichment school on Sundays. The environment the children were growing up in can be identified as predominantly English-speaking, although this particular part of the state has many Russian businesses and stores.

When looking for participants, informal conversations took place with the teachers in the enrichment school, parents and researchers. Six out of seven families reported that their children spoke exclusively Russian until approximately age three (the exception was Alycia, whose parents reported that they maintained "one parent one language" policy at home). The teachers at the enrichment school judged two children as being Russian dominant, one child as being English dominant and four children as having balanced ability in two languages.

The mean age of children was 5 years, 9 months. All children had one session, except one child, Vera, who did not feel comfortable talking during the first session. She met with the researcher twice and narrated the stories during her second session.

## Materials

Two books were used for data collection. "Good dog, Carl!"(Day, 1986) was used to model the narration to the children. This is a 31-page colored book that tells a story of a dog that was left to babysit a baby and the adventures the two had together while alone in the house. The book has only two captions: one in the beginning of the book and one at the very end.

The second book, "Frog, where are you?" (Mayer, 1969), is a 29-page book illustrated in two colors. The book has no text other than the title and the author's name. The book conveys a story about a boy and a dog going to search for a frog that ran away from the boy's house. The boy and the dog go though many adventures before they find their friend, the frog. The book was used by children to narrate the story and direct a show demonstrating the events of the story. The decision to use this book for narrative purposes was based on the fact that many language studies (both monolingual and bilingual) have used this book (see for example, Bamberg and Damrad-Frye, 1991; Berman \& Slobin, 1994). This makes it possible to compare the narratives not only across different children within the current study, but also with other studies of interest.

A bin with toys was also used during the sessions. The toys for the show narrative included: a boy doll, parents, a bed-room set, a living room set, two
frogs (one plastic and one cloth), a dog, a jar without a cover, toy shoes and boots, a cloth bee, a plastic set of trees, rocks and various animals. In the bin there were also various toys that could be used for free play (e.g., a car, a telephone). Finally, also in the bin were two large cloth dolls used to represent the audience for the show.

Two IPSyn worksheets generated in Excel - one for each language - were used for data coding. The worksheets had a list of all IPSyn groups and categories for each language and a place next to each category to indicate an utterance number and a word or phrase being coded. This information was necessary in order to easily locate the coded information on the transcript should such need arise.

## Procedure

The sessions with all children took place in their schools. Each child narrated the story twice over the course of the session.

Monolingual children. A native speaker of the language spoken by the children (referred to as "the researcher" in this section) conducted the meetings with the children. This was done to ensure that the adult who speaks with the children would have no accent. Children were seen individually in a quiet room in the school or day care center that they attend. Each session with the monolingual children lasted for approximately 45 minutes.

At the beginning of each session the researcher introduced herself and talked to the child to make him/her feel comfortable. Next, the researcher offered to tell a story using "Good Dog, Carl" (Day, 1986). After the narration was over,
the researcher introduced the book by Mayer (1969) and asked the child to tell the story from that book. After the child was done with the story, the researcher offered to look through the bin with the toys and play for a while. In about 5 minutes of play, when all the toys were out on the floor or the table, the researcher exclaimed: "Oh, I have an idea! Look there are some toys that we can stage a show with!" The researcher then proceeded to tell the child that they could put on a show telling the story of the boy, the dog and the frog using the toys as props for the "theater". The researcher offered that the child direct the show by telling the story a second time. The role of the child was to look at the "Frog" book and tell the researcher what happens in the book. The role of the researcher was to listen to the child's narrative and, by manipulating toys from the bin, show the action to the audience. At this point, the researcher offered to find the toys for the story in the bin, on the floor and/or on the table, and then introduced the audience for the show - two dolls, a girl and a boy. The researcher and the child put all the necessary toys together and then moved the bin with the leftover toys. Sometimes the child offered to substitute one toy for another and the decision was made as to what to substitute and why. Once these decisions were made and the toys chosen, the researcher handed the book to the child and the story was told and enacted.

At the end of the show, the researcher thanked the child for a great show and stated how much fun it was to play with the child and then offered to let the child play with the toys for about 15 more minutes.

Bilingual children. The data collection procedure was similar to that of monolingual children, except the following:

- A bilingual speaker (referred to as "the researcher" in this section) conducted the meetings to engage the children in the story narratives.
- When introducing the audience, the researcher stated that one of the audience members (toy doll, named Jacob) only spoke English, while another audience member (toy doll, Катя, Kate) only spoke Russian. This was done to ensure that the children would tell the story in each language separately.
- The researcher introduced the audience before the first narration by each child and asked the child to tell a story so Jacob or Kate would understand it.
- At the end of the narration in one language, the children were offered a free play period, during which the researcher prompted the child to switch languages by switching into the second language.
- At the end of the free play period, the researcher exclaimed: "Listen, Jacob (or Kate) is complaining that (s)he did not understand the story about the boy, the dog and the frog you were telling before. How about repeating the story, but this time we will stage it with the toys!"
- The order of languages was counterbalanced, i.e. three bilingual children told it in English first and then in Russian, while four bilingual children told the story in Russian first and then in English.
- Each session with bilingual children lasted for about one hour.

All sessions were video and audio taped. All sessions were transcribed. Each session was transcribed twice: once by two independent transcribers unfamiliar with the research (one transcriptionist was responsible for English transcriptions and the other for Russian transcriptions) and the second time by the researcher herself. The reason for the second round of English transcriptions was the occurrence of multiple inaccuracies and skipped minutes of transcriptions by the independent transcriber. The reason for the second round of Russian transcriptions was to make sure that the same types of inaccuracies, were not occuring with the Russian data. During the first pass at transcribing, the primary source for the transcriptions was audio, as the sound was better in the audio recordings. During the second pass at transcription, the primary source for the transcriptions was video, since the video could be run on a computer while transcribing. However, if there was something that was not clearly heard or when the researcher was not sure what was said, the audio tapes were consulted to ensure the accuracy of transcriptions.

All the sessions were transcribed in CHAT software, as it is compatible with the Child Language Analysis (CLAN) software which allows for various automated analyses of child's speech (MacWhinney, 2000).

IPSyn coding. The unit of analysis in this study was the entire narration of each story by a single child. To code the narratives in IPSyn, the list of each child's utterances was compiled. For the purposes of this study, an utterance is understood to be a unit of speech that is bounded by breaths, pauses or the end of turn. Both types and tokens of words were counted and the frequencies were
compiled. The coding was on the word or phrase level. The list of examples for each IPSyn category in each language is given in Appendix E.

Monolingual data. After the transcription was completed, each narrative was coded using an adapted version of the IPSyn (Chernobilsky \& McCune, 2004). The adapted IPSyn was developed to analyze bilingual language data, but it could also be used in the analysis of monolingual data (Chernobilsky \& McCune, 2006). For English speakers only the adapted English IPsyn was used, for Russian speakers only the Russian IPSyn measure was used.

Bilingual data. After the transcription was completed, three lists of utterances were created for each child: one list for each language and one list of mixed utterances. All decisions about what constitutes the mixed utterances were made based on a previous study (Chernobilsky \& McCune, 2004). One of the decisions was that the English words that the members of Russian community in the United States use frequently (e.g., OK, baby, yeah) should not be considered as mixed in, since children hear these words in the context of Russian speech all the time. Once the lists were compiled, each list was coded using adapted IPSyn, in the same manner as the monolingual data. However, since the children were bilingual, both the Russian and English IPSyn measures were used.

Prior to the coding of the entire data set, reliability was established (see Reliability coding section below). The researcher then proceeded to code the rest of the data. Once the entire data set was coded in the IPSyn, the total score was computed for each narration. To make sure that the number of utterances did not affect the score, the IPSyn total score was prorated for each participant (i.e. the
total IPSyn score was divided by the total number of utterances produced by a child).

## Reliability coding

MLU calculations. To ensure that calculations of the Russian MLU (in both morphemes and words) were accurate in the CLAN software, MLU-m and MLU-w for 10 Russian narratives selected randomly were calculated by hand as well as using CLAN software. The results were then compared. The results indicated that the reliability between hand-coding and CLAN was $94.40 \%$ for MLU-m and $97.85 \%$ for MLU-w. The details of comparison are given in Table 4. The reason for the differences in numbers between the automated and manual calculations is that when counting out the morphemes and words manually, the researcher counted only those utterances that were clear and legible, whereas the machine also counted utterances that were marked "xx" (not understood) in the transcript.

Another difference in the results may be attributed to the fact that when the researcher counted the words manually, only those that carried semantical meaning were counted (i.e. those that were complete). The CLAN software, however, counts all uttered words or parts of words when making the calculations (for example, Ksuysha while telling her first story - transcript 55) says:
(1) *INV: угу.
ugu
aha
(2) *INV: а дальше?
dal'she?
and then?
(3)

(4)

| *INV: лягушечку | свою, | да? |
| ---: | :--- | :--- |
| lyagushechku | svoyu, | da? |

Frog (n., sing., fem, dim., acc., ) its (pron., sing., acc.) yes His little froggie, yes?

When the child ends utterance (3), she stops and then continues, restarting the word twice and then finally opting to use it. That hesitation was recorded in a non-finished word, first as one syllable, then as two, neither of which is meaningful on its own. When counting this utterance, the researcher omitted these "pa" and "разы"", as these were neither full words nor morphemes. The CLAN software, however, counted them as a morpheme and as

Table 4
Comparison of MLU-m and MLU-w counts manually and using CLAN (Russian data only)

| Transcript | MLU-m |  |  |  |  | MLU-w |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| No. |  |  |  |  |  |  |
|  | CLAN | MANUAL | \% | CLAN | MANUAL | $\%$ |
|  |  |  | agreement |  |  | agreement |
|  |  |  |  |  |  |  |
| 54 | 6.415 | 6.393 | 99.657 | 6.195 | 6.146 | 99.209 |
| 57 | 8.241 | 8.050 | 97.682 | 8.069 | 8.392 | 96.151 |
| 58 | 6.742 | 6.327 | 93.844 | 6.083 | 6.055 | 99.548 |
| 60 | 5.258 | 4.997 | 95.036 | 4.939 | 4.830 | 97.808 |
| 61 | 2.804 | 2.620 | 93.438 | 2.786 | 2.750 | 98.707 |
| 65 | 5.382 | 4.968 | 92.308 | 5.118 | 4.971 | 97.128 |
| 67 | 4.074 | 3.537 | 86.819 | 3.706 | 3.750 | 98.827 |
| 69 | 7.469 | 7.401 | 99.090 | 7.094 | 7.156 | 99.134 |
| 73 | 5.528 | 5.107 | 92.384 | 5.302 | 5.038 | 95.016 |
| 75 | 6.222 | 5.835 | 93.780 | 6.464 | 6.667 | 96.955 |
|  |  | 94.404 |  |  | 97.848 |  |

a separate word as well. Thus, in the manual calculations this utterance would have 9 words and 11 morphemes. The CLAN calculations, however, would be: 11 words and 13 morphemes.

Despite the differences in the calculations, the differences in results seemed to be minor, and thus, the decision was made to analyze the rest of the transcripts using the CLAN software only.

IPSyn. Two different coders were trained to code for reliability - one for English and for Russian. Transcripts stored in the CHILDES database (MacWhinney, 2000) were used to train the coders to code using IPSyn coding categories. The English data for training came from Wolf and Hemphil (Miranda, Camp, Hemphill and Wolf, 1992) data set. The Russian data for training came from the data set collected by Protasova and stored in CHILDES. During the training, extensive discussions as to what constitutes each coding category took place. The coders used the coding manual and a set of examples provided to each of them for training and coding purposes. The coding manual was initially adapted from the work of Scarborough (1990) and then further developed during the pilot studies. However, as the discussions took place and more clarifications were needed, the code book was revised and developed further. The list of categories and is provided in Appendix E. Once agreement on coding the training data reached approximately $90 \%$, the coders began coding the "real" data independently.

IPSyn reliability coding was done in three phases. During phase 1 the researcher and the reliability coder looked for utterances to be coded in each speech sample. There were three general rules that coders followed when selecting the utterances:

1. Ten utterances needed to be selected from each transcript.
2. Each reliability selection should start on page 3 of the story that was told. The copy of the book "Frog where are you?" was provided to each coder to ensure that the selections begin at the appropriate page. When selecting the data, it was noted that sometimes the children combined the events from pages 2 and 3 into one utterance. If this occurred, then the utterance that had events from both pages was selected and counted as utterance 1 for the purposes of reliability. Nine subsequent utterances were then counted out.
3. If a transcript had some utterances that fell within those to be coded, but were in a different language or were uncodable (e.g., xx ) then one or more utterances would be added to complete the ten that were needed to be selected.

The agreement for phase 1 for the English data was $99.1 \%$ (see Table 5). However, it turned out that the reliability coder on the Russian data differed from both the researcher and the English reliability coder in selection of utterances for coding. When an utterance contained only an interjection, a single word, or was otherwise incomplete, she added an utterance to the count. This resulted in a lower agreement of $89.68 \%$ prior to the discussion. During the course of the discussion on this issue, the coders went through each transcript under question and agreed on how many utterances needed to be coded in these transcripts.

Phase 2 of the reliability calculations involved going through each of the selected lines and figuring out exactly how many categories would be coded in
each line. The results indicated that the total agreement on English categories to be coded was $91.73 \%$ and the total agreement on Russian categories to be coded was $91.97 \%$ (see Table 6). The disagreements were discussed and resolved.

Phase 3 of the reliability coding involved the actual coding of the utterances in each sample. Once the coders had finished coding, they met and examined (a) exactly how many words were placed into each category and (b) which words these were. The agreement on this phase was $90.02 \%$ for the English data and $86.10 \%$ for the Russian data. The details of these results are presented in Table 7 for English data and in Table 8 for Russian data. This examination revealed that there were some disagreements in how some data were coded. The coders then had a discussion of these disagreements and tried to resolve the issues as to where the data were to be coded.

Some of these disagreements stemmed from different understanding of the coding categories. For example, when coding category 69 (S12 in the original IPSyn) - "conjoined sentences", the English reliability coder (coder 2) placed not only all the utterances that had conjunctions in the middle of the utterance (e.g., "but a groundhog just popped and bit his nose"; transcript no. 26; Jenna, monolingual child, Story 1), but also all sentences that started with such conjunctions as then, and. Some representative examples of such utterances are given in a short excerpt from transcript No. 24 (Jaylen, monolingual child, Story 1):
(1) *CHI: then he checked under and then he checked under // beehives.
(2) $\quad$ CHI: then he found a skunk.
(3) * CHI : then, then the dog checked under the bees.
*INV: uh-oh.
(4) *CHI: then the bees fell.
(5) $\quad$ CHI: then they went under, under a // under a tree.
(6) *CHI: but it was an owl in there and he fell right out where the bees stung him it is licking her.

In this instance, coder 2 counted all six utterances given in the example as conjoined sentences. In contrast, the researcher (coder 1) considered these beginning conjunctions as utterance or sentence starters and placed utterances in this category only if the sentences were conjoined within an utterance. Looking at the example of the utterances given above, coder 1 coded only utterance (6) as a conjoined sentence. After the extended discussion, it was decided that this type of utterances should be coded as suggested by coder 1 .

Another question that had to be resolved through discussion was what had to be placed in the category No. 58 (S1, in the original IPSyn). Although this original IPSyn category was described as "two word combinations", the examples that were given in the original IPSyn code book were of two word utterances typical of the young children just learning to speak (e.g., Lookit Mom. Here hammer). During the discussions, it was noted that there was a very small percentage of two word utterances in the speech of the children that participated in the study. Most of their utterances were more than two words in length, exceptions being one word utterances of agreements/ disagreement or the

Table 5
Reliability for IPSyn coding, phase 1 - percent agreement on the number of utterances to be coded in each transcript

| English |  |  |  | Russian |  |  |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| Transcript | Selected | Lines | Agreement | Trans- | Selected | Lines | Agreement |
|  | Coder | Coder |  |  | Coder | Coder |  |
|  | 1 | 2 |  |  | 1 | 2 |  |
| 21 | 3-12 | 3-12 | 100.00 | 54 | 6-15 | 6-15 | 100.00 |
| 22 | 6-15 | 6-15 | 100.00 | 55 | 4-16 | 4-21 | 72.22 |
| 23 | 4-13 | 4-13 | 100.00 | 56 | 10-19 | 10-19 | 100.00 |
| 24 | 3-12 | 3-12 | 100.00 | 57 | 8-18 | 8-19 | 90.00 |
| 25 | 9-18 | 9-17 | 90.00 | 58 | 6-15 | 6-15 | 100.00 |
| 26 | 4-13 | 4-13 | 100.00 | 59 | 10-21 | 10-26 | 64.71 |
| 27 | 5-14 | 5-15 | 90.00 | 60 | 17-28 | 17-28 | 100.00 |
| 28 | 4-13 | 4-13 | 100.00 | 61 | 11-21 | 11-24 | 84.62 |
| 29 | 15-24 | 15-24 | 100.00 | 62 | 8-18 | 8-18 | 100.00 |
| 30 | 3-12 | 3-12 | 100.00 | 63 | 6-15 | 6-15 | 100.00 |
| 31 | 9-18 | 9-18 | 100.00 | 64 | 6-15 | 6-20 | 100.00 |
| 32 | 14-23 | 14-23 | 100.00 | 65 | 8-18 | 8-18 | 100.00 |
| 33 | 16-25 | 16-25 | 100.00 | 66 | 5-17 | 5-21 | 76.47 |
| 34 | 7-16 | 7-16 | 100.00 | 67 | 9-19 | 9-22 | 84.62 |
| 35 | 2-11 | 2-11 | 100.00 | 68 | 19-28 | 19-30 | 83.33 |


| English |  |  |  |  | Russian |  |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| Trans- | Selected Lines | Agreement | Trans- | Selected Lines | Agreement |  |  |
| cript |  |  |  | cript |  |  |  |
|  | Coder | Coder |  |  | Coder | Coder |  |
|  | 1 | 2 |  | 1 | 2 |  |  |
| 36 | $7-16$ | $7-16$ | 100.00 | 69 | $7-16$ | $7-17$ | 90.91 |
| 37 | $10-19$ | $10-19$ | 100.00 | 70 | $6-16$ | $6-16$ | 100.00 |
| 38 | $10-19$ | $10-19$ | 100.00 | 71 | $5-15$ | $5-15$ | 100.00 |
| 39 | $17-26$ | $17-26$ | 100.00 | 72 | $6-15$ | $6-15$ | 100.00 |
| 40 | $6-15$ | $6-15$ | 100.00 | 73 | $3-15$ | $3-15$ | 100.00 |
| 41 | $13-22$ | $13-22$ | 100.00 | 74 | $11-24$ | $11-30$ | 70.00 |
| 42 | $4-13$ | $4-13$ | 100.00 | 75 | $3-18$ | $3-12$ | 62.50 |
| 43 | $7-16$ | $7-16$ | 100.00 | 76 | $6-16$ | $6-18$ | 83.33 |
| Total agreement: |  | 99.1 | Total agreement: |  | 89.68 |  |  |

Table 6
Reliability for IPSyn coding, phase 2 - percent agreement of the total number of categories to be coded in each utterance by transcript

| English |  |  |  | Russian |  |  |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| Transcript | Total No. of categories |  | Agree- <br> ment | Transcript | Total No. of categories |  | Agreement |
|  | Coder 1 | Coder 2 |  |  | Coder 1 | Coder 2 |  |
| 21 | 45 | 36 | 80.00 | 54 | 50 | 44 | 88.00 |
| 22 | 34 | 32 | 94.12 | 55 | 37 | 40 | 92.50 |
| 23 | 31 | 33 | 93.94 | 56 | 40 | 38 | 95.00 |
| 24 | 28 | 25 | 89.29 | 57 | 38 | 38 | 100.00 |
| 25 | 24 | 27 | 88.89 | 58 | 39 | 36 | 92.31 |
| 26 | 32 | 32 | 100.00 | 59 | 41 | 31 | 75.61 |
| 27 | 28 | 30 | 93.33 | 60 | 36 | 38 | 94.74 |
| 28 | 32 | 28 | 87.50 | 61 | 26 | 28 | 92.86 |
| 29 | 15 | 17 | 88.24 | 62 | 34 | 33 | 97.06 |
| 30 | 45 | 41 | 91.11 | 63 | 36 | 34 | 94.44 |
| 31 | 35 | 37 | 94.59 | 64 | 31 | 25 | 80.65 |
| 32 | 24 | 27 | 88.89 | 65 | 30 | 32 | 93.75 |
| 33 | 28 | 27 | 96.43 | 66 | 31 | 30 | 96.77 |
| 34 | 32 | 28 | 87.50 | 67 | 38 | 31 | 81.58 |
| 35 | 39 | 38 | 97.44 | 68 | 28 | 30 | 93.33 |
| 36 | 37 | 37 | 100.00 | 69 | 31 | 29 | 93.55 |


| English |  |  |  |  | Russian |  |  |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| Tran- | Total No. of | Agree- | Tran- | Total No. of | Agree- |  |  |  |
| script | categories | ment | script | categories | ment |  |  |  |
|  | Coder 1 | Coder 2 |  |  | Coder 1 | Coder 2 |  |  |
| 37 | 36 | 29 | 80.56 | 70 | 34 | 33 | 97.06 |  |
| 38 | 25 | 26 | 96.15 | 71 | 30 | 26 | 86.67 |  |
| 39 | 28 | 31 | 90.32 | 72 | 23 | 24 | 95.83 |  |
| 40 | 30 | 32 | 93.75 | 73 | 38 | 37 | 97.37 |  |
| 41 | 23 | 25 | 92.00 | 74 | 29 | 28 | 96.55 |  |
| 42 | 24 | 26 | 92.31 | 75 | 40 | 35 | 87.50 |  |
| 43 | 31 | 29 | 93.55 | 76 | 35 | 38 | 92.11 |  |
| Total agreement: |  |  |  |  | Total |  |  |  |

Table 7
Reliability for IPSyn coding, phase 3 - percent agreement by major category -

## English data

| Tran- | Questions |  |  |  |  |
| :---: | :---: | :---: | :---: | :---: | :---: |
|  |  |  |  | Sentence | Total |
|  | Nouns | Verbs | and |  |  |
| script |  |  |  | Structures | Agree- |
|  | Category | Category | Negations |  |  |
| No. |  |  |  | Category | ment |
|  |  |  | Category |  |  |
| 21 | 84.87 | 67.85 | 100.00 | 66.94 | 76.30 |
| 22 | 90.29 | 85.33 | 75.00 | 87.05 | 85.66 |
| 23 | 80.24 | 81.46 | 83.33 | 85.71 | 82.82 |
| 24 | 98.02 | 94.17 | 100.00 | 84.31 | 92.69 |
| 25 | 96.19 | 88.26 | 79.17 | 98.57 | 92.33 |
| 26 | 99.70 | 93.47 | 87.50 | 82.82 | 90.66 |
| 27 | 96.03 | 90.10 | 91.67 | 94.20 | 93.14 |
| 28 | 94.84 | 97.92 | 100.00 | 86.19 | 93.59 |
| 29 | 94.71 | 92.71 | 100.00 | 89.29 | 93.10 |
| 30 | 89.79 | 88.43 | 83.33 | 87.04 | 87.59 |
| 31 | 98.60 | 99.68 | 91.67 | 89.60 | 94.96 |
| 32 | 98.70 | 96.35 | 91.67 | 86.68 | 93.09 |
| 33 | 94.05 | 95.83 | 91.67 | 98.21 | 95.59 |
| 34 | 95.24 | 93.96 | 83.33 | 85.46 | 89.97 |
| 35 | 94.84 | 93.03 | 75.00 | 91.65 | 90.48 |
| 36 | 85.80 | 94.54 | 80.56 | 99.39 | 92.01 |


| Tran- |  |  | Questions | Sentence | Total |
| :---: | :---: | :---: | :---: | :---: | :---: |
| script | Nouns | Verbs | and | Structures | Agree- |
| No. | Category | Category | Negations | Category | ment |
|  |  |  | Category |  |  |
| 37 | 85.61 | 76.74 | 83.33 | 69.68 | 77.54 |
| 38 | 97.84 | 94.44 | 100.00 | 91.82 | 95.20 |
| 39 | 97.96 | 97.08 | 91.67 | 80.08 | 90.93 |
| 40 | 99.57 | 86.53 | 88.89 | 87.06 | 90.26 |
| 41 | 100.00 | 98.33 | 100.00 | 87.80 | 95.51 |
| 42 | 94.02 | 80.86 | 91.67 | 90.11 | 88.68 |
| 43 | 88.85 | 93.06 | 100.00 | 79.00 | 88.37 |

Table 8
Reliability for IPSyn coding, phase 3 - percent agreement by major category -
Russian data

| Trans | Nouns | Verbs | and | Sentence | Total |
| :---: | :---: | :---: | :---: | :---: | :---: |
| -cript | Agree- |  |  |  |  |
| No. | Category | Category | Negations | Ctructures | ment |
|  |  |  | Category |  | Category |


| Tran- |  |  | Questions | Sotal |  |
| :---: | :---: | :---: | :---: | :---: | :---: |
| script | Nouns | Verbs | and | Sentence | Agree- |
| No. | Category | Category | Negations | Structures | ment |
|  |  |  | Category |  | Category |

utterances that contained the interjections only. Thus, it appeared that this category was designed to capture the speech of very young children and did not fit the purposes of the current analysis. Since IPSyn was designed to be of a flexible nature as to what categories can be used or not used, the decision to exclude this category from coding and analysis was made.

One more issue that was resolved during the discussions was the placement to category 15 (noun/adjective agreement). When coding Russian data, coder 1 interpreted this category to be only for the NPs (e.g., одна большая лягушка - odna bol'shaya lyagushka, one big frog), while coder 2 considered this to be any of the nouns and adjectives that have to agree in the sentence; for
example, when nouns and adjectives are linked with a copula as in мальчик был злой (mal'chik byl zloj, the boy was mad). This was resolved through discussion and by referring to the original IPSyn coding, where only two or three word NPs were counted in this category. Thus, it was decided that only NPs that had one or more adjective were to be placed in this category.

Another disagreement between the coders of the Russian data was the issue of what constitutes a sentence. This was necessary in order to code category no. 82 - "sentences without subject" correctly. This issue never came up during the training sessions, as all sentences that were in the training transcripts were multiword utterances. However, in the data that were coded for this project, there were many sentences with only one or two words in the utterance. The coders had a different understanding of a sentence. The researcher (coder 1) had conceptualized a sentence to be a word, phrase or a clause that designates an idea (e.g., Только тихо. - Only quietly.; Да. - Yes). Coder 2, however, disagreed. Coder 2's conception of the sentence was that it must indicate an action, i.e. it must have a verb to become a sentence (e.g., Jump! Be quiet!). Thus, while coding utterances like 1, 6, 9 below (transcript No. 59; Pavel, bilingual child), coder 2 did not place them into the category of "sentences without subject", while coder 1 did so.

## (1) * CHI : вот так. <br> vot tak <br> Like this.

(2)
*CHI: а пока была
ночь +//.
a poka byla noch’
and so far was (v., p.t. sing., fem., impf.) night (n., f., sing., nom.)

And so far it was a night.

| *CHI: когда я скажу, | что лягушка |
| ---: | :---: |
| kogda ya skazhu | chto lyagushka |

when I say (v., pr.t., $1^{\text {st }}$ p., sing., perf.) that frog (n., sing., fem, nom.)

убежала тогда уберите
ubezhala togda uberite run (v., p.t., fem. sing., perf.) then move (v.,.imp., pl.).

When I tell you that the frog ran away, then you take it away
*INV: хорошо.
(OK)

* CHI : лягушка

Lyagushka ubezhala
Frog (n., fem., sing., nom.) run (v., p.t., fem., sing.)
The frog ran away.

| *INV: чуть чуть громче | говори |
| :--- | :--- |
|  | chut'-chut' gromche $\quad$ govori |
|  | a bit $\quad$ loud (adj., c.d.) |
|  | speak (v., imp., sing.) |
|  | Speak a bit louder. |

*INV: я тебя не слышу.
Ya tebya ne slyshu.
I you (prepos., sing., acc.) not hear (v., pr.t., $1^{\text {st }}$ p., sing., impf.)

I cannot hear you.
(5) *CHI: лягушка убежала.

Lyagushka ubezhala
Frog (n., fem., sing., nom.) run (v., p.t., fem., sing.)
The frog ran away.
(6) * CHI : только тихо.

Tol'ko tikho
Only quietly.
*INV: okay.
*CHI: а на утро
a na utro

проснулись
prosnulis'
and in morning (n., neut, sing., nom.) wake up (v., p.t., pl., perf., refl. )

все, а лягушки нет.
vse a lyagushki net
everyone and frog (n., sing., fem., gen.) no.
And in the morning, everyone woke up and the frog is not there.
(8) *CHI: а потом собака

выпала
a potom sobaka vypala
and then $\operatorname{dog}(\mathrm{v} .$, fem. sing., nom.) fell (v., p.t., fem.,
sing., perf.)
конечно же из окна.
konechno zhe iz okna
of course emph. particle from window (n., sing., neut., gen.)
And then the dog fell out of the window, of course.
padaet
fall (v., pr.t. $3^{\text {rd }}$ p., sing.
Is it falling out?
da.
yes.
*INV: падает?
(9) *CHI: да.

This disagreement in coding was resolved by discussion based on the research into what constitutes a sentence in both English and Russian using a text on English grammar (Leech \& Starvik, 1975), Russian language grammar (Bakhudarov, Krjuchkov, Maksimov \& Cheshko, 1995) and English language websites (EnglishClub.com, n.d.; SIL International, 2004). As a result of the research and discussion, it was decided that for the purposes of coding, a sentence should include elliptical materials as well as non-construction items, like yes or hello (SIL International, 2004).

During the discussions held to flesh out the coding scheme and the specific coding of certain words, many ideas as to how to make the IPSyn become a more complete instrument for Russian were identified as well. These will be discussed in detail in the discussion section of this report (Chapter 4).

## Chapter 3

## Results

The findings in this chapter are presented by sections rather than by the research questions outlined at the end of Chapter 1. It is useful to outline the sections of the current chapter to facilitate the reading. In the opening section we examine the differences in story lengths. This is important to explore to make sure that the length of the stories told remains unaffected by fatigue, boredom or practice, since each child told the story two times. In the second section of the chapter, the results of the statistical tests and visual inspection of graphs for statistical normality are presented. In the next two sections, the results of MLU-m calculations and their comparison to MLU-w scores are discussed. The IPSyn scores were analyzed in detail and are reported after the MLU scores are discussed. The results of the IPSyn analyses are first presented by group and then are compared descriptively across groups. Then, based on the IPSyn results, the individual competencies of bilingual children are presented as case studies.

Since the narratives were collected in naturalistic settings, the researcher was an integral part of the conversations that took place during the telling and enactment of the stories. Thus, it was important to analyze the input given by the adults during the storytelling. This is the focus of the next section. Finally, since the level of proficiency may be directly related to the code-switching in speech, an analysis of code-switching is given in the last section of the chapter. In chapter 4, the reflections on the findings will be provided in the form of a discussion, addressing all five questions that were proposed in Chapter 1 one by one.

## Differences in the lengths of stories

The first analysis performed was the analysis of the story lengths. This was a concern because the fatigue, boredom or practice effects could have made a difference in the length of the stories told. The lengths of stories told by each narrator in each language are given in Table 9 for monolingual speakers and Table 10 for bilingual speakers.

Monolingual speakers. The results of this analysis indicate that only one monolingual English speaker, Sarah, had an equal number of utterances in both stories. Of the rest of monolingual children, three Russian and three English speaking children had used fewer utterances in the second storytelling. The average decrease in utterances among those children was 6.50 utterances. Nine monolingual children (four who spoke English and five who spoke Russian) had an increased number of utterances in their second stories. The increase ranged from 3 to 49 utterances.

One child, Anthony, a monolingual English child had 40 utterances while telling the story the first time around but used 99 utterances when telling the story for the second time. This prompted the researcher to look at the transcripts to see whether only the length of the utterances changed or whether there were any other significant patterns of change in the way this child told the stories. The results of this investigation indicate that in the second narration, Anthony had a hard time focusing on the story. This is evident from the utterances like "I have to get to the phone" (Utterance no. 87) and the conversations around the phone and calling someone that followed. It is unclear, however, whether this was due to the

Table 9
Total number of utterances in each story told, monolingual speakers

| Storyteller's name | Language | Story 1 | Story 2 |
| :--- | :--- | :---: | :---: |
| Shawna | English | 70 | 66 |
| Jaylen | English | 36 | 33 |
| Jenna | English | 43 | 54 |
| Nahl | English | 21 | 31 |
| Nathaniel | English | 37 | 30 |
| Anthony | English | 40 | 99 |
| Sarah | English | 17 | 17 |
| Elizabeth | English | 28 | 34 |
| Asya | Russian | 40 | 47 |
| Ksuysha | Russian | 29 | 34 |
| Lera | Russian | 62 | 65 |
| Polina | Russian | 35 | 27 |
| Matvey | Russian | 36 | 55 |
| Danya | Russian | 39 | 33 |
| Varya | Russian | 52 | 68 |
| Maxim | Russian | 32 | 31 |

boredom from telling the story for the second time around or whether there was any other reason (a child may have been hungry or tired, for example).

Since this was the single largest increase that by far outperformed all other children in any of the three groups, Anthony's case was considered to be an outlier. When the average increase in utterances in the second story telling was computed without the outlier, the average increase turned out to be 9.70 . Paired samples t-test on monolingual data was also performed and the results were not significant -- $\mathrm{t}(6)=0.12, \mathrm{p}>0.05$.

Bilingual speakers. The story is not so simple in the bilingual speaking group. Of the seven children participating in the research, four told the story in the Russian language first and in the English language second (see Table 10). Of these four children, two had a very large increase in utterance number when narrating in English (Misha had 38 utterances more, and David had 22 utterances more). One child, Nika, however, had a large drop of 48 utterances.

Out of the three children who narrated the story in English first, two, Pavel and Alycia, had large increases in utterances, when narrating the story for the second time in Russian (59 and 18 utterances respectively), while Natasha used 13 fewer utterances when narrating (in Russian) for the second time.

This mixed picture in the bilingual data does not allow generalizations as to whether these changes and differences were related to language proficiency (and thus, preference), to the fact that children were familiar with the story (and thus, more willing to speak about it) or to any extraneous factors (hunger, tiredness). However, the examination of both bilingual and monolingual transcripts of the children who increased the number of utterances when telling

Table 10
Total number of utterances in each story told, bilingual speakers

| Storyteller's | Story 1 |  | Story 2 |  |
| :--- | :--- | :--- | :--- | :---: |
| name |  |  |  |  |
|  | Language | No of | Language | No of |
|  |  | utterances |  | utterances |
|  |  | Russian | 151 | English |
| Nika | Russian | 48 | English | 49 |
| Vera | Russian | 23 | English | 61 |
| Misha | Russian | 27 | English | 49 |
| David | English | 18 | Russian | 77 |
| Pavel | English | 39 | Russian | 26 |
| Natasha | English | 35 | Russian | 53 |
| Alycia |  |  |  |  |

the story the second time indicated that these children went into more details about the story as well as engaged in negotiations as to what goes where and what needs to be done next. This may be, in part, due to the variation as to how the second story was narrated. During the second story, the child played the role of the show director and some children took it very seriously, constantly monitoring what the "actors on stage" (i.e. the researcher and the manipulated toys) were doing. For example, the bilingual child Misha, when telling the story for the second time (in English) spent some time negotiating which toy the researcher was to use in the enacting of the story, which contributed to the larger number of
utterances that were used in the second storytelling. Thus, the acting out of the story changed the task from narration to conversation between "the show director" and "an actor", which brought more negotiation into the conversation. Consider the example:
(1) $\quad * \mathrm{CHI}$ : another frog, no this is the dog.
(2) $* \mathrm{CHI}$ : I like this dog.
*INV: yeah.
*INV: so they're sleeping.
(3) $\quad$ CHI: no this is not a froggie.
(4) $\quad$ CHI: that was the one on your head.
*INV: alright so which frog are we putting in here?
(5) *CHI: um.
*INV: that one?
(6) *CHI: yeah that one.
*INV: okay so that's the frog that's sitting here so what is happening next?
(7) *CHI: next they open the thing and and the frog that went away from them.

In this example, the child indicates that he does not like the toy the researcher is using for the enacting (utterances 1 and 3 ) and despite the fact that the researcher is trying to focus the child's attention on the story when she says "so they're sleeping", the child does not return to the story until the right toy is chosen (utterance 6) and the researcher prompts him to focus on the story again.

All in all, the results of this analysis indicate that while there are variations in the story lengths, with the exception of a monolingual English speaking child, Anthony, such variations appear to be within the expected range.

## Statistical normality of data

The goal of this test was to show that the data in this sample are distributed normally. The normality of the data was established in two different ways. First, the Kolmogorov-Smirnov test was used to examine whether data come from any specified continuous distribution. This test is based on the differences between the observed distribution and expected cumulative-normal distribution (Neil, 1996). Generally, the smaller the maximum difference, the more likely that the distribution is normal. This test was performed using the SPSS program. When testing for normality, the IPSyn scores as well as MLU-m and MLU-w scores were considered. The results of the tests indicated that the data were normally distributed (see Table 11). P values for all the tests were higher than 0.05 , which indicates that there is no evidence to indicate that the data were not normally distributed.

However, the number of participants in the study was low (total $n=23$, however, in each group there were only 7 or 8 participants). That means that the test for normality may not indicate the normal distribution accurately. To make sure that the data were indeed normally distributed, the data were inspected visually to ensure that there were no outliers that would skew the distribution of the data. The IPSyn score plots are presented in Figures 1 through 4 by each group for both stories. The reason that only IPSyn scores are presented in these
figures is that the plots for both MLU scores (counted in morphemes and words) look almost identical to the plots of the IPSyn scores, and thus, it appears to be redundant to display all three plots for each group in this report.

Table 11
Kolmogorov-Smirnov test p-values by group and total for IPSyn, MLU-m and MLU-w, both stories

|  |  | p values |  |
| :--- | :--- | :--- | :--- |
|  | IPSyn | MLU-m | MLU-w |
| Monolingual English- |  |  |  |
| speaking children | 0.740 | 0.358 | 0.343 |
| Monolingual Russian |  |  |  |
| speaking children | 0.619 | 0.883 | 0.937 |
| Bilingual children: | 0.993 | 0.930 | 0.920 |
| English story | 0.810 | 0.989 | 0.989 |
| Russian story | 0.942 | 0.280 | 0.258 |
| All English stories | 0.750 | 0.899 | 0.993 |
| All Russian stories | 0.698 | 0.060 | 0.084 |
| All children, all stories |  |  |  |



Figure 1. IPSyn scores for monolingual English speaking children, both stories combined.


Figure 2. IPSyn scores for monolingual Russian speaking children, both stories combined.


Figure 3. IPSyn scores for bilingual children, English story.


Figure 4. IPSyn scores for bilingual children, Russian story.

## MLU-m results

The means and standard deviations on MLU-m scores by group are reported in Table 12. Three planned comparisons were made when analyzing MLU-m scores:

1. Within group comparison on the two languages of bilingual children on the MLU-m.
2. Across group comparison of monolingual and bilingual English language MLU-m score.
3. Across group comparison of monolingual and bilingual Russian language MLU-m score.

The results of all three comparisons were non-significant, indicating that there is no difference between performance of monolingual and bilingual children in either language as compared with their monolingual speakers. However, since the sample was so small, such results were likely.

As is evident from Table 12 the mean MLU-m score varies for bilingual children from story 1 to story 2 . One needs to remember, however, that the children who told story 1 in English are not the same as those who told story 2 in English. Thus, the difference in the MLU-m score in bilingual children's stories may be attributable to individual differences. The MLU-m for monolingual English children is about the same for both stories - $M=7.67(S D=4.16)$ for story 1 and $\mathrm{M}=7.17(\mathrm{SD}=3.22)$ for story 2 . However, it is important to point out that standard deviations in these results are rather large as well. This means, that although the means are close, the variability is also high.

Table 12
Means and standard deviations on MLU-m for each group

|  | Story 1 |  | Story 2 |  |
| :--- | :---: | :---: | :---: | :---: |
|  | Mean | Standard | Mean | Standard |
|  |  | deviation |  | deviation |
| English monolinguals | 7.67 | 4.16 | 7.17 | 3.22 |
| English bilinguals | 8.17 | 2.74 | 5.08 | 1.52 |
| Russian monolinguals | 5.36 | 1.66 | 5.01 | 1.16 |
| Russian bilinguals | 4.81 | 1.90 | 5.95 | 2.19 |

Comparing the MLU-m results for the Russian speakers, we see that the mean scores for monolingual children are also similar for both stories: story one $\mathrm{M}=5.36(\mathrm{SD}=1.66)$ and story two $\mathrm{M}=5.01(\mathrm{SD}=1.16)$. Both stories told by the Russian monolingual children have similar means and standard deviations, which means that the scores in both stories vary similarly.

The mean MLU-m score for bilingual children's Russian story 1 was lower $(M=4.81, S D=1.90)$, as compared to their story $2(M=5.95 ; S D=2.19)$. Again, one needs to remember that the story 1 and story 2 were narrated by different children and therefore, these differences may reflect individual differences among the children.

Examining the mean MLU-m scores, it is evident that English monolinguals have larger MLU-m scores, meaning that their utterances are, on average, longer that those of monolingual Russian speakers. This is different from
the pilot studies, where the results indicated that Russian monolingual children used longer utterances. When the speech samples in the pilot data were examined more closely, it appeared that the Russian monolingual children used more complete utterances than the English monolingual or bilingual children. That result of the pilot study suggested that bilingual speaking children transfer their telling strategies from English, where they often used incomplete sentences, to the narratives in Russian. However, looking at the MLU-m results of the current data, it is evident that (a) the theory that Russian children use longer utterances than their English peers does not hold true and (b) bilingual children do not seem to transfer their English strategies to build utterances when telling the stories in English. Instead, it appears to be the case that when bilingual children narrate their stories in English, their length of utterances is comparable to that of monolingual English speakers of their age. Likewise, when the bilingual children construct their narratives in Russian, their average utterance length appears to be comparable to that of their monolingual Russian peers. Thus, it appears that MLU scores of bilingual children are not different from those who speak only one language.
$M L U-m$ vs. $M L U-w$
When this project was proposed, one of the issues that this researcher intended to examine was the usefulness of MLU-w in language analysis when comparing Russian and English. Table 13 compares mean MLU-m and MLU-w scores by language and story. The results presented in the Table indicate that both MLU-m and MLU-w means and their corresponding standard deviations in the
two languages are very similar. When one compares the Russian MLU-m scores with MLU-w scores, it is evident that MLU-w are slightly lower compared to MLU-m scores. Looking at the English side of the data, such differences are not evident at all. This leads to the conclusion that it makes no difference whether MLU-m or MLU-w are used in the analysis of the data.

Table 13
Means and standard deviations on MLU-m and MLU-w

|  | MLU-m |  |  |  | MLU-w |  |  |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
|  | Story 1 |  | Story 2 |  | Story 1 |  | Story 2 |  |
|  | Mean | SD | Mean | SD | Mean | SD | Mean | SD |
| English | 7.67 | 4.16 | 7.17 | 3.22 | 7.57 | 4.13 | 7.19 | 3.49 |
| monolinguals |  |  |  |  |  |  |  |  |
| English | 8.17 | 2.74 | 5.08 | 1.52 | 8.19 | 2.42 | 5.00 | 1.50 |
| bilinguals |  |  |  |  |  |  |  |  |
| Russian | 5.36 | 1.66 | 5.01 | 1.16 | 5.05 | 1.49 | 4.75 | 1.09 |
| monolinguals |  |  |  |  |  |  |  |  |
| Russian | 4.81 | 1.90 | 5.95 | 2.19 | 4.79 | 2.01 | 5.81 | 2.06 |
| bilinguals |  |  |  |  |  |  |  |  |

IPSyn results
IPSyn Proportionate Scores. The total IPSyn score was calculated. This score was not based on two exemplars per category as originally suggested by

Scarborough (1990). Instead, total counts in each category were added to make category totals and the three categories were then added to make a total IPSyn score. However, that meant that the IPSyn score would be directly related to the length of the particular story analyzed. To eliminate the effect of the story length from the score, the proportionate IPSyn score was computed. To do that, the total IPSyn score in each sample was divided by the total number of utterances in each speech sample. The means and standard deviations on IPSyn scores by group are reported in Table 14. Three planned comparisons were made when analyzing IPSyn scores:

1. Within group comparison on the languages of bilingual children on the mean IPSyn scores.
2. Across group comparison of monolingual and bilingual English language mean IPSyn score.
3. Across group comparison of monolingual and bilingual Russian language mean IPSyn score.

The results of all three comparisons were non-significant, indicating that there is no difference between performance of monolingual and bilingual children in either language as compared with their monolingual speakers. However, this researcher recognizes that the sample in this study is very small and that with small samples the results are more likely to be non-significant that with large samples. Thus, to complement these statistical analyses, the data were also analyzed descriptively.

Table 14
Means and standard deviations on Proportionate IPSyn scores

|  | Story 1 |  | Story 2 |  |
| :--- | :---: | :---: | :---: | :---: |
|  | Mean | Standard | Mean | Standard |
|  |  | deviation |  | deviation |
| English monolinguals | 17.97 | 10.72 | 16.40 | 7.86 |
| English bilinguals | 20.35 | 5.45 | 13.10 | 4.30 |
| Russian monolinguals | 11.71 | 3.48 | 11.07 | 2.61 |
| Russian bilinguals | 12.08 | 5.55 | 13.11 | 5.31 |

The first analysis involved examining the proportionate IPSyn scores by story told (see Table 15 and Figure 5). The analysis indicated that the Proportionate IPSyn scores of the monolingual speakers ranged between approximately 10 and 15 points (on a scale from 0 to 40 ). The exceptions were the scores from Elizabeth and Sarah, both English speakers. They had very high scores in both stories. Contrastingly, Anthony (an English speaker) and Matvey (a Russian speaker) both had scores below 10 points for both stories. It was also noted that although some students had higher scores in story one and some had higher scores in story two, generally, the two scores tended to be very close. Again, the exception was Elizabeth, who had a score of almost 30.00 in the first story and whose second story had a lower score of 22.41. Checking the ages of the children with the lowest and highest proportionate IPSyn scores we see that

Table 15
IPSyn proportionate scores by story, monolingual children only

| Language | Child's <br> name |  | Story 1 |  | Story 2 |
| :---: | :---: | :---: | :---: | :---: | :---: |
|  |  | Tran- | Proportionate | Trans- | Proportionate |
|  |  | script | IPSyn Score | cript | IPSyn Score |
|  |  | No. |  | No. |  |
| English | Anthony | 29 | 5.08 | 41 | 8.20 |
|  | Elizabeth | 31 | 29.82 | 43 | 22.41 |
|  | Jaylen | 24 | 15.25 | 40 | 14.79 |
|  | Jenna | 26 | 19.37 | 36 | 15.41 |
|  | Nahl | 27 | 15.43 | 38 | 11.45 |
|  | Nathaniel | 34 | 12.11 | 28 | 14.37 |
|  | Sara | 30 | 37.29 | 35 | 32.94 |
|  | Shawna | 37 | 9.37 | 21 | 11.61 |
| Russian | Asya | 54 | 15.28 | 71 | 13.96 |
|  | Danya | 62 | 8.41 | 74 | 10.55 |
|  | Ksuysha | 55 | 10.31 | 65 | 11.50 |
|  | Lera | 56 | 12.29 | 60 | 10.62 |
|  | Matvey | 66 | 5.61 | 61 | 6.67 |
|  | Maxim | 69 | 15.56 | 72 | 11.84 |
|  | Polina | 58 | 14.26 | 76 | 14.70 |
|  | Varya | 70 | 11.98 | 67 | 8.75 |



English Speakers
Russian Speakers
■ Story 1
$\square$ Story 2

Figure 5. Proportionate IPSyn score comparison by story, monolingual children only.
the lowest scores (Anthony and Matvey) belong to the youngest children in either group: both children were 56 months old at the time the data were collected.

Elizabeth and Sarah, two English speaking children with the highest IPSyn scores were two of the oldest children in the group (76 and 74 months, respectively). Scarborough (1990) found a strong correlation between the age and IPSyn scores. While this sample is too small to draw a similar conclusion, the evidence from these four children seems to suggest that such a correlation is, indeed, present. To understand better whether the IPSyn score depends in any way on age, the proportionate scores of the IPSyn were correlated with age. For the purposes of this analysis, English scores for bilingual and monolingual participants were


Figure 6. Correlation of the IPSyn scores and age, English data.


Figure 7. Correlation of IPSyn scores and age, Russian data.
combined as well as Russian scores. The correlation for the data revealed that the IPSyn scores and age were moderately correlated ( $\mathrm{r}=+0.55, \mathrm{n}=15, \mathrm{p}<.025$, one tailed for the English group, and $\mathrm{r}=+0.49, \mathrm{n}=15, \mathrm{p}<.05$, one tailed for Russian participants). The plot of the English data is presented in Figure 6. The plot for the Russian data is presented in Figure 7.

Looking at the proportionate IPSyn scores for bilingual children in their storytelling (see Table 16 and Figure 8), more fluctuation is evident. Nevertheless, in general when the scores are high, they tend to be high in both English and Russian, when the scores are low, they tend to be low in both languages as well.

Table 16
IPSyn proportionate scores by story, bilingual speakers

| Storyteller's | Story 1 |  | Story 2 |  |
| :--- | :--- | :---: | :--- | :---: |
| name |  |  |  |  |
|  | Language | IPSyn | Language | IPSyn |
|  |  | score |  | score |
|  |  |  |  |  |
| Nika | Russian | 7.95 | English | 13.18 |
| Vera | Russian | 6.65 | English | 7.00 |
| Misha | Russian | 17.13 | English | 15.75 |
| David | Russian | 16.59 | English | 16.47 |
| Pavel | English | 17.67 | Russian | 7.97 |
| Natasha | English | 16.77 | Russian | 18.58 |
| Alycia | English | 26.63 | Russian | 12.79 |



Figure 8. The Proportionate IPSyn scores bilingual children only.

The exceptions are Pavel and Alycia. Both told the stories in English first, and both had drastically lower scores in the Russian rendition of the stories. It is also evident that Nika's score in English (her second story) is higher that her Russian IPSyn score. A possible explanation for such strong performance in English for both Pavel and Alycia may be that both were older than other children (Pavel - 79 months, Alycia - 77 months) and thus, had more exposure to English than other bilingual children in the study did. Furthermore, Alycia is a child who has grown up speaking English at home, as noted earlier, which may explain the strong performance in English when telling a story. To understand why Nika's performance in Russian was so different, the researcher went back to the data to see how the two stories told by Nika may be different. From this comparison, it appeared that in her first narration (Russian), Nika was not sure what she was
expected to do. Many of her utterances seem to be negotiations as to what to do and how to tell the story. She also uses many utterances that are imitations of animal sounds during her storytelling. An excerpt from her first story is given below:
@Comment: CHI shows how to place a toy.
(1) $* \mathrm{CHI}: \quad$ и вот так.
e vot tak
and like this.
(2) $* \mathrm{CHI}$ : нет // и вот так.
net $e$ vot tak
no and like this.
*INV: ок.
(3) *CHI: и потом он говорил + " $/$.
and then he say (v., p.t., masc., sing.,
impf.)
And then he said
(4) *CHI: +" ау, где ты? au gde ty

Hoo-oo, where are you?
(5) *CHI: мальчик вот так.
mal'chik vot tak
boy like this
(6) $\quad$ CHI: ay, ay!

|  |  | au au hoo-oo, hoo-oo! |
| :---: | :---: | :---: |
|  |  |  |
| (7) | * CHI : | потом $\mathrm{OH}+/ /$ |
|  |  | potom on |
|  |  | then he |
| (8) | * CHI : | ты должна упасть. |
|  |  | ty dolzhna upast' |
|  |  | you (pron., sing., nom., ) should fall (v., inf., |
|  |  | impf.) |
|  |  | You should fall. |
| (9) | * CHI : | вот так смотри. |
|  |  | vot tak smotri |
|  |  | Like this, look. |
| (10) | * CHI : | y y [!=imitates the owl noise $]$. |
| (11) | * CHI : | это сова. |
|  |  | eto sova. |
|  |  | this owl (n., fem., sing., nom.) |
|  |  | This is an owl. |
| (12) | * CHI : | <ну давай посмотрим> [!= soft speech]. |
|  |  | nu davay posmotrim |
|  |  | well let see (v., f.t., perf., ${ }^{\text {st }} \mathrm{p} ., \mathrm{pl}$.) |
|  |  | Well, let's see. |
| (13) | * CHI : | теперь уже пчелы |

teper' uzhe pchyoly
now already bee (n., fem., nom., pl.)
там в камушках.
tam v kamushkax
there in pebbles (n., pl., dim. prep. ).
Now the bees are there in the pebbles.
In this excerpt, one can see that in the first two utterances the child points to the picture instead of really describing it. Then in utterances (4) and (6) Nika is employing a Russian calling sound, "ay!" which is used when someone is looking for others in the woods. Further down the transcript, in utterance 10, she gives an owl imitation. Out of the 13 utterances in this excerpt, only a few are syntactically complete and may be coded in IPSyn's major categories (Utterances 3, 4, 8, 9, 12, 13). When Nika does use complete utterances, she confidently employs such constructions as " let/make/watch introducers" (utterance 12), or "diminutive nouns" (utterance 13) that other children seem to be reluctant to use.

On the other hand, when telling her story in English (second narration), probably due to the practice effect, Nika seemed to gain a better understanding of what was expected of her, became more engaged in the task (play) and consequently, spoke in fuller, more elaborate utterances (even though some may contain errors and/or code switching):
*INV: ok.
*INV: I'm listening.
(1) $\quad * \mathrm{CHI}: \quad$ and then bite!

| *INV: | ugm. |
| :---: | :---: |
| * CHI : | and he says +"\%. |
| * CHI : | +" hey! |
| * CHI : | +" what did you bite for? |
| * CHI : | and then he grabbed his nose and the dog |
|  | was barking at the bee house. |
| * CHI : | and the dog said + $\%$ / |
| * CHI : | +" wow, wow, wow! |
| * CHI : | and then the boy // he climbed out and |
|  | then + / |
| *INV: | let's see. |
| *INV: | excuse me. |
| * CHI : | he climbed on the tree and there was a hole. |
| * CHI : | owl. |
| *INV: | ok. |
| * CHI : | and then he said + "/. |
| * CHI : | +' are you there froggie? |
| * CHI : | you have to say it too. |
| * CHI : | очень громко. |
|  | ochen' gromko |
|  | Very loudly. |

Looking at this excerpt, one can see that although Nika is still using some one word utterances and imitation sounds, she also uses many utterances such as (10), where she describes what is happening in the picture.

## MLU vs. IPSyn proportionate scores

A way to understand whether the relationship between the syntactic development and the length of utterance is similar in the two languages is to rank participants on each measure and then correlate the two scores (Gay, Mills, \& Airasian, 2006). To understand whether the relationship between MLU-m and the IPSyn scores exists in the two languages in the study, such analysis was carried out. For the purposes of this analysis, the data were combined into two groups. Bilingual and monolingual English data were combined together. Likewise, Russian monolingual and bilingual data were combined in the other group. Also, all stories from all the participants were taken into the account.

The ranked scores were plotted and the plots are presented in Figures 9 (for the English data) and 10 (for the Russian data). The correlation analysis of the data indicated a strong, significant correlation between the IPSyn and MLU-m in both Russian and English data sets $(\mathrm{r}=+.976, \mathrm{n}=23, \mathrm{p}<.01$, two tailed, for the English data; $r=+.949, n=23, p<.01$, two-tailed for the Russian data). These results indicate that there is, indeed, a strong relationship between the length of utterance and the syntactic development.


Figure 9. MLU-m and the IPSyn score correlation plots, English data.

## IPSyn Categories

Three groups and their categories are discussed in this section. The categories are Nouns, Verbs and Sentence Structures.

Monolingual English data. English monolingual children used approximately equal numbers of nouns and NPs in the two stories (see Figure 11). They used many nouns as well as pronouns and prolocatives. The children also used a large number of two word NPs (e.g., the frog, small animal), but the number of three word NP (e.g., a small animal) is limited in both stories. The majority of phrases in the two word NPs category are the "article + noun" type phrases, because the children used very few adjectives or modifiers), as compared


Figure 10. MLU-m and IPSyn score correlation plots, Russian data.
to other major categories in this category. The use of more complex categories, such as diminutive nouns (e.g., froggie, doggie) or comparative degree of adjectives/adverbs is limited to just a few for the whole sample.

Looking at the verbs used in the two stories, the picture is somewhat different. While the children use about the same number of words and phrases in most of the categories in the two stories, Figure 12 shows that in the second story, monolingual English children used more verbs in story 2 than in story $1(\mathrm{M}=$ 47.63; $\mathrm{SD}=20.23$ and $\mathrm{M}=58.75 ; \mathrm{SD}=21.86$, respectively). Their use of prepositional phrases is also higher in story $2(\mathrm{M}=11.88 ; \mathrm{SD}=5.74$ in story one vs. $M=15.63 ; S D=4.34$ in story two). They also used more adverbs in the second story $(M=29.50, S D=13.49)$ than they did in the first $(M=25.00, S D=$


Figure 11. Means of NOUNS categories, English monolingual children.
13.41). What is also of interest is that they used present tense (marked by such categories as "Third person singular suffix" and the "Verb conjugation") and past tense (captured in the categories "Regular past tense suffix", "Irregular past tense verbs" and "Perfective aspect past tense verbs") interchangeably. However, although there were more past tense verbs in both stories, it appears that in the second story, children used more present tense verbs as compared to the first narration.


Figure 12. Means for VERBS categories English monolingual children.

The use of various sentence structures, which appears to be the same in the two stories told by the monolingual English children is depicted in Figure 13. The exceptions are subject verb sequences and conjunctions, which were used more in the second story $(M=40.50 ; S D=12.71$ and $M=38.50 ; S D=26.56$, respectively) than they were in the first story $(M=34.00 ; S D=13.41$ and $\mathrm{M}=$ $31.88 ; \mathrm{SD}=22.81$, respectively).

These results support the finding in the pilot study that while English speaking children of this age range do use many different words and word


Figure 13. Means for SENTENCE STRUCTURES categories English monolinguals.
combinations, these are mainly limited to nouns, verbs and conjunctions, with the primary sentence structure being "subject + verb" type with an occasional direct object added in. Not much elaboration in the speech in terms of clauses, which add to the complexity of the speech, or the use of direct and indirect objects.

Children also seem to use many conjunctions to initiate their utterances and link them to one another. The use of anaphora is minimal and children stick to the nouns or pronouns when referring to the same person or thing. (e.g., $d o g$ looks, dog fell, dog licks).

Also, what seems to be evident in the stories of monolingual English speaking children is that they do not keep the narration in one tense. Instead, while they seem to prefer past tense, they sometimes slip into telling the story in the present tense. As seen in Figure 12, about half of their verbs are in the past tense and about half of their verbs are in present tense. To explain why children do this, an argument can be made that in colloquial English, while storytelling, speakers often lapse into progressive tense, especially when they engage in the first person stories. Two points can be made in addressing this argument for this data. First, all the children narrated this story using the third person, i.e. no child placed him or herself in the role of the main character in the story. Secondly, the children frequently changed the tense from past to present and in the present tense, they used both regular present tense ( $-s$ ending) as well as progressive tense (-ing ending). In addition, the results indicate that progressive case was used in both the present and the past tense, as can be seen by the two categories labeled "auxiliary in the VP" and "past tense auxiliary" in Figure 12.

Monolingual Russian data. The use of various categories in the Nouns and Verbs groups appears to be the same in the two stories told by the Russian monolingual children. The results of the comparisons of means of various Noun categories in both stories are displayed in Figure 14. What is immediately evident is that in the first story monolingual Russian speaking children used more nouns, but in the second story they used more pronouns. In all other regards, children displayed an approximately even use of other categories in both stories. One might speculate that children chose to use more pronouns to vary the storytelling


Figure 14. Means of NOUNS categories, Russian monolingual children.
second time around. Another reason for the increased use of pronouns in the second storytelling may be due to the familiarity with the antecedent entities. Greater pronominalization during the second story telling may also be an indication (and a result) of a greater comfort in talking about the entities that the child is familiar with after the first story telling.

The results of comparisons of various Verb categories are displayed in Figure 15. All the categories used in this group were used about the same number of times in both stories. What seems to be interesting in this group is the use of tense. Russian monolingual children are more consistent in keeping the story in the past tense (shown by the categories "Regular past tense suffix", "Perfective past tense", and "Irregular past tense verbs"). Children do occasionally slip into
the present tense (indicated by the categories "Third person, singular present tense suffix", and "Verb conjugation"), but do that less often than monolingual English speaking children do.


Figure 15. Means of VERBS categories, Russian monolingual children.


Figure 16. Means of SENTENCE STRUCTURES categories, Russian monolingual children.

Figure 16 shows the use of various categories in the Sentence Structures group. Again, the categories used in this group were used about the same number of times in both stories. Of particular interest in this Figure are the categories that deal with word order in a sentence. A total of six such categories were created when coding the Russian data. The reason for the multiple categories is the fairly free word order in the Russian language. The researcher was interested to see whether Russian speakers (as well as bilingual speakers of Russian) would prefer one order over another. Out of the six categories two had to do with the order of the subject and verb in a sentence. The category labeled SV was for coding the sequence where the verb directly followed the subject. For example,

$$
\text { (1) *CHI: } \quad \begin{aligned}
& \text { он подумал. } \\
& \text { on podumal } \\
& \text { he think (v., p.t., sing., masc., perf.). } \\
& \text { He thought. }
\end{aligned}
$$

The category labeled "VS, VxS, SxV" captured the inverted order or the order that was broken, where ' $x$ ' stood for another word that came between the subject and the verb. In particular, VS order meant that subject followed the verb instead of leading it, as in the example (2) below:

| *CHI: | собачке | говорит |
| :--- | :--- | :--- |
|  | sobachke | govorit |
|  | $\operatorname{dog}(\mathrm{n} .$, fem., sing., dat., dim.) | say (v., pr.t., $3^{\text {rd }} \mathrm{p} .$, |
|  | sing., impf.) |  |
|  | мальчик. |  |
|  | mal'chik |  |

boy (n., masc., sing., nom.)
The boy says to the dog.
VxS meant that the verb and the subject were separated by another word, as in the example below:

| (3) | и уві: | там они там норку. |
| :--- | :--- | :--- |
|  | e uvideli | tam oni tam norku. |
|  | and see (v., p.t., pl., perf.) there they there burrow |  |
|  | (n., sing., fem., acc., dim.) |  |

And there they saw a burrow.

Finally, SxV meant that the subject was in the leading position but was separated from the verb by another word, usually an object. The example below illustrates such a sequence:
(4) ${ }^{*} \mathrm{CHI}$ :

| a щенок | его |
| :---: | :---: |
| a shchenok | ego |
| and puppy (n., masc., sing. nom.) him (prepos., acc., |  |
| masc., sing.) |  |
| стал | лизать. |
| stal | lizat' |
| begin (v., p.t., sing., masc., impf.) lick (v., inf.) |  |
| And the puppy |  |

All four uses are legitimate in the Russian language, but it was of interest whether Russian children would use the most common SV order more than other orders. That is why SV order was separated out, whereas all the other orders were coded together. The results indicate that, indeed, the children seemed to prefer the SV order, using the other orders as well, but not as frequently.

The verb object order was also tracked. There were four possible categories of such sequences. The first one, VO sequence where the verb was directly followed by an object, was tracked and coded separately. An example of such a category is given below:

* CHI -
потом они увидели улей. potom oni uvideli uley. then they see (v., p.t., pl., perf.) bee-hive (n.,
masc., sing., acc.
Then they saw a bee-hive.
The other three categories were collapsed when coding. These categories were the OV sequence, OxV sequence and VxO sequence. The OV sequence was the sequence, where the object preceded the verb, as in
(2) $* \mathrm{CHI}$ :
$\begin{array}{lc}\text { они её } & \text { звали. } \\ \text { oni eyo } & \text { zvali }\end{array}$
they it (prepos., sing., fem., acc.) call (v., p.t. pl., impf.)

They called her/it.
OxV was the sequence where an object was in the first position and was separated from the verb by another word. Although this is not the most fluid use of the words in an utterance, and native speakers would probably opt for the use of another verb object order, it is possible to use this sequence in Russian and such use is not considered erroneous. The example (3) below illustrates this sequence.
(3)
*CHI:
и теперь олень
его
e teper' olen' ego
and now deer (n., masc., sing., nom.) it (prepos.,
sing., masc., acc.)
вниз выпустил.
vniz vypustil
down let go (v., p.t., sing., masc., perf.)
And now the deer put him down.

Finally, the VxO sequence is possible, where the verb is in the leading position, but is separated from the object by another word. For example:

| (4) ${ }^{*} \mathrm{CHI}:$ | он $\quad$ сунул |  |
| :--- | :--- | :--- |
|  | he (prepos., sing. nom.) put (v., p.t., sing., masc., |  |
|  | perf.) |  |
|  | туда свой | нос. |
|  | tuda svoy |  |
|  | there his (prepos., masc., sing., acc.) nose (n., |  |
|  | masc., sing., acc.) |  |
|  | He stuck his nose there. |  |

The researcher looked at two different kinds of objects - direct objects and indirect objects - separately. The use of indirect objects in any sequence was limited (less than five times on average in either story). The use of direct objects was more common. The results depicted in Figure 13 show that while the use of the VO order in direct object was more common, nevertheless, the other types of sequences were also used.

The third type of categories to be considered in term of order was the SVO sequence. Again, since Russian has a flexible word order, multiple sequences are possible. Two categories were created and coded, one was for the SVO order where the subject is followed by the verb which, in turn, is followed by the object. Another was to capture subjects, verbs and objects that were in any other that

SVO order. The results indicate that neither of these orders was used much, but of the two categories, the SVO order was more prevalent.

The results of this analysis indicate that, in general, Russian monolingual children have similar patterns of use of various categories as compared to their English speaking peers. The differences between the Russian and English monolinguals in the Noun group is limited construction of two and three word NPs by Russian monolingual speakers. This can be explained by the fact that the majority of English 2 and 3 NPs were composed of the "article + a noun" structure. For example, according to the original IPSyn, the NP in the child's utterance below should be coded as follows:
*CHI: that the frog is in there.
Frog: N1 - proper, mass or count noun.
The frog: N4 - two word NP - nominal preceded by an article or modifier The: $\quad$ N5 - article used before the noun.

The frog: N8 - two word NP: before verb.
These types of NPs make a significant number of cases in the English data.
However, since the Russian language does not have articles, the only two or three word NPs are those that are composed of the adjective or noun or an adverb or a noun, as in the example below:

| *CHI: | вот будет |
| ---: | :--- |
|  | vot budet |
|  | maленькая be (v., f.t., $3^{\text {rd }}$ p., sing., impf.) small (adj., sing., |
|  | fem. nom.) |

> игрушка.
> igrushka
> toy (n., sing., fem., nom.)
> This one will be a small toy.

That is why the number of modifiers and the number of two word NPs in Russian stories is roughly the same (see Figure 14).

Russian children use more diminutive nouns (e.g., лягушечка, froggie) than English monolinguals do. Such a difference is cultural. It is customary to use diminutives in speech, especially when talking to children or telling a story and children seem to capitalize on this feature of the Russian language.

When comparing the two monolingual groups in regards to the use of verbs in the stories, it seems that the biggest difference is in the use of tense by the speakers of two languages. While Russian children seem to relate the story almost entirely in the past tense, English speakers move from present tense to past and back to present again. Otherwise, the use of verbs by the two groups seems to be quite similar.

It appears that children in both groups create simple sentences where SV order predominates and the use of direct or indirect objects is quite infrequent. Just like monolingual English speakers, Russian children rarely employ multiple VPs in the sentence or use clauses to make their narration more elaborate. The monolingual Russian participants use more sentences without subjects than do their English monolingual peers, but that is again attributable to a difference in what each language allows. The use of such structures is quite common in

Russian and again, the monolingual Russian children seem to capitalize on this feature that their language affords them.

Bilingual data, English. First of all, it is important to note that each monolingual child told each story twice in the same language, whereas the bilingual children told each story twice, but only once in each language. That means that when the data are compared, the number of stories told in each group would be different. When comparing the story 1 told by bilingual vs. monolingual children, for example, it is necessary to remember that only three bilingual children told the story in English first, whereas all eight monolingual children told the story in English first time around. Keeping this in mind during the analysis is important, as the data change drastically from the first to second story when looking at the results by bilingual children. Because the children told the stories in two languages, and in two different orders, it is important to remember that the differences between the stories are, in reality, the differences between the children, and we probably cannot attribute the differences to any other factor except the individual differences.

When narrating the stories in English, the bilingual children appear to use a large number of words and phrases in the Nouns category regardless of the order of narration. However, those who told the story in English in their second narration (theater task) used a lot more pronoun/prolocative words than those who


Figure 17. Means for NOUNS categories used by bilingual children narrating English stories.
have done it in the first task. The results are displayed in Figure 17. This difference may be the result of the task and the negotiations that were involved in choosing the toys or deciding what and how to do during the enactment of the story, since the second task appeared to be more conversational rather than a pure narrative.

The results are not as clear cut in the Verbs group as it is in the Nouns category (see Figure 18). The children who used English in their second narratives, used more verbs in general, and, more past tense verbs in particular. In respect to the verbs, it is interesting to note that the use of tense coincides with the monolingual English data, where the children had used both present and past
tense interchangeably although, on average, they used more verbs in the past tense that in the present.


Figure 18. Means for VERBS categories used by bilingual children narrating stories in English.

There were many more adverbs used by bilingual children who had narrated the story in English the second time around. It is not clear how this can be explained. One way to explain, however, may be to look at Figure 19 at the category labeled "Adverbial conjunctions". Here it is evident that the use of adverbial conjunctions is high in the second story as well, and that may be why the category "Adverbs" has such a high number of words coded in it, as adverbial conjunctions were recorded in the category "Adverbs" as well.


Figure 19. Means for SENTENCE STRUCTURE categories used by bilingual children in the English stories.

Another observation that may be striking when studying the Verbs categories is the number of prepositions and particles and the prepositional phrases. It is interesting that there are fewer prepositional phrases in each narration than there are prepositions. This fact prompted the researcher to go back to the data and seek what kinds of utterance constructions might have contributed to this fact. It turned out to be the case that the children used quite a few linking verbs that require the infinitive (e.g., began to search, tried to look) that probably can be attributed to the larger count in the category labeled "Particles and Prepositions", as the infinitive particle to was coded in this category. When the researcher compared this finding to the English data from monolingual narrations, it was clear that the pattern of the use was similar there as well.

Figure 19 displays the results of comparisons of the two stories told in English by the bilingual children for the Sentence Structures categories. Analysis of the Figure allows us to conclude that for the most part, children used various sentence structure categories similarly. The children who told the story in English the second time around preferred using conjunctions, used more sentences with no subjects, produced more exclamations, and included more utterances with direct speech in their stories. Examining this further, it is evident that when these children told their stories, they often used one or two word utterances with no subject. For example:
*CHI: no, no.
*CHI: these right there.
*CHI: and then +/
*INV: let's wait +/
This contributed to the higher count for the utterances with no subjects to be placed in the IPSyn category. One reasons for this higher production of two word utterances could be the more informal nature of the second telling. This could also be attributed to a practice effect at the semantic level. If this is true, then this effect should be found regardless of the language. The third reason may be that these children simply preferred to use pronouns to nouns. Again, if this is correct, then this should be evident in their telling of the Russian stories. Checking the results of the Russian data for these speakers, it is evident that this is, in fact, true. The data indicate that the children who told the first story in Russian (second
narration in English) did use the pronouns more heavily than nouns in their Russian narration as well.

The same children (English in the second narration) also used many more phrases and sentences with both subject and verb included, as is evident from the category labeled "SV". The fact that children who narrated in English the second time around used more direct speech and exclamations is probably indicative of their involvement in the task. Taking on the role of the "show director" also meant taking on the roles of the characters in the story. All children did that to some degree, it is just these children seem to be doing it more often.


Figure 20. Means for NOUN categories used in the Russian stories told by bilingual children.

Bilingual data, Russian. The results of the comparison of Russian narrations by story are presented in Figures 20-22. Figure 20 shows the means for Nouns categories, Figure 21 depicts the results for the Verbs group, and Figure 22 shows the results for Sentence Structures categories. The three figures indicate that the bilingual children use various categories outlined in the Nouns, Verbs and Sentence Structures groups similarly in the two stories. The exception is the categories labeled "Proper, mass or count nouns" and "Pronouns or prolocatives", where in story 1 the children used fewer nouns, but more pronouns as compared to story 2 (see Figure 20). It is also evident that children who told the Russian version of the story during their second narration used more diminutive nouns than those who narrated in Russian prior to telling the story in English. Since the children who told the story in Russian first were different from those who told the story in Russian the second time, the differences may be attributed to the individual differences of the choice of words and phrases. The same could be said for the higher use of adverbs in the first story telling (see Figure 21) and the higher use of regular verbs by those who told the story in Russian during the second narration.

Comparing the use of words in this category between the English and Russian languages, it is striking that monolingual English speakers as well as bilingual children telling the story in English used many more NPs than monolingual Russian speakers or bilingual children when they told the story in


Figure 21. Means for VERB categories used by bilingual children narrating Russian stories.

Russian. However, as discussed above the IPSyn category labeled "Two word NPs" and the subsequent categories labeled "Two word NP after a verb or preposition" and "Two word NP before verb" include such NPs as "article + noun" in English, whereas articles do not exist in Russian.

The first six comparisons in Figure 22, where the use of various sentence structures is depicted, are the comparisons of the word order in the Russian stories of bilingual children. Looking at the first two comparisons (SV versus any other order of subject and verb placement), one can see that bilingual children clearly
preferred the SV order in the Russian language. It is also clear that the bilingual children preferred to use verb + object order and, consequently, subject


Figure 22. Means for SENTENCE STRUCTURES categories used by bilingual speakers narrating Russian stories.

+ verb + object order, to all other possibilities in the word order when constructing their sentences in Russian.

What is interesting is that the bilingual children who told the Russian story first used quite a few sentences without subjects. They also used many imperatives, exclamations or direct speech, whereas the children who told the story in Russian the second time around did not use any of these language features and/or storytelling techniques. The children narrating in Russian first were the same four children who used these features when telling their English stories (in the second narrations, discussed above). This may mean that the children use the
same techniques when telling the story in either language, which in turn, may suggest that they use either language with equal facility and that their narrative "style" operates across the two languages.

Comparing bilingual Russian and bilingual English narrations, a few things are clear. In general, the patterns of use of various categories are similar in the two languages bilingual children employ. However, when telling the story in English, children seem to use very few adverbs to modify the nouns or adjectives, while in Russian they seem to use more of them. It is unclear as to why this may be happening.

In addition, when looking at the category Nouns, children use few diminutive nouns in English while they use a large number on Russian. This may mean that creating diminutive nouns may be more difficult in English (in terms of morphology) as compared to the Russian language. This may also mean that children are sensitive to cultural differences, because the use of diminutive nouns in English is not as prevalent as it is in the Russian language.

When looking at Verbs, the use of tense seems to follow the monolingual patterns: when children narrate in Russian, past tense is prevalent. However, when they narrate in English, past and present tenses are used interchangeably. Finally, the general patterns of use of various sentence structures seem to follow the monolingual pattern with the exception of the use of clauses, which may mean that children experience more complex internal reactions to the story.

While looking at the data by group and by story may be interesting, it provides only a partial picture as to what the children can do. To get a more
complete idea of what kinds of grammatical categories children use to construct their stories, it is useful to compare them across groups. The next few subsections of this chapter will be dedicated to this comparison. Since the differences in the stories told in different orders appear to be minimal, for the purposes of the following comparisons the data from all the stories were pooled and organized by groups. The following comparisons are discussed: Three major IPSyn groups are examined when Bilingual English stories are compared to monolingual English stories and Bilingual Russian stories are compared to monolingual Russian stories.

Bilingual English vs. monolingual English data. The results for the Noun categories are presented in Figure 23. Only the categories that the children had used are presented in the Figure. In every category presented in the Figure, the bilingual children scored as well or better as compared to the monolingual English children. Bilingual children used more nouns and created more NPs. They also used more nouns preceded by articles than the monolingual children did. This is interesting, because it indicates facility in language use, since the Russian language does not have the articles and those native Russian speakers who learn languages that do have articles, like English, often have trouble understanding the concept and mastering their use.


Figure 23. Comparison of NOUN categories used by monolingual English speaking and bilingual children when narrating their English stories.

The results of use of various Verbs categories are presented in Figure 24.
The categories labeled "Medial adverbs", "Copula, modal or auxiliary for emphasis or ellipsis" as well as two categories devoted to the perfective aspect of the verbs are not included into the Figure, since none of the children used these categories. Again, in all the categories, the bilingual children perform as well or better in the use of all but one of the categories. Bilingual children used more verbs and adverbs when creating their narrations. They were just as fluent as their monolingual English speaking peers in using copulas or auxiliary verbs to create grammatically sound expressions. The only category where English only speakers slightly outperform the bilingual participants was in the use of the third person
singular suffix in present tense. It appears that some bilingual children omit this suffix when using the third person singular verbs in the present tense as Misha did in the example (1) below:
(1) CHI: and then then the bee, then then , the dog scream at the bees.

CHI: $\quad \&=$ imit: $\operatorname{dog}$
CHI: \&=laugh
(2) CHI: Then the boy then the boy was begging to find the frog and there was a squirrel.

This is interesting because their use of verb conjugation for the verbs to be, to do, and to have, captured in a category labeled "Verb conjugation" and illustrated in utterance (2) above, appears to be better that that of monolingual children. The explanation for such a discrepancy may be that Russian speaking bilinguals are used to morphological changes in Russian speech and have no trouble changing the form of the verb (i.e. changing from to be to am, is, and are) whereas, the third person present tense suffix $-s$ may be not a salient change to the Russian speaking bilingual children.

The mean scores for the categories in the Sentence Structures categories are plotted in Figure 25. The categories that capture various word orders other than SV, VO and SVO were excluded. Also, the categories that had means of less


Figure 24. Means of VERB categories used in narrations by English monolinguals and bilinguals when narrating their English stories


Figure 25. Means of SENTENCE STRUCTURES categories used by monolingual English speaking children and bilingual speakers when telling their stories in English.
than 0.50 in both bilingual and monolingual score were excluded from the Figure to make it easier to read. These categories were the following: "Let, make, watch, help introducer", "Propositional complement", "Relative clause" "Infinitive clause", "Gerund", "Other", "Conditional mood" and "Subjunctive mood". The results depicted in Figure 25 indicate that in every category presented, bilingual children scored as well or better as compared to monolingual English children. Both bilingual and monolingual children use SV phrases and their use of sentences without subjects is limited. Looking at the Figure, one can also see that children prefer to use simple sentences, as the use of sentences with two or three VPs is minimal. However, it is evident that both bilingual and English monolingual children use many conjunctions when telling the story. Interestingly, the use of conjoined phrases and conjoined sentences is minimal as compared to the use of conjunctions. Going back to the data, it is clear that children often opted to use conjunctions (e.g., then, and) as fillers or as introducers in their utterances, possibly when they were thinking how to express themselves when telling the story.

Examining the categories not used by any of the speakers may be just as interesting as studying the categories that the children do use. Such examinations may shed light on the language features that are yet to be mastered by young children. Rare use of a category may indicate that such a linguistic category is just now emerging in the speech of a child. What is remarkably interesting in the current data is that both monolingual and bilingual children have the same categories that may be considered emergent. These emerging categories are

Introducers (let, make, watch), propositional complements, relative and infinitive clauses, gerund (for English), adjectival or adverbial participles (for Russian), conditional and subjunctive moods. Moreover, there were six categories that English monolingual and bilingual children did not use in English, and there were four categories that bilingual and Russian monolingual children did not use in Russian. Two of these categories overlap for both languages. These categories are the superlative degree of adjectives and irregular plurals. In addition, English speakers (either mono- and bi-lingual) did not use comparative forms of adjectives, medial adverbs, and perfective tenses in either future or past tense, whereas Russian speakers (both mono- and bi-lingual) did not use ordinal numbers. While one explanation could be that the story simply did not afford the use of these categories, another may be that these categories are later developing in the speech of young children and are yet to be mastered.

Bilingual Russian vs. monolingual Russian data. The results for the Noun categories are presented in Figure 26. Only the categories that the children had used are presented in the Figure. In every category presented, bilingual children scored as well or better as compared to monolingual Russian children. The exception is the category diminutive adjectives, where monolingual children have a slightly higher score.

The results for the Verbs categories for the stories told in Russian by bilingual and monolingual speakers are presented in Figure 27. The categories "Progressive suffix" and "Copula, modal or auxiliary for emphasis or ellipsis" are not included as they are marked N/A in the Russian IPSyn measure.


Figure 26. Means of NOUN categories used by Russian monolingual children and Bilingual children when telling their Russian stories


Figure 27. Comparison means of VERB categories used by Russian monolingual children and by bilingual children when telling their stories in Russian.

The following categories: "Past tense modal" and "Auxiliary in VPs" were used only once by a Russian speaking child. To make the Figure easier to read, these were removed from the Figure as well, but it is worth remembering that they were used by a Russian speaking monolingual child and only once. Figure 27 indicates that although bilingual children overall used more verbs in their stories, the monolingual children were more fluid in their use. For example, they used more verbs in perfective past tense, something that the story called for. They were also more flexible using reflexive verbs or irregular past tense. While bilingual children used those categories as well, it seems that monolingual Russian speakers were more productive in the use of these categories, as well as using them correctly. Consider the two examples below that describe the same picture. Example (1) is from a bilingual child (Alycia) and example (2) is from a monolingual Russian child (Asya). Both children used four verbs to describe the scene. Alycia did it in one utterance; Asya used three utterances to do so. What is interesting though is that in the four verbs Asya used, all are perfective, as the story calls for. Of the four verbs Alycia used, she repeated one and that is the verb that should be in perfective aspect (uvidel, saw), but is not. In addition, Alycia made two noun-verb agreement errors when describing what she sees on this page.

| (1) CHI: | и | потом лягушка | вылезла |
| :--- | :--- | :--- | :--- |
|  | I | potom lyagushka | vylezla |
|  | and | then $\quad$ frog (fem., sing., nom.) get out(v., p.t., |  |
|  | fem., sing., perf.) |  |  |


| из банки | и мальчик |
| :---: | :---: |
| iz banki | i mal'chik |
| from jar (n., fem., sing., gen., ) and boy (n., masc., |  |
| sing., nom.) |  |
| видела | // мальчик |
| videla | mal'chik |
| saw (v., p.t., sing., fem., impf.) boy (n., masc., |  |
| sing., nom.) |  |
| и собачка | видели |
| e sobachka | videli |
| and $\operatorname{dog}$ (n., fem., sing., nom., dim.) saw (v., p.t., |  |
| pl., impf) |  |
| что они | //gm лягушка |
| chto oni | lyagushka |
| that they (prepos., pl., nom.) frog (n., fem., sing., |  |
| gen.) |  |
| не была. |  |
| ne byla |  |
| not be (v. p.t., fem., sing., impf. ) |  |
| And then the frog came out of the jar and the boy |  |
| saw// the boy and the dog saw that they //the frog |  |
| was not there. |  |

(2) CHI: a потом мальчик
a potom mal'chik
and then boy (n., masc., sing., nom.)
улёгся спать
ulegsja spat'
lie (v., p.t., masc., sing., perf., refl.) sleep (v., inf.)
со своей
so svoej
with his (pron., posses., inst., sing., fem.)
собачкой
sobachkoj
$\operatorname{dog}$ (n., fem., sing., inst., dim.)
And then the boy went to sleep with his doggie.
INV: угу.
ugu
ah-ha
CHI: a лягушка в это
a lyagushka $\quad \mathrm{v}$ eto
and frog (n., fem., sing., nom.) in this (prepos.,
neut., sing.)

| время | ушла |
| :--- | :--- |
| vremja | ushla |

time (n., neut., sing., nom.) go (v., p.t., sing., fem., perf.)

And the frog left at that time.
INV: угу.
ugu
ah-ha
CHI: а потом мальчик.
a potom mal'chik
and then boy (n., masc., sing., nom.) проснулся
prosnulsya
wake up (v., p.t., masc., sing., perf., refl.)
а лягушки нет
a lyagushki net
and frog (n., fem., sing., gen.) no
And then the boy woke up and the frog was not there.

While looking at the data, it is evident that bilingual children sometimes made mistakes using complex grammatical features of the Russian language. Consider an example below. This example is from the story told by a bilingual girl, Natasha:

| *CHI: | мальчик | был |
| :---: | :---: | :---: |
|  | mal'chik | byl |


| impf.) |  |
| :---: | :---: |
| злой | когда собачка |
| zloty | kogda sobachka |
| mad (adj., sing., masc., nom. | when $\operatorname{dog}(\mathrm{n}$. , fem. |
| sing, nom.dim.) |  |
| упала | c банки |
| upala | s banki |
| fell (v., p.t., fem., sing., perf.) from jar (n., fem., |  |
| sing., gen.) |  |
| и банка | уже случайно |
| e banka | uzhe sluchajno |
| and jar (fem., sing., nom.) | already accidentally |
| разбил. |  |
| razbil |  |
| break (v., p.t., masc., sing., perf., ) |  |
| The boy was mad when the dog fell with the jar and |  |
| the jar incidentally broke. |  |

This utterance has two errors, one involving the preposition and the other reflexivity. The first error occurs in the phrase " $с$ банки", where the preposition " $c$ " demands instrumental case - " $с$ банкой", whereas the child is using genitive case (marked by the ending $-u$ ).

The second error involves the verb "разбил". It is used in the past tense masculine form. However, it belongs to the noun "банка", which is a feminine word. Furthermore, in order to use this word in the form it is used in the story, the noun in this NV phrase should have been the subject of the sentence, i.e. "the doer" (as in "the boy broke the jar"). Since there is no agent, and the sentence states that the jar broke, without explicitly telling who broke it, the Russian language demands the use of a reflexive verb in this utterance (to literally mean "broke itself"). The correct utterance should thus have been:

| мальчик | был | злой, |
| :--- | :---: | :---: |
| mal'chik | byl | zloy |

boy (n., nom., masc., sing) be (v., p.t, sing., masc., impf.) mad (adj., sing., masc., nom.)

| когда собачка | упала | с банкой |
| :--- | :--- | ---: |
| kogda sobachka | upala | s bankoy | when $\operatorname{dog}(\mathrm{n} .$, fem. sing, nom., dim.) fell (v., p.t., fem., sing., perf.) with jar (n., fem., sing., inst.)


| и банка | уже | случайно | разбилась. |
| :--- | :--- | :--- | :--- | :--- |
| e banka | uzhe | sluchajno | razbilas’ |

and jar (fem., sing., nom.) already accidentally break (v., p.t., masc., sing., perf., refl. )

The boy was mad when the doggie fell with the jar and the jar accidentally broke
To compare the speech of Russian monolingual children was, in general, error-free. This may be due to the fact that they preferred to use simpler
sentences. This also may be because the researcher collecting the Russian data had participated more actively in their stories as will be discussed below. This active participation may have minimized the talk of the children and thus, might have had an impact on the clarity of their speech.


Figure 28. Comparison means of SENTENCE STRUCTURES categories used by Russian monolingual children and by bilingual children when telling their stories in Russian.

Figure 28 introduces the results for the Sentence Structures categories.
The means for all the categories that had mean scores more than 0.50 are plotted on the Figure. This is done to make the Figure more readable and easier to read. The results indicate that bilingual children did as well or better when using these categories in the constructions of their stories. The exception is in the use of sentences with two VPs, but the difference is minimal. Another exception is the
words placed in "not coded" category, which includes utterances that could not be understood, as well as interjections, animal sounds the children had used during the narratives, and partially uttered words.

The first six categories in this Figure have to do with the word orders coded in this category for the Russian side of the data. What is striking is that all children, both bilingual and monolingual, use all the word orders. It is also clear that although bilingual children use both categories that deal with subject verb orders $(\mathrm{S} 1, \mathrm{SV})$ and (S1-a, VS, VxS or SxV$)$, they seem to prefer the SV order in their speech, whereas monolingual children are less strict about using it.

Just as in the English side of the data, the use of conjunctions is abundant. And again, we see that although there are many conjunctions used by both bilingual and monolingual children, the use of conjoined phrases and sentences is minimal. This means that just like English speaking children, monolingual Russian and bilingual Russian-English speakers use conjunctions as fillers and introducers.

Another interesting observation that can be made about the children's speech from this Figure is that both bilingual and monolingual children use many more sentences without subjects as compared to the English side of the data. This is interesting, as bilingual children follow the patterns: they use quite a few of these sentences in Russian, which is generally flexible in allowing sentences to be said without explicitly stating a subject, and they use very few of those sentences in English, where in order for a sentence to be complete, a subject is generally required. This indicates that bilingual children "feel" the language and implicitly
know the rules of each language they speak in terms of constructing correct sentences.

Examining the three groups of children by language allows us to see that the bilingual children perform just as well as their monolingual peers in both of their languages, allowing to suppose that even though all but one bilingual children started learning English three years later than Russian, they have caught up in their learning to their monolingual peers. Because there are some categories where bilingual children surpass their monolingual peers, one can also speculate that being bilingual is beneficial to the children as they are able to use various language categories with facility and even surpass their monolingual peers in their use. However, in order to make such an assertion, more data from more children and in a variety of speech tasks are necessary.

## Individual results for bilingual children

One of the questions that this dissertation aims at answering is what each bilingual child's grammatical competency in the two languages is. To answer this question, it was necessary to analyze the languages of each bilingual child. Because there are so many categories that need to be considered in the IPSyn measure, performing statistical analyses may not be feasible, as measuring multiple categories statistically compromises the $\dot{\alpha}$ levels. Thus, although individual competencies and differences among the children are discussed in this section, this will be done descriptively, without the use of statistical analysis of any kind.

When looking at the languages side by side, using the IPSyn as a tool, it is important to remember that although the researcher has tried to balance the two measures, it has not been possible at all times. For example, when looking at the various categories in the group of categories labeled Nouns, one can see that the use of various two word NPs (general, and then specifically before or after the VP) is always higher in English than in Russian. That is because in English such categories included phrases that had an article. For example, the phrase $a$ boy is considered a two word NP in English, while in Russian a person talking about a situation involving a boy would always use a single word мальчик, unless they opt to use a pronoun, for example этот мальчик (this boy), since the Russian language does not have articles to denote the notion of (in)definiteness. At the same time, looking at the categories in the VERB group, for example, one should not expect to see any categories for perfective aspect in English, whether in future or in past tense. This is because such notion in English is usually marked by an auxiliary and in the IPSyn, the auxiliaries are placed in a separate category.

Pavel. Although Pavel's proportionate IPSyn score in English was higher than the same score in Russian, it appears that he has a good command of both languages. He used many more utterances in Russian (story 2) than in English (story 1), as Table 16 indicates, but that can be explained by the familiarity factor of telling the story the second time. Pavel's scores for Noun categories are presented in Figure 29-a. As can be seen from this Figure, Pavel's use of nouns and pronouns is higher in Russian. He is also using more diminutive nouns in Russian and while he uses the comparative adjectives in Russian, he does not do
so in English. All other noun categories appear to be about equal in both of Pavel's stories.

Figure 29-b shows the use of various Verbs categories in Pavel's two stories. One can see from the Figure that Pavel uses more verbs in Russian, as well as more prepositions (and/or particles) and prepositional phrases, copulas and adverbs and other categories when telling his story in Russian. The only category that is higher in English is the use of irregular past tense, which is understandable, given that the most used English verbs change irregularly in the past tense. From the Figure, it is also evident that Pavel uses more Russian categories and uses them more frequently. Pavel is comfortable using various English categories. He is equally comfortable using various Russian verb categories. f the use of verb and verb-related categories is any indication of language competency as Genesee (2004) argues, then one can state that Pavel's competency in Russian is, probably, greater that his English competency.

Figure 29-c focuses on Pavel's use of various sentence structure categories. One thing worth pointing out is that on this Figure the use of word orders is plotted as well. It is evident that Pavel uses all variants of word orders offered in Russian, but seems to prefer the SVO order over any other. Although some categories are used more in Russian (e.g., conjunctions, imperatives), it appears that Pavel uses various categories available in both languages with approximately similar frequency. However, the number of categories Pavel uses
in each language is different. In English, he uses 14 categories, whereas in Russian, he uses twenty ${ }^{2}$.

Given the fact that Pavel uses more categories in Russian in all three groups of categories that the IPSyn affords in this analysis, and uses some of them with similar facility in the two languages, one can say that despite the fact that Pavel's proportionate IPSyn score was higher in English, Pavel may be considered to be a child whose two languages are balanced. This assessment is in agreement with the opinion about Pavel's language that his teachers in the enrichment school shared at the onset of the study.

Misha. Misha's IPSyn proportionate score was slightly higher in Russian (17.13) that it was in English (15.75) as Table 16 indicates. Figures 30-a through 30-c presents Misha's use of the IPSyn categories. His use of Nouns is presented in Figure 30-a. Looking at the Figure, it is clear that Misha has a greater use of different categories in English. The exceptions are the two categories (adverbs modifying nouns and diminutive nouns) that are higher in Russian, but he uses these two categories infrequently in either language, so no judgment can be made. Those categories that do not exist in English (e.g., diminutive adjectives) are either not used at all or hardly used in Russian. One such category, noun adjective agreement, has a very low frequency count. This means that although Misha used many nouns and some modifying adjectives, while telling his story in Russian, he

[^1]

Figure 29-a. Pavel's use of the noun categories in the two stories.


Figure 29-b. Pavel's use of the Verb categories in the two stories.


Figure 29-c. Pavel's use of sentence structure categories in the two stories.
did not make those adjectives agree with the nouns as the noun-adjective agreement rules of Russian language demand. Since such a rule is essential for clear communication in Russian, it may be said that not following this rule affects language competency.

Figure 30-b presents Misha's use of various Verbs categories in the two stories. Overall, Misha used more categories in English (17) than in Russian (10) as is evident from the Figure. One can see that those categories that exist in both languages are used more when telling the story in English. Just as in Pavel's case, the exception to this is the use of the regular past tense suffix in Russian versus English. However, if we look at the right hand side of Figure 30-b, we can see that Misha has used many irregular past tense verbs in English. This would
explain the lower use of regular past tense verbs in the English narration, as many of the high frequency verbs in English take irregular forms in the past tense. One can also see that Misha did not use a single reflexive verb while telling his Russian story. This is unusual, as many Russian verbs take reflexive ending in certain situations.

Examining the use of sentence structures in Misha's speech, which are presented in Figure 30-c, one can see once again, that Misha has used many more categories in English (18) than in Russian (12). It can be seen that his English story was more complex: he uses $w h$ - clause, an indirect object, some exclamations and relative and subordinate clauses. At the same time, one can see that Misha uses quite a few sentences without subjects in English. While such structures are perfectly natural in Russian, they are generally not allowed in English. The relatively high use of such structures in English might indicate that Misha "borrows" these structures from Russian and uses them in English.

Examining the word orders in Misha's use of Russian, it is clear that he uses different word orders. Although SV sequence is clearly preferred, when an object comes into play, the word order becomes more varied and the VO order does not seem to be a preferred order for this child.

Overall, looking at Misha's use of both languages and his high use of English categories in the three categories examined, it may be possible to state that Misha is the child who, although bilingual, is dominant child in English. When we compare this results with what the teachers thought of Misha's two
languages, we see that despite many production errors in Russian, teachers believed that he was a child with the balanced ability in two languages.


Figure 30-a. Misha's use of various Noun categories.


Figure 30-b. Misha's use of verb categories.


Figure 30-c. Misha's use of sentence structure categories.

Natasha. Natasha's proportionate score in Russian was higher than her English score (18.58 and 16.77 respectively). Her use of the various Noun categories is given in Figure 31-a. The analysis of this Figure indicates that Natasha uses about the same number of categories in both languages (11 in English and 10 in Russian). Those categories that exist in both languages are used about the same number of times. The exception is the higher use in Russian of adverbs that modify nouns, and the higher use of pronouns and prolocatives in English. However, these exceptions are not enough to point in favor of one direction or another in terms of language dominance.

Figure 31-b shows Natasha's use of various categories that are related to verbs. Again, equal number of various categories was used (12 in each language). What is interesting to note in this Figure is that the picture is very mixed. She uses some categories more than others, some that exist in one language, but not in the
other. What is particularly interesting is that Natasha makes a use of passive voice in English. She is one of the older children in the study (79 months old at the time of data collection) and this may be why she is able to use such a complex construction in her story telling.

Natasha uses many verbs in progressive tense, so her use of past tense is limited in English; as a matter of fact, she did not use any regular past tense suffixes at all. While it may be difficult to state that Natasha is a capable user in either of her languages, because of a highly mixed picture in this category, the high use of a number of different categories in English (verbs, passives, prepositions/particles, and prepositional phrases) allows one to assume a higher competency in English.

Examining the use of the various sentence structures presented in Figure 31-c, one can see that Natasha uses more of the various sentence structures in Russian than in English (14 and 11 respectively). She also uses complex structures like wh- clauses, sentences with multiple VPs in both languages. She uses subordinate clause in Russian but not in English. To make complex sentences Natasha uses a large number of conjunctions when telling her story in Russian. As far as word order is concerned, Natasha clearly prefers an SV order to any alternatives that Russian might afford. She also uses verbs and objects infrequently in either order.

Again, given a mixed picture of the use of various categories, it may be hard to state with certainty whether Natasha's languages are balanced or one is dominant. However, such a mixed picture may also indicate that Natasha is not
bound by the rules that exist in both languages, and she uses each language to as full potential as is possible at her age. If we take a definition that Grosjean (1982) gives for bilinguals -- which is not the knowledge of the language per se, but rather the ability to use a language in a given situation -- we can argue that the use of many different categories in either language by Natasha is the sign of having an equal competency in both languages. Teachers who teach Natasha in the Russian enrichment school had the same assessment of her language abilities, deeming her two languages balanced.


Figure 31-a. Natasha's use of noun categories in the two stories.



Natasha, English
Natasha, Russian

Figure 31-b. Natasha's use of verb categories in the two stories.


Figure 31-c. Natasha's use of sentence structure categories.

Alycia. Alycia's proportionate scores point out to clear dominance in English, as Table 16 indicates. Her English proportionate IPSyn score was 26.63, whereas her Russian proportionate IPSyn score was 12.79 . However, as can be seen in the case of Pavel, high discrepancy in the proportionate IPSyn scores might not be definitive when assessing grammatical competency. Figure 32-a shows the comparison of various noun categories Alycia used in her speech. Examining this Figure, one can see that in Russian Alycia used fewer nouns when constructing her story. However, in the same language, she had used more pronouns, which may indicate that she substituted pronouns for nouns when telling her story in the Russian language. We also see that Alycia has used many diminutive nouns and has quite a few phrases with nouns and adjectives in agreement in Russian. In terms of the use of English, the Figure indicates that Alycia uses more English in most of the categories in this group.

Figure 32-b presents Alycia's use of various verb categories that the IPSyn affords. The Figure shows that Alycia used many verbs in the past tense in both languages, in Russian these were mostly regular verbs; in English these were mostly irregular verbs.

Looking at the overall use of verb-related categories, it is evident that Alycia used more categories in English (14) than she used in Russian (12). Moreover, looking at the frequency of use of the categories, it seems that although the categories that are available in both Russian and English were used, the English frequencies are slightly higher than those in Russian.

Figure 32-c depicts the use of sentence structure categories in the two languages Alycia used. What is evident in this Figure is that all the structures occurred at about the same frequency in the two languages. Although Alycia uses more sentence structures categories in Russian overall (19 vs. 15 in English), many categories that she used in Russian are used only once or twice (e.g., bitransitive predicate) and so no conclusion can be reached about the competence of use of these categories. In terms of word order, it is evident from the Figure that SV, VO and SVO are the word orders that Alycia prefers when constructing her narrative in Russian (as well as in English).


Figure 32-a. Alycia's use of noun categories.

Looking at all three categories of Alycia's IPSyn, it may be stated that sentence structures categories are mastered on equal (or about equal) level. The major differences in Alycia's case come in the use of nouns and NPs and the verb and VPs as well as in the use of tenses in her two languages. Given that she is using various noun and verb categories more frequently in English, it is possible to conclude that Alycia's competency in this language may be higher than it is in Russian. This is the same conclusion as Alycia's enrichment teachers reached. Teachers in the enrichment school also believe that Alycia's English is a stronger language as they reported before the study began.


Figure 32-b. Alycia's use of verb categories.


Figure 32-c. Alycia's use of sentence structure categories.

David. The results of comparison of use of the three groups of categories of the IPSyn in David's speech are presented in Figures 33-a through 33-c. Figure 33-a shows the use of noun categories in David's two stories. First of all, it is clear that David code-switches when telling his stories. Going back to the data, it is evident that all code-switching in David's speech are English nouns that David brought in when telling the story in Russian. Examining the Figure further, it is evident that overall, David used more categories in English than he did in Russian (12 and 10 respectively). While the higher use of categories in English may not, in and of itself, be the indication of competence, the higher frequency of English in the noun categories that were used may indicate the preference and higher competence of English language.

Examining Figure 33-b. one can see that overall David is using more English verb categories (16) than he does Russian verb categories (12). Again, while this fact may not be indicative of competence, the higher frequency of use of various categories in English and the low frequency of use of the same Russian categories points to higher competency in the English language.

Examining the use of sentence structure categories (Figure 33-c), it is evident again that David is using more English categories than the Russian ones (18 and 14 respectively). Furthermore, such complex structures as relative clauses, indirect object, use of infinitives without a catenative verb are used in English only. When looking at the word order David uses in Russian, it is clear that he prefers the SVO order although he uses other word order possibilities.

Considering all categories of the IPSyn simultaneously we may conclude that David's competency in English results in his preference for this language when narrating his two stories, even though David's proportionate scores might indicate that he is equally competent in the two languages (his Russian score is 16.59, and his English score is 16.47). When comparing this conclusion to opinions of his enrichment school teachers, we see that they give a different assessment of David's languages, as the teacher's conclusion was that David has balanced competencies in the two languages.


Figure 33-a. David's use of noun categories.


Figure 33-b. David's use of verb categories.


Figure 33-c. David's use of sentence structure categories.

Vera. Vera had very low proportionate IPSyn scores in both languages. Her proportional score in Russian is 6.65 and her proportionate score in English is 7.00, as Table 16 indicates. Figures 34-a through 34-c depict Vera's use of various categories and categories of IPSyn. Looking at her use of nouns (Figure 34-a), it is evident that Vera uses many more nouns in Russian that she does in English. She frequently code-switches into Russian while telling the story in English. One can also see that she uses very few categories as compared to other children. She uses only eight noun categories in Russian, and even fewer in English (six). The low use, or the lack of use, of other, more complex categories (e.g., adverbs modifying nouns) indicates that Vera engaged in frequent simple naming when telling her story.

Figure 34-b indicates that, just as with noun categories, out of 24 available categories, Vera used only used 8 in English and 10 in Russian. Of those
categories she did use, Vera used those in Russian more frequently than in English (with the exception of the irregular past tense verbs, which are more frequent in English that in Russian). It is evident, however, that her use of verbs themselves is about the same in the two languages. It is also evident that Vera opted to use the verbs in the progressive tense in English and in the present tense in Russian. Since she used many English verbs, but most of them in progressive tense, which, as Brown (1973) points out, is the earliest tense children master in English, this may be indicative that Vera is still trying to gain competency in English. The same suggestion may be underscored by the fact that Vera frequently used verbs to name the actions without connecting them to other words in complete phrases or elaborate sentences. Going back to the data, it is easy to find an example. At the very beginning of the story in English, there is the following exchange:

```
*CHI: boy.
*INV: uhuh.
*CHI: dog.
*INV: uhuh.
*CHI: frog.
*INV: uhuh.
*INV: what are they doing?
*CHI: seeing.
*INV: yeah that's right they see a frog and they
    look at the frog.
```

Vera continues to tell the story using single words or phrases with prompts form the researcher.

The sentence structures that Vera uses when telling her stories are depicted in Figure 34-c. Close examination of this Figure confirms what has been illustrated in the verbs category discussion, namely, that the single largest category used by Vera was the subject verb sequence category in both languages, with Russian being of higher frequency. The example below from Vera's data illustrates this well:

| * CHI : | they are seeing. |
| :---: | :---: |
| *INV: | I can't hear you. |
| * CHI : | they're seeing. |
| *INV: | they're seeing? |
| @Comment: CHI nods |  |
| *INV: | they're seeing, they're looking for the frog okay. |
| * CHI : | the boy said + " $/$. |
| * CHI : | +" лягушка где ты? |
|  | lyagushka gde ty |
|  | Frog (n., fem., sing., nom.) where you <br> (prepos., sing., nom.) |
|  | Frog, where are you?) |
| *INV: | that's right. |

The only complex structure that Vera uses in her speech is subordinate clause, is when she tells the Russian version of the story. What is also interesting about this Figure is that Vera uses (as compared to other categories) quite a bit of direct speech. Furthermore, mixed in utterances are the highest in this group of categories. The data indicates that these mixed utterances were Russian utterances produced when Vera was telling the story in English. The conclusion that can be drawn from the data and from this analysis is that Vera has low competency in English. The teachers who work with her in the enrichment Russian school agree with this assessment, as Vera was reported to be a Russian dominant child.

It may be important to note that Vera is one of the youngest participants in this study; she was 60 months old at the time of data collection. This might possibly have affected the way Vera told the stories in both languages, but particularly in English as age may have had an effect on her ability to relay the content of the picture books in words. To understand whether other younger participants display similar patterns of language use, the data from a monolingual Russian speaker, Matvey and a monolingual English speaker, Anthony were considered. Both children were 56 months old at the time when the data were collected. The analysis indicates that both monolinguals used more categories in each group than Vera in either of her languages. Table 17 illustrates these results. This analysis goes hand in hand with the results of correlation analysis reported earlier in the chapter that there is a moderate positive relationship between age and the IPSyn proportionate score.


Figure 34-a. Vera's use of Noun categories in the two stories.


Figure 34-b. Vera's use of verb categories.


Figure 34-c. Vera's use of sentence structure categories

Table 17
Number of categories used by younger monolingual and bilingual speakers

|  | Number of categories used |  |  |
| :--- | :---: | :---: | :---: |
|  | Nouns | Verbs | Sentence Structures |
| Russian: |  |  |  |
| Matvey | 10 | 16 | 16 |
| Vera | 8 | 10 | 13 |
| English |  |  | 14 |
| Anthony | 11 | 14 | 10 |
| Vera | 6 | 8 |  |

Nika. Table 16 indicates that Nika's proportionate IPSyn score was 7.95 in Russian and 13.18 in English. Examining her data in Figures 35-a, 35-b, and 35-c, one can say that Nika mixed some nouns and pronouns, inserting Russian words when telling her English story (Figure 35-a). From the Figure, it is also evident that she used about the same number of categories in both languages (she used 13 categories in Russian and 12 categories in English). Her use of categories in both languages also appears to be balanced, excluding the two word combinations categories that include "article plus noun" type of combinations in English.

Nika uses a lot more adverbs (Figure 35-b) in Russian than she does in English. This is an exception, as it appears that Nika uses those categories that exist in both Russian and English, at about the same frequency in both languages. She also uses about the same number of categories in this group (she used 15 categories in Russian and 16 in English).

Examining Figure $35-\mathrm{c}$, one can see that again Nika uses about the same number of categories in her two stories (she used 21 categories in Russian and 20 in English). She also used some categories where she had mixed in Russian words and utterances, while telling her English story. Such categories as address, imperatives, exclamation and direct speech are used more frequently when Nika is telling her story in Russian. This may indicate that her command of Russian language may be more competent, as these are the secondary structures that make the speech more elaborate and emotional for the audience. She is also using a lot
more sentences without subjects in Russian. In terms of the word order, it is clear that Nika prefers $\mathrm{SV}(\mathrm{O})$ order to any other that Russian affords.

Examining all three Figures, it may be possible to say that although there are some categories that Nika prefers to use in Russian, there are also some that she uses in English and not in Russian. Given the fact that she uses about the same number of various categories in both languages and that the frequency of their use is approximately the same in each category, it is possible to conclude that Nika is equally competent in both of her languages. This assessment disagrees with the report of Nika's linguistic competencies provided by her teacher, as her teacher reported that Nika was a Russian dominant child.


Figure 35-a. Nika's use of noun categories.


Figure 35-b. Nika's use of verb categories in the two stories


Figure 35-c. Nika's use of sentence structure categories.

## Adult speech

Since this was a naturalistic data collection, the researcher was an important participant in the conversation process. While transcribing, the researcher has noticed that often the researchers collecting the data were using their turn in speaking to encourage children to go on by using interjections (e.g., aha, ugm) or short statements (e.g., good). Other times, the researchers collecting data tried to prompt the children to go on with questions (e.g., what happened next?). During the narrations where the stories were enacted, the researchers collecting the data frequently repeated either the entire child's utterance or a part of it while enacting. Finally, sometimes, the researcher collecting the data would request a toy from the child when enacting the story. For example:
*CHI: next they open the thing and and the frog that went away from them.
*INV: okay went away.
*CHI: and then he's looking under the shoe.
*INV: they're looking under the shoe
*INV: we need the shoe
*INV: here it is.
Detailed analysis of the transcripts of the stories told by the Russian monolingual children indicated that the Russian monolingual researcher used a lot more prompts and questions as compared to either the English monolingual researcher or the bilingual researcher. That observation prompted an analysis of the adult utterances. The utterances were examined and broken into two general
categories. One category was meaningful utterances, i.e. utterances that had questions (e.g., that one?), prompts (e.g., what happened next?), help with the word (E.g., *CHI: I don't know... *INV: log.) or otherwise moved the story forward. The second category was labeled non-meaningful utterances - mainly consisting of interjections (e.g., Ah! Ugm, etc.), imitations (e.g., *INV: \&=imit: dog.) and repetitions after the child (e.g., *CHI: and then he says + "/. * CHI : +' yikes. *INV: yikes.). The results are depicted in Table 18.

The results of the analysis indicate that while adults used both meaningful and non-meaningful utterances during all stories told by the children, it is evident that those children who were more engaged in the activity and willing to tell the stories received fewer meaningful prompts, and more encouragements in the form of interjections and/or praise. Those children who had a hard time with the stories, hesitated or were not interested were prompted by the researcher's questions or were given help through questions. All three researchers collecting data appeared animated and engaged in the process, so it is possible that the fact that some children were more interested in the stories while some were less interested could be attributed to individual difference or some extraneous facts (e.g., hunger, being tired, and others).

## Code-switching

The instances of language mixing were examined with care. The results indicated that, overall, children were quite careful to stick to the language of the story. The exception was Vera. Vera told her story in Russian first and when the time came to narrate the same story in English, she was unsure of herself and,

Table 18
Means and standard deviations of adult utterances by language

indeed seemed not to know how to proceed. An excerpt from the beginning of her narration partially discussed on page 156 is given below to illustrate the point.

At the beginning of her narration, Vera would resort to only one word per utterance. Once the researcher noticed that, she told the child that if she didn't know a word in English, she could either ask the researcher or could put in a Russian word. This was done to make the child feel more comfortable and to make the process go more smoothly. Here is the beginning of that narration: @Comment: Second storytelling begins.
(1) $\quad$ CHI: boy.
*INV: uhuh.
(2) $\quad$ CHI: dog.
*INV: uhuh.
(3) $\quad$ CHI: $\quad$ frog.
*INV: uhuh.
*INV: what are they doing?
*CHI: seeing.
*INV: yeah that's right they see a frog and they look at the frog.
*INV: okay.
*INV: are we turning the page?
*CHI: \&=head: yes.
*INV: yes.
*INV: so what's happening?
(6) $\quad \mathrm{CHI}$ : hmm .
*INV: if you don't know in english you can either ask me or you can put in russian word.
*INV: okay?

* CHI : они спят. oni spyat they sleep (v., p.t., $3^{\text {rd }}$ p., pl., impf.) They are asleep.
*INV: okay do you know how to say that in english?
(8) *CHI: \& =head:yes .
*INV: how?
*CHI: they're sleeping.
*INV: that's right they're sleeping okay.
This excerpt shows that at the beginning the researcher tried not to interfere with the telling of the story. However, when the child did not offer much more than single word utterances, the researcher went on to help her. As soon as the child received permission to provide the information in Russian, she began talking in Russian, even though she indicated in utterance (8) and (9) that she knew how to say the same things in English. Out of 49 utterances that Vera constructed while telling the story in English, 11 utterances were in Russian and 1 was mixed. This is the only case where a bilingual child in this sample codeswitched so heavily, and the heavy code-switching was clearly the result of a single prompt by the researcher. This may indicate that the child was not
comfortable speaking English. Three times in the course of telling the story in English, Vera stated that she did not know how to do it. When the researcher prompted her to say things in Russian, Vera was more willing and seemed to be more at ease talking. This led us to conclude that she was not comfortable speaking English and, clearly, preferred to speak in Russian. Vera uses one utterance where most of the utterance is in English, but where she inserts a Russian word:
*INV: okay.
*CHI: dog scared the осы (osy; wasp, n., pl., acc.).
The dog scared the wasps.
*INV: good job!
What is interesting is that she does not use the article when she talks about the dog, but does so when she uses the Russian word. Russian language does not have articles and it is generally very hard for a Russian speaker to use them appropriately. This probably means that when Vera was thinking about what she was to say, she concentrated hard on producing the utterance in English and in this concentration she forgot to use the initial article. However, once she opted for the use of the Russian word in the English context, the burden of thinking in English and speaking was lifted, and in order to make the "transformation" of a word complete, she dressed it up with the appropriate article.

The rest of the children were more conservative when it came to codeswitching. Table 19 summarizes the information on the code-switching between the two languages in the children's stories. The Table indicates that Alycia in her
telling the Russian story uses one English utterance. This happens at the very end of her narration, when she assumes the role of the boy who says farewells to the frog's family. She says:


One can argue that words "Good bye" are quite common in the language of the Russian American community. Many Russians prefer saying "bye!" or "bye-bye" when leaving. Thus, the use of this phrase is quite acceptable in the Russian narrative by a bilingual child.

Table 19

## Mixed utterances count and percentages

| Transcript | Child's <br> name | Story order |  |  | Intra-sentential switches |  | Intra-word switches |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
|  |  |  |  |  | Total No. | \% | Total No. | \% |
| 42 | Alycia | 1 | English | 35 | 0.00 | 0.00\% | 0.00 | 0.00\% |
| 73 |  | 2 | Russian | 53 | 1.00 | 1.89\% | 0.00 | 0.00\% |
| 33 | Natasha | 1 | English | 26 | 0.00 | 0.00\% | 0.00 | 0.00\% |
| 57 |  | 2 | Russian | 39 | 0.00 | 0.00\% | 1.00 | 2.56\% |
| 23 | Pavel | 1 | English | 18 | 0.00 | 0.00\% | 0.00 | 0.00\% |
| 59 |  | 2 | Russian | 77 | 0.00 | 0.00\% | 0.00 | 0.00\% |
| 75 | David | 1 | Russian | 27 | 0.00 | 0.00\% | 3.00 | 11.11\% |
| 39 |  | 2 | English | 49 | 0.00 | 0.00\% | 0.00 | 0.00\% |
| 63 | Misha | 1 | Russian | 23 | 0.00 | 0.00\% | 0.00 | 0.00\% |
| 32 |  | 2 | English | 61 | 0.00 | 0.00\% | 0.00 | 0.00\% |
| 68 | Nika | 1 | Russian | 151 | 0.00 | 0.00\% | 4.00 | 0.00\% |
| 22 |  | 2 | English | 103 | 5.00 | 4.85\% | 1.00 | 0.97\% |
| 64 | Vera | 1 | Russian | 48 | 0.00 | 0.00\% | 0.00 | 0.00\% |
| 25 | Vera | 2 | English | 49 | 11.00 | 22.45\% | 1.00 | 2.04\% |

Table 19 also indicates that Nika had used four partially mixed utterances in her telling of the Russian story (Transcript No. 68). The researcher examined English words that Nika used in her Russian narration. It turns out that Nika gave the main character in the story, the boy, an English name (Jacob) and used it twice in her narrative. There is a Russian equivalent of the same name (Яков), but Nika may not have known that at the time she narrated the story. Furthermore, one of the audience dolls was introduced as Jacob. The introduction took place a few minutes before the storytelling began, as Nika told her story in Russian first. This introduction might have triggered the use of the English name despite the Russian narration.

The other two instances, in which Nika had used English words were the instances where she talks about baby frogs, and uses the word "baby" in the Russian narrative:

| (1) | * CHI : | и они увидели |  | есть |
| :---: | :---: | :---: | :---: | :---: |
|  |  | e oni uvideli | chto | est' |
|  |  | and they see (v., p.t., | that | be (v., inf.) |
|  |  | babies. |  |  |
|  |  | And they saw that th | babie |  |
|  | \%act: shows INV the book. |  |  |  |
|  | *INV: | uguhm! |  |  |
| (2) | * CHI : | потом они сказали +"/. |  |  |

> potom oni skazali then they say (v., p.t., pl., perf.)
> (3) $\quad$ CHI: $\quad+$ " до сиданья!
> do svidanija
> good bye
> (4) *CHI: где их
> gde ix
> where their (prepos. poss., $3^{\text {rd }} \mathrm{p} ., \mathrm{pl}$ ).
> маленькие игрушки?
> malen'kie igrushki
> small (adj., pl., nom.) toy (n., pl., nom.)
> Where are their small toys?
> \%act: takes another toy from box and puts it on floor.
> vot budet malen'kaya igrushka
> here be (f. t., $3^{\text {rd }}$. p.) small (adj., pl., nom.) toy (n., pl., nom.)
> This will be a small toy
> (6) *CHI: сейчас мы сделаем ей бебиков.
> seichas my sdelaem ey bebikov
> now we make (v., f.t., $1^{\text {st }}$ p., pl. perf.) her baby (n, pl., gen.) ${ }^{3}$

[^2]We will make the babies for her now.
She does that in the utterances 1 and 6 in this excerpt. It is interesting that in the first occurence, Nika uses the word 'baby' as if it were an English word, that is, she gives it an English inflection. In the utterance number six, however, she uses it as if it were a Russian word. The use of the word "baby" in the RussianAmerican community is quite common as many mothers prefer it to one of the Russian equivalents (one is "дитя" which may sound archaic, another is "ребёнок" which means "a child" and can designate a child of any age, whereas an English "baby" specifically refers to very young children). Thus, one can argue that Nika, a bilingual child growing up in an English dominated culture, had used all her "Russianzied English" words appropriately in her Russian language narratives.

Nika also uses some Russian utterances when she tells the story in English. She uses a total of six utterances that were mixed. In one instance there is an intra-word mixing, which is given in (1) below and in the other five instances, the entire utterance was mixed; however, out of those five instances, two utterances, (7) and (8) below, only have one word:
(1) $\quad * \mathrm{CHI}: \quad$ this is where $<$ for the big крот $>[!=$ soft speech $]$.
krot mole (n., masc., sing., nom.)
*INV: ok.
*INV: $\quad$ so he is screaming right?


Utterances (7) and (8) are the one word Russian utterances. She uses them when she assumes the role of a boy looking for his frog. She switches to Russian to give us what the boy would be saying when looking for his friend (Direct speech).

Table 20
The list of mixed utterances
Transcript Utterance Utterance
Number number

English

22

25

22

* CHI : а как осколки по-английски?
(And what is the English for "pieces"?)
* CHI : this is where $<$ for the big $\kappa$ рот $>[!=$ soft speech $]$.
(This is where for the big mole.)
* CHI : and he cries $+\mathrm{*} /$.
*CHI: +" ay! (hoo-oo!)
*CHI: +" ay! (hoo-oo!)
* CHI : очень громко.
(Very loudly)
*CHI: очень громко.
(Very loudly.)
* CHI : они спят.
(They are sleeping)
* CHI : лягушка вылезла из бутылки.
(the frog got out of the bottle)

| Transcript | Utterance | Utterance |
| :---: | :---: | :---: |
| Number | number |  |
|  | 14 | *CHI: +" лягушка где ты? <br> (Frog, where are you?) |
|  | 20 | *CHI: +" лягушка где ты? <br> (Frog, where are you?) |
|  | 21 | *CHI: +" лягушка где ты? <br> (Frog, where are you?) |
|  | 22 | *CHI: +" лягушка где ты? <br> (Frog, where are you?) |
|  | 24 | * CHI : собачка лает на ос. <br> (The dog is barking at the wasps.) |
|  | 25 | * CHI : я не знаю. <br> (I do not know) |
|  | 27 | *CHI: dog scared the ocbl. <br> (The dog scared the wasps) |
|  | 32 | *CHI: мальчик кричит+"/. <br> (The boy is screaming) |
|  | 33 | *CHI: +" лягушка где ты? <br> (Frog, where are you?) |
|  | 34 | * CHI : он бежит на олене. <br> (He runs on the deer). |

Transcript Utterance Utterance

Number number

## English

57

75

17

15

19

52
*CHI: then they said
*CHI: +" до сиданья!
(Good-bye)
*CHI: потом \# потом мальчик и кинул камушки потом свалил на \# на дерево но только был что-то deer.


Examining the code-switching in the stories by bilingual children, it is clear that the words that children choose to substitute in their longer utterances are usually nouns. The complete list of all mixed utterances is given in Table 20. The single words that are mixed within an utterance in another language are italicized. From this Table it is evident that when children are telling a story, they are quite capable of using the verbs in the target language, but when the need arises, they are willing to throw in a noun in a different language here and there.

In summary, when the children are confident in their language abilities, then the cases of code-switching appear to be infrequent. However, when children
are unsure of what or how they are to say (as in Vera's case), then they may prefer the language in which they are most comfortable and will code-switch heavily.

## Chapter 4

## Discussion

Drawing upon the results presented in Chapter 3, it is possible to address the five research questions posed in the introductory chapter. To facilitate such a reflection, this chapter will begin with a brief summary of the results. Then each of the five questions will be addressed one by one, beginning with the empirical questions and followed by the discussion of the methodological questions. Once all the questions are discussed and answered, the considerations for future research and implications of this study will be addressed.

## Summary of the results

The results presented in Chapter 3 may be summarized into seven major points. First, the results of MLU-m calculations indicated that English monolingual children use longer utterances when telling their stories as compared to Russian monolingual children. However, bilingual children's MLU indicated that when they tell their stories in Russian, their MLU-m is comparable to that of the Russian monolingual children and when bilingual children told their stories in English, their MLUs were just slightly lower than those of their English speaking peers. Second, there appears to be no difference as to whether to use MLU-m or MLU-w when analyzing the Russian and English data cross-linguistically. Third, statistically, there was no difference between the monolingual and bilingual speakers in their common language as measured by the IPSyn proportionate scores. Fourth, there seems to be a direct relationship between the age and the proportionate IPSyn score, as the younger children in the study have lower scores
and older children have higher scores. Fifth, when breaking up the IPSyn down by the categories, the comparison results indicate that in general, bilingual children, as a group, perform as well, and in some categories, better that the monolingual children in either language do. Sixth, the analysis of adult utterances during the conversation indicated that all adult participants used both meaningful and nonmeaningful utterances during the story-telling by children. Additionally, the results indicate that the bilingual adult used more total utterances during the children's English story telling than the monolingual English speaking adult did. At the same time, the monolingual Russian speaking adult used significantly more utterances than the bilingual adult when children told their stories in Russian. Finally, the results of the analysis of code-switching indicated that bilingual children, overall, were very careful to speak in the language requested to be spoken during storytelling. Most of the instances of mixing came from one child, Vera, when she was engaged in telling the story in English. The few instances of mixing produced by other bilingual children were predominantly nouns.

Now, having these results in mind, each of the five research questions can be addressed.

## Grammatical competency

The first question deals with grammatical competency of bilingual children in each of their two languages. Since the question is asking about each child and his/her performance in each of their languages, the results of the case studies were used to reflect on this question.

The results indicate that out of seven children in the study, one child (Vera) appeared to have higher competencies in Russian, three (Misha, David and Alycia) seemed to have higher competencies in English and three (Nika, Pavel and Natasha) seemed to have equal competencies in each of their two languages. Thus, even though all seven children were exposed to the Russian language from birth and, six out of the seven did not begin using English until the age three, it is evident that English is already taking an equal position with the native Russian in three cases and takes an even more prominent position in terms of competency in the three other children. While it may not be surprising in the case of Alycia, who has been exposed to both languages from birth, it is surprising in the cases of Misha and David, especially given the fact that these two children are two of the younger participants: Misha was 61 months old and David was 63 months old at the time of data collection. This means that even though these children started acquiring and using English approximately three years later than Russian, two years after the onset of the English acquisition, they already had enough knowledge to be more comfortable in speaking English than Russian. This might mean than children who are exposed to the second language early might have an easier time catching up with the demands of language learning, especially if the language that is introduced later is the dominant language of the culture where the children are growing up.

It was also of interest to compare the teachers' opinions at the beginning of the study with the results as they emerged. Teachers and the results of the study agree on four of seven participants: Alycia was an English dominant child, Vera
was a Russian dominant child, and Pavel and Natasha had balanced abilities in the two languages. For the remaining three, the study found that David and Misha has stronger English, while teachers believed them to have balanced languages, and Nika balanced while teachers believed her to be a Russian dominant child.

Since formal questionnaires were not given to the teachers prior to the study, it is hard to know what criteria teachers used to make decision about the languages of the children. It is interesting, however, that the cases like Alycia and Vera, where the children clearly have stronger skills in one language than in another were easy to identify for the teachers. In the cases where more careful study of the child's language was necessary (e.g., David, Nika) because the evidence was not clear cut, the teachers assessment of the grammatical competency was less accurate. Thus, in the absence of formal measures, teachers were able to correctly identify only the most obvious cases of dominance or balanced bilingualism.

The results indicate that children who participated in the study were using all three groups of categories analyzed in the study; however, some categories were used more heavily than others. For example, in the Nouns category, children used many nouns and pronouns but fewer modifiers of all sorts. Russian children as well as bilinguals used more diminutive nouns than did English speakers. This fact could probably be explained by the fact that the use of diminutive nouns is encouraged in the Russian language, especially in children directed speech. What is interesting is that bilingual children used more diminutive nouns in their

English narrations, which suggests a possible indication of transfer of their knowledge of diminutives into English.

Another group that was used unevenly was Verbs. Children used many verbs, but few auxiliaries in their narrations. This indicates that the sentences that the children were building were most likely in declarative mood, and were either in the simple present or in the indefinite past tense that does not require auxiliaries. It was also evident that children also preferred to build their sentences using active voice structures. Although the passive voice was used, it was rare and one might argue that whenever children used it, it was used in a repeated set phrase, i.e. it was not actively built by a child, but rather reproduced as heard before. Thus, the use of this particular linguistic category may be seen as just emerging in this age group. This may be explained if one considers that the development of language goes hand in hand with the cognitive development of a child. Considering developmental stages Piaget (Piaget and Inhelder, 1969) identified, it is possible that none of these children still may not be ready yet to use such complex linguistic formulas that require the understanding of the notion of reversibility as argued by Sinclair, Sinclair and De Marcelus (1971).

Language competency can be considered as a psychological system that includes two subsystems: Experiences in speech (i.e. practice) and knowledge about language in general (often labeled as metalinguistic awareness). Bozhovich and Kozitskaya (1999) studied the language competency of older preschoolers and young school children using four parameters of language: phonetics, morphology, lexicon and syntax. The goal of their investigation was to understand
at what point a child becomes a competent enough speaker of his/her native language to begin schooling. The general conclusion Bozhovich and Kozitskaya reach is that the children do not reach competency in each of these four language parameters simultaneously. Also, the researchers understood that such competencies are very much dependent on the individual experiences and practices that each child has in the language. Having a high score in one system, for example, in lexicon, does not mean complete competency, as other systems (for example, syntax) may not be at an adequate level to begin and succeed in schooling. Bozhovich and Kozitskaya indicate that it is impossible to predict the levels of competency in other subsystems if only one or two scores are known.

The current study examines just one subsystem of language in terms of competency, namely, the competency of use of grammatical structures. However, much as in the Bozhovich and Kozitskaya (1999) study, it is possible to state that different grammatical structures are developing at different rates in the language of these children. The results of this study indicate that even in one subsystem, syntax, the children's knowledge is not developing evenly. In particular, although it is believed that children master grammar as a basic building block of a language by the time they are about five (Tabors, 1997), the results of this study indicate that this may not be the case.

## Differences between bilingual and monolingual language

The set of questions dealing with differences between bilingual and monolingual pattern of acquisition has two distinct questions. Each will be addressed separately.

The first question asks whether bilingual speakers differ in each of their languages from monolingual speakers of that language. Statistical and descriptive analyses indicate that there was no difference in terms of language development between the bilingual and monolingual groups. In considering this question further, descriptive analysis may be more useful to think about since this type of analysis is more detailed.

Thinking about the children's competencies in relation to the literature discussed in Chapter 1, it may be useful to see whether some parallels can be drawn between what bilingual children in this study exhibited in their language ability and the monolingual studies that traced the development of language in monolingual children. Meisel (1990) suggests that bilingual children learn their two languages in the same way that their monolingual peers do. He bases his suggestions on studies of bilinguals acquiring German and French. If his assumption is correct, the same maybe true in the case of Russian-English bilinguals.

Considering the fourteen morphemes studied by Brown (1973) in his English speaking children and extrapolating these same morphemes from the IPSyn categories, it's clear that out of 14 morphemes all bilingual children used 13. The morpheme that was not observed in children's speech was the possessive " 's". Checking against monolingual English speaking data, it is evident that that the same is true in the case of monolinguals in the same sample. One can argue that this could be because the story does not afford the use of this morpheme in the narrative. The counter argument that can be offered is that children used many
possessive pronouns in the story, thus indicating that they understand the concept, however opting not to use the possessive "'s" morpheme.

Examining the use of other obligatory morphemes, not studied by Brown, we see that neither monolingual nor bilingual speakers of English used the morphemes that denote superlative form of adjectives and only one monolingual English speaking child used it while narrating his story. One can thus conclude that children who acquire English as an additional language do not differ from their monolingual peers with respect to the main aspects of grammar acquisition studied in English monolingual literature.

Looking at the Russian language, it is evident that bilinguals just like monolinguals do use grammatical markers for case, number, and gender. They also use diminutives for both nouns and adjectives. It is not accurate, however, to state that all bilingual children used those markers equally well. While the children who had a balanced competency in their two languages did use these markers with a high degree of accuracy, children who were stronger in English (Misha and David) made many more errors, especially in noun/adjective agreement (in gender, case and number).

Gvozdev's data show that usage of case endings for nouns is in place by the age of five. The data from the current study indicate that both monolingual and bilingual children rarely use the dative case (required to indicate the indirect object) in their speech. Whether this is because they prefer to build their sentences avoiding the indirect object or because they have not yet mastered their dative case forms of nouns is unclear, however.

The use of the instrumental case by either bilingual or monolingual children was not observed in the stories either. Again, it is unclear what the reason may be. The use of the prepositional case was limited in both populations as well. Possible reasons for such observations may be that the story did not afford the use of these forms, or that children preferred to use simple sentence structures that did not allow for the use of these cases. Finally, one can argue that children are still working on mastering these forms.

Many bilingual participants did use some compound sentences with clauses, as Gvozdev suggests Russian speaking children can already do at this age. However, it would not be accurate to state that the children used these complex language structures frequently. This infrequent use suggests that bilinguals are just now mastering these complex linguistic structures. Comparing the data for the monolingual children one can see that this is the case with this group as well. Thus, contrary to Gvozdev's findings, although children can use these complex structures, they often do not, at least not in the structured narratives when talking to an unfamiliar adult. No Russian speaking child (whether monolingual or bilingual) used any kinds of participles (adjectival or adverbial) in their stories. This suggests that this linguistic category may be too advanced for children at this age.

In summary, it seems possible to conclude that bilingual children, in general, mirror the pathways of acquisition of language that monolingual children take. What also seems to be the case, is that if one of the languages acquired is morphologically rich and the other is not, then the acquisition of a
morphologically rich language may be slowed down, as can be seen in Misha's and David's data. One reason for this may be that as children become more familiar with the less syntactically rich language, they transfer the rules and procedures from one language to the other, thus truncating the words or using the words without the change in form.

However, there may be many reasons for such transfer. One of the reasons is the home attitudes to language. If, once the acquisition of the second language began, the family shifts to the more frequent use of English in the house, then that factor alone could affect the acquisition of Russian. Another reason can be the amount of exposure to English on a daily basis. If children spend most of their day outside of the Russian-speaking environments, using the language of the dominant culture, this can also have an effect on slowing the acquisition of Russian.

The second question in this set is asking whether there are any patterns of language use that are similar or different in these three distinct groups of children this study considered. Moving away from the cross-study comparisons and concentrating on the comparisons across groups on various IPSyn categories, descriptive analysis once again may be more helpful. Statistical analyses indicate that the differences between the three groups do not exist. The descriptive explorations of the data, indeed, confirm these results. The descriptive analysis show that, in general, bilingual children perform just as well, and in some categories better, than their monolingual peers on many categories that IPSyn affords. This means that learning two languages at the same time does not place
constraints on the development of either of their two languages. On the contrary, the fact that bilingual children perform better on some categories of the IPSyn may indicate that the metalinguistic awareness that all children eventually develop may be developing faster, when children acquire two languages simultaneously.

At the same time, one can trace certain similarities in the way bilingual and monolingual children use their language(s). All children, both monolingual and bilingual tend to use simpler phrases and sentences. For example, while the use of two word NPs was quite frequent in their speech (especially in the speech of the English speakers, as "article plus noun" phrase is considered to be a two word NP in English), the use of three word NPs was very rare. This might indicate that although children possess basic competencies for language construction, they are still mastering secondary, more complex structures that make speech colorful and often more emotional for the listener.

Although the Russian language offers multiple word orders, bilingual children prefer to use the SVO word order. There are two possible explanations that could be offered. One such explanation could be that SVO is a preferred word order in Russian because these are bilingual English speakers, and in English such word order is a norm. The second explanation could be that although SVO is not the only word order that can be used in the Russian language, this is the word order that is used the most by speakers of Russian and that is why bilingual children opt to use it as well. This explanation is also in line with the model of grammar proposed by Kallestinova (2007) who suggests that free Russian word order is not as free as it might seem. She proposed that the syntactic component of

Russian grammar generates SVO sentences only, which is a basic word order in both English and in Russian. Other word orders in Russian, Kallestinova suggests, result from pragmatic influences that determine the optimal word order in a particular structure during a speech act. If this model is accurate then it can account for variations between the so called 'fixed' word order of English and a 'free' word order in Russian. It can also serve as an explanation as to why SVO order is preferred by bilingual children in this sample. However, in order to ascertain whether this explanation is an accurate one, it is necessary to collect more data from a larger pool of participants, including adults.

Thus, the answer to the question of differences is that although there are some differences, in general, bilingual speakers' languages do not differ greatly from the languages of monolingual speakers. It is also possible to state that all the patterns of language development and use are largely the same in Russian monolingual, English monolingual and Russian-English bilingual speaking children.

## Individual differences

The third question in the set of empirical questions deals with individual differences in language use by bilingual children. The question asks whether we can make any general statements about language acquisition and use by these children. Again, statistical analysis may not be helpful in answering this question, whereas descriptive analysis may help shed light on this question. Looking at all three categories of Alycia's IPSyn, it may be stated that sentence structures categories are mastered on equal (or about equal) level. The major differences in

Alycia's case come in the use of nouns and NPs and the verb and VPs as well as in the use of tenses in her two languages. Given that she is using various noun and verb categories more frequently in English, it is possible to conclude that Alycia's competency in this language may be higher than it is in Russian.

Although six of the seven bilingual children who participated in the study began studying English at age three, individual differences in the rate of acquisition of English are evident. Of the seven children in the study, only one child, Vera, is more competent in Russian than she is in English.

Vera's case is interesting because even though she attended an English speaking day care facility, her preference for Russian was very strong. One might argue that was because Vera was the youngest of all the participant in the study. At the time of data collection, Vera was 60 months old. It might have been that her age mattered in this situation. Review of the recorded data clearly indicated that Vera was not comfortable when speaking English. Before the storytelling and during free play she preferred to use Russian. While this in itself is not an indicator of low competency, one has to take into account that a competent and proficient user of a language should be comfortable using this language in a variety of situations.

What is also interesting is that the single prompt by a researcher at the beginning of the conversation launched a set of mixed Russian utterances in Vera's English rendition of the story. A notion of prompting and its apparent effects on mixing may be an interesting question for the future investigation.

Vera was not the only younger participant in the study. The other two bilingual participants, Misha, who was 61 months old and David, who was 63 months old at the time of the data collection clearly do not show the signs that the younger age may, in fact, affected their use of the two languages. If the facility of switching from one language to another is an indicator of competency then one can assert that these two children were quite competent in using both of their languages as they easily switched from one to another after the researcher switched language as a prompt. So it is interesting that in just two years their level of competency in English reached and then surpassed their Russian competency.

What is interesting in determining the competencies of each child is that many bilingual children showed similar competencies on various language structures in their two languages, but varied greatly in the nouns and verbs categories. It seems that mastering such language structures as correct word order or using conjunctions to connect two or more VPs is not difficult for the bilingual children. What might be more difficult is using more "connecting" verb categories or such categories as catenative verbs, using the copula, auxiliary or modal verbs, as well as creating more complex NPs that consist of more than one modifier. However, the same difficulties were observed in the speech of monolingual children. Therefore, it may be the general trend that language acquisition is taking at this stage of the child development, not the trend specific to the bilingual children alone.

Another general pattern worth discussing is the use of verb tenses by bilingual children. The results indicate that when monolingual Russian children
told their stories they clearly preferred to do so in the past tense. When monolingual English children told their stories, they switched tenses from the past to present and back to the past. Bilingual children seemed to follow the monolingual patterns, i.e. narrating in Russian they preferred past tense, but when narrating in English, they used tenses interchangeably. One way to explain this finding is that this may be a cultural phenomenon that narrators use in colloquial speech. In order to state this with certainly, a future study that includes different linguistic populations of different ages (including adults) may be necessary to conduct.

Another way to look at the results may be to consider Minami's (2005) idea that the changes in the tense reflect the attitude of the speaker and the temporal placement of the speaker towards or away from the story. Examining different narratives children produce, Minami points out that using different tenses in narrative means expressing different verbal notions in telling the story. For example, the present tense is often used in narratives that specify a typical series of events taking place in a particular activity, like going to a restaurant or a party. However, if the task of the narrator is to recount the series of events that are spatially or temporarily distant from the speaker, then the narrators often opt for the use of the past tense. Minami points out that "in this way, the tenses that narrators use reveal their subjective attitude toward a particular event" (p. 1618).

The book that was used for narration describes a series of events (from losing a frog to eventually finding it in the woods after many adventures) taking place in a particular activity (searching for a missing frog). Thus, if Minami's
(2005) finding is accurate and stable across languages (he studied Japanese and English speakers), then most of the story should have been told in the past tense. While this proved to be the case for the Russian speaking children, this is not the same for the English speaking participants and bilingual children when speaking English. It could be that while Russian children relate the events as a fairy tale, simply describing what is happening, English speaking children switch between relating the story fairy-tale style (as happening to someone some time ago) and relating it as if it is happening now. This may be a cultural difference that bilinguals notice and capitalize on.

Shirai and Anderson (1995) proposed another explanation for the tense mixing phenomenon. They found that in children's speech, past tense markers were strongly associated with semantic features of telicity (or the verbs that have a goal orientation), whereas progressive marking was associated with verbs that feature dynamic or ongoing action. Although this study did not specifically focus on what kinds of verbs went with what tenses, as this was outside of the scope of the study, the fact that both monolingual English speaking children and bilingual children mixed tenses when speaking English, may indicate that when telling the story, Russian speaking children use a majority of telic verbs whereas the English speakers (and bilinguals when talking in English) did not. This may relate to the fact that the Russian perfective tense (which often denotes accomplishment) cannot be used in the present tense, thus forcing narrators to use past tense where the story talks about the action completion.

Thus, to answer the posited question about individual differences and general language acquisition trends, one could say that age of onset of the second language acquisition in not the only factor that contributes to the competency children achieve by the time they are ready to begin schooling. Much also depends on the amount of exposure to the second language at home and outside as well as on child's personal language preferences. This agrees with the user-based approach of acquisition (Langacker, 1987; Tomasello, 1992) which assumes that language use is the basis for the emergence of various language structures. This approach also assumes that learning of linguistic elements is directly related to the frequency of use of these elements, as frequent occurrence reinforces mental representations which in turn facilitate the activation of these expressions in speech (Diesel, 2004). Another important element contributing to child's competencies is the child's need for particular elements of language for communication (Ninio, 2006). This, coupled with the frequency of input and child's personal preferences may play a crucial role in the competency that children eventually display in their two languages.

## The IPSyn as an assessment instrument

The last two questions deal with methodological concerns. The first question in this set asks how the IPSyn broadens assessment when larger samples are studied.

Proportionate score. Using the IPSyn allows one to evaluate children's performance in each of the categories the IPSyn offers. However, as became evident during the coding of the data, this is not a perfect tool. First of all, the
proportionate score cannot be used alone as an indicator of competency, as a low proportionate score does not necessarily mean that the child has lower competency in a language. It may be a simple function of sentence length. That means that longer utterances spoken without a discernable pause could include more information than many shorter utterances. Thus, if the child uses many shorter utterances, this may affect the results of the proportionate score calculations as compared to the child who used fewer, but longer utterances. The example of such a discrepancy is Pavel, whose proportionate score in English was 17.67 and whose proportionate score in Russian was 7.97 . However, when Pavel's stories were examined through all three categories descriptively, it turned out that Pavel used more Russian categories and more frequently as well. Thus, the proportionate score may be just one indicator of competency, but should not be regarded as the only such indicator.

The IPSyn and MLU. The results of the study indicate that the IPSyn proportionate scores and MLU as measured in morphemes correlate highly. The question then arises: If both measures are so sensitive to the syntactic development and growth, they why use the IPSyn when MLU is much simpler to score? The advantage of using the IPSyn is that it yields not only a single score, but also has multiple groups of scores that a researcher can examine. By uniquely combining a total score, scores for the groups of categories as well as scores for the individual categories, researchers have an opportunity to examine the data on multiple levels, zooming in and out in their explorations of the data. This affords researchers the ability to make not only general statements about the syntactic
development and growth, but it also allows to see exactly which categories experience change at any given point in time. Most importantly, in case of bilingual acquisition such explorations could be done side by side in both languages a child might be acquiring.

Considering how the three IPSyn groups, Nouns, Verbs and Sentence Structures, fared in this exploratory research, it may be fair to say that all three groups were easy to understand and worked well. When coding, a number of decisions had to be made as to how to determine the categories, but in general, such decisions did not impact on the integrity of the coding scheme and the coding itself. The fact that coding in three categories that deal with grammatical competencies was relatively easy makes the point that such use of the IPSyn measure is possible in bilingual research, not only for Russian and English, but also, possibly, for other languages.

One group of categories, Questions and Negations, was not used in this study. This was for two reasons. One reason was that speech of the children had very few questions and/or negations. This is because the task was structured in such a way that did not allow to focus on these types of utterances. To use this category successfully, a different kind of task may need to be given to the children. This category proves to be of little use when narratives are used for language analysis. Because it was evident early on that this category would not be used for the analysis of narratives, little was done to ensure that the Russian version of this IPSyn group was thought through carefully. Thus, if future research considers the use of this category, more work on adapting this for the use
with Russian needs to be done, since there are some significant differences in how questions and negations are handled in the Russian and the English languages. Considering the use of this category in the future research, it may be feasible to devise an extension task in the form of a game where children would be asked to create questions about the story they have just told and/or be able to state something in negative about the story they have just told. Such game could involve the "audience" that would be present during the narratives told by the two children. For example, the prompt to switch the languages and tell the story in a second language was that one of the audience dolls did not understand anything that happened during the play. An exchange with the audience and the child could have been arranged in such a way that the child had to answer some questions or ask the audience some questions to ensure they "got it".

Thus, the answer to the question of the potential use of the IPSyn to broaden the assessment is a positive one. Using the IPSyn allows researchers to not only examine the language use in case studies, but the data in the larger samples can be collapsed and examined in general thus allowing more generalizations to be made and statistical analyses carried out. $M L U-w$ vs. MLU-m

The last question that this study posed to answer dealt with the use of MLU in Russian-English cross-linguistic research. Specifically, the question asked which measure, Mean Length of Utterance in words (MLU-w) or in morphemes (MLU-m) might be more useful when comparing Russian and English sentence length without modifying the measure in either language.

The results of the study indicated that MLU-m counts were not substantially different in the two languages. The same was true for the MLU-w results. When compared, MLU-m and MLU-w scores in each language were not far apart either. That may be explained by the fact that although Russian is a synthetic language that has many suffixes that allow the grammatical meaning to be constructed, English makes extensive use of articles, prepositions and auxiliaries that are not used in the Russian language. Thus, the answer to the question is that either measure may be used successfully when comparing the data from Russian and English.

## Considerations for future research

Several issues unfolded and became evident as the study progressed.
These issues need to be considered when working with the IPSyn in two or more languages in the future. One issue that is important to consider is the number of researchers collecting the data. When collecting data in two languages, a decision needs to me made regarding the language status of experimenters. In this case, bilingual data were collected by a bilingual researcher. Subsequently, because of travel difficulties, the Russian data were collected by a monolingual Russian speaker. Since it was necessary to match the way the data were collected, the decision was thus made that a monolingual English speaker was to collect the English data. In an ideal situation, it might have been preferred that a single person collects all the data. This would have eliminated dealing with the issue of individual differences among the researchers.

Another point to consider in future work is paying greater attention to the English language background of bilingual children. In order for the researchers to get a more accurate interpretation of what parents mean during the interviews, a more accurate instrument must be used to interview or survey parents. In this study, the researcher simply talked to parents in informal interviews prior to the data collection. The researcher also talked to the teachers at the enrichment school asking them to describe children's competencies in both languages. This may not have been enough. A better way to find out about the language habits of children would be to ask parents to rate how much time children spend watching TV in each language, how much time parents read to their children in each language, what language children prefer when they talk to their siblings during play time and so on. An even stronger procedure for participant selection would be to observe the families and rate the language use independently of the parental surveys.

The data collected in this project may be considered typical data for the three groups of children: bilingual Russian and English children, monolingual English children and monolingual Russian children. However, we cannot know without adult data on narratives of the same story whether the patterns of use of various groups and categories is representative of different age groups. Thus, future research needs to consider comparison of child and adult data.

Often the assessment of child language focuses on correct usage of the forms of the language in obligatory contexts. In the current study, the goal was to determine whether various categories were used at all. In scoring the data, the
impression is that a detailed analysis of errors carried out in the future would be of interest.

Finally, this is a cross-sectional study. Longitudinal bilingual and monolingual study within and across languages would allow one to really understand how the languages of a bilingual child develop and grow. Although such study may be time-consuming and complicated, it would advance our knowledge substantially.

## Implications and Conclusions

Recent trends in globalization and increased immigration to the United States place new emphasis on bilingualism and the education of bilingual children. When children who speak more than one language enter schools, educators often face the need to assess children's knowledge and skills in all of their spoken languages in order to understand how to serve these children well. Knowledge of typical monolingual and bilingual development is essential to this task.

The current study offers a new way to look at what grammatical competencies English and Russian monolingual and Russian-English bilingual five year olds have. The proposed assessment methodology can be useful if we are to trace the micro-development of language in the ages between 5 and 7 in order to understand better what kinds of linguistic skills and knowledge children acquire at this critical for literacy development age. This may be especially important for teachers as such knowledge allows them to understand how to improve instruction of the bilingual children in their classrooms. Many
elementary school teachers still harbor the notion that bilingual children are somehow at a disadvantage when it comes to schooling. Many teachers also view bilingualism as a type of impairment and do not fully understand that bilingualism can offer multiple benefits to cognitive and cultural development of young children (Bialystock, 2001). The results of this study may help teachers see that bilingualism in and of itself does not impair English learning or school achievement. In fact, it may be helpful for the children to be exposed to two languages early, as their grammatical competency in some specific categories may be higher than that of monolingual children. Therefore, this study may help teachers understand that bilingualism is not detrimental to children's development. When lower achievement occurs, it may be the result of socioeconomic status, a factor that hampers achievement not only in bilingual, but also in monolingual children.

This issue merits further examination. The children in this project were carefully selected to be comparable in SES and all were middle class. Bilingual parents reported that they emphasized the importance of the second language to their children and the fact that they enrolled children in a language enrichment school shows how important this type of education is for them. Thus, to validate the results of this study, more research on language maintenance and development in bilingual populations of various SES and parental emphasis on bilingualsim need to be undertaken.

The study offers a new way to collect linguistic data, using a more naturalistic setting to make it easier and more engaging for children to participate.

This allows for richer opportunities to collect speech samples (Stromswold, 1996). It also gives the researchers a more valid picture of language development and use by children (Shohamy, 1994). For the teachers, this type of data collection and analysis gives a better picture of what a child can do in a language. This is evident from the comparison of what the teachers thought about the ability of children in each of languages and what the study results show. While teachers had no problem identifying clear cases of dominance in either language, they were less accurate in the cases where the dominance was not as evident.

This study opens up a new way of examining the two languages of bilingual children simultaneously by using the IPSyn as a tool to do so. While the study answers many questions about the use of the IPSyn and MLU in bilingual Russian -English research, it also gives more food for thought regarding future research aimed at improving the IPSyn for the use in multiple languages.

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## Appendix A

Rules for MLU calculations
(From Brown, 1973)
Start with the second page of the transcript unless that page involves a recitation of some kind. If this is the case, start with the first recitation-free stretch. Count the first 100 utterances that satisfy the following rules:

1. Only fully transcribes utterances are used, none with blanks. Portions of utterances entered in parentheses to indicate doubtful transcription are used.
2. Include all exact utterance repetitions. Stuttering is marked as a repeated efforts as a single word; count the word once in the most completed form produced. If the word is produced a few times for emphasis or the like (e.g., no, no, no!) count each occurrence.
3. Do not count such fillers as $m m$ or oh, but do count yeah, no, and hi.
4. All compound words (two or more morphemes), proper names, and ritualized reduplications count as single words. Examples: birthday, rackety-boom, choo-choo, quack-quack, night-night, pocketbook, see saw.
5. Count as one morpheme all irregular pasts of the verbs (e.g., got, did, went, saw).
6. Count as one morpheme all diminutives (e.g., doggie, mommie).
7. Count as separate morphemes all auxiliaries (e.g., is, have, will, can, must, would). Also all catenatives (e.g., gonna, wonna, hafta). Count as single
morphemes all inflections, for example, possessive $-s$, plural $-s$, regular past $-e d$, third person singular $-s$, progressive $-i n g$.
8. The range count follows the above rules but is always calculated for the total transcription rather than for 100 utterances.

## Appendix B

Brown's stages (from Brown, 1973)

| Stage | $\begin{aligned} & \text { MLU } \\ & \text { range } \end{aligned}$ | Mean <br> MLU | Approximate age (months) | Emerging Morphemes |
| :---: | :---: | :---: | :---: | :---: |
| I | 1.50-2.00 | 1.75 | 15-30 | Various simple sentence types, no inflections or prepositions used |
| II | 2.00-2.50 | 2.25 | 28-36 | (1) -ing <br> (2) in <br> (3) on <br> (4) -s (plural morpheme) |
| III | 2.50-3.00 | 2.75 | 36-42 | (5) irregular past tense <br> (6) -s (possessive) <br> (7) uncontractible copula |
| IV | 3.00-3.70 | 3.50 | 40-46 | (8) articles <br> (9) -ed (regular past tense) <br> (10) -s (third person regular present tense) |
| V | $3.70-4.50$ | 4.00 | 42-52 | (11) irregular third person singular <br> (12) uncontractible auxiliary <br> (13) contractible copula <br> (14) contractible auxiliary |

## Appendix C

## Survey of features of the Russian language

Russian has a complex synthetic-inflectional structure, i.e. it has many prefixes, suffixes, and infixes that can be combined together to form derivatives of a word. The Russian language has three grammatical genders (masculine, feminine and neuter). In the nominative case, Russian feminine nouns end on $-a$ or a soft sign (b), for example, книга (kniga, book), дочь (doch', daughter). Masculine nouns in the nominative case usually end on a consonant, for example, стол (stol, table), лес (les, forest), whereas neuter nouns end on a vowel -o or -e as in the following examples солнце (solntse, sun), окно (okno, window).

Adjective are also marked for gender by a special ending and have to agree in gender to the noun they modify. For example: большая книга (bol'shaya kniga, large [adj., fem., nom., sing.] book [n., fem, nom., sing.]), большой стол (bol'shoj [adj., masc., nom., sing.] stol [n., masc., nom., sing.], large table) большое окно (bol'shoye [adj., neut., nom., sing.] okno [n., neut., nom., sing.], large window).

Russian has six cases that are denoted by the suffixes added to nouns and to modifying adjectives which must agree with nouns not only in gender, but in number and case as well (Wade, 1992). The Russian language uses diminutives extensively, especially in child-directed speech. Both nouns and adjectives can take diminutive forms. For example:

Маленькая
Malen'kaja kniga

Small (adj., fem., nom.) book (n., fem. nom.)

Малюсенькая
Maljusen'kaya knizhechka

The very small (adj., fem., nom., dim.) book (n., fem.,nom., dim.)
Because of the extensive case system and the large number of inflections that preserve the meaning of a sentence, Russian word order is relatively flexible. At the same time, this flexibility of word order in Russian is not arbitrary. Some restrictions apply, as a change in the word order can sometimes lead to changes in meaning or render a sentence ungrammatical (Krylova \& Khavronina, 1988).

Russian also has grammatical verb conjugation, i.e. the verb endings change depending on the person (first, second or third), the number (singular or plural) and tense. The Russian language distinguishes three tenses (present, past and future) as well as an imperative. The subjunctive is marked by the use of a special conjunction чтобыl plus past tense, whereas the conditional mood is formed by using a special conjunction если, particle бьı plus past tense. Russian verbs in past tense require an agreement in number and gender with a subject noun or noun phrase (NP) as illustrated by the following examples:
(1) Солние зашло.
Solntse zashlo
Sun (n., neut., nom., sing.) go down (v., p.t., perf., neut. sing.)
The sun went down.

| (2) Девочка | засмеялась. |
| ---: | :--- |
| Devochka | zasmeyalas’ |

Girl (n., fem., nom., sing.) begin laughing (v., p.t., perf., fem.sing.)

A girl started laughling.
(3)
Грузовик уехал.

Gruzovik uehal
Truck (n., masc., nom., sing.) leave (v., p.t., perf., masc., sing.) A truck (has) left.
(4)
Они уже смотрели $\quad$ итет
Oni smotreli
They (prepos., nom., pl.) already watch (v., p.t., impf., pl.) this
(prepos., masc., acc., sing.)
фильм.
fil'm
movie (n., masc., acc., sing.)
They already saw this movie.

Russian language has copulas, however, to be is rarely used in present tense. Instead, copulas are used extensively in past or future tense. Examples (6) and (7) illustrate this feature:
(6)

он
on
He (prepos., masc., nom. sing.) student (n., masc., sing., nom.)
He is a student.
(7) $\quad О н$

был

On
byl
He (prepos., masc., nom. sing.) be (v., p/t/, sing., imp., masc.)

учеником этой
uchenikom etoj
student (n., masc., sing., inst.) this (prepos., fem., sing., gen.)
школь.
shkoly
school (n., fem., sing., gen.)
Russian uses auxiliary to be to form future tense in imperfective aspect.
Consider the examples (8) and (9) below:

| (8) | OH | поёт. |  |
| :---: | :---: | :---: | :---: |
|  | On | poyot. |  |
|  | He (prepos., masc., sing., nom.) sing (v., p.t., $3^{\text {rd }}$. p. sing.) |  |  |
|  | He sings (is singing). |  |  |
| (9) | $O H$ | будет | петь. |
|  | On | budet | pet'. |
|  | He (prepos., masc., sing., nom.) be (v., f. t., $3^{\text {rd }}$. p. sing.) sing (v., |  |  |

He will (be) sing(ing).
Russian, as many other languages has a grammatical category of aspect.
Aspect is different from tense because even though both are concerned with time, tense is a grammatical category that locates situation in time and usually has a reference to present moment, a moment when the speech act is occurring (Comrie,
1976). Aspect, on the other hand, is concerned with temporal consistency of a situation. As Comrie suggests, the difference could be seen if we consider aspect to be situation-internal time and tense to be considered situation-external time (Comrie, p. 5). Unlike English, where aspect is blended in progressive and perfect categories of tense, Russian verbs have distinct markers for the two aspects in the language. The two are aspects are perfective and imperfective. Both aspects have past and future tense, however only imperfective aspect verbs can be used in present tense. There are also some verbs that have only one aspect, imperfective. The difficulty comes in with the formation of these aspects, as they can be formed in a number of ways - by prefixation, by derivation from different roots, by stress or by internal modification (Wade, 1992). The following examples illustrate this difficulty:

| Prefixation: | Писать | написать |
| :---: | :---: | :---: |
|  | Pisat ${ }^{\prime}$ | napisat' |
|  | To write | to have written |
| Word change: | Говорить | сказать |
|  | Govorit' | skasat' |
|  | To say | to have said |
| Suffix removal: | Рассказывать | рассказать |
|  | Rasskazyvat' | rasskazat' |
|  | To tell | to have told |
| Internal change: | Засыпnamb | заснуть |
|  | Zasypat' | zasnut' |

To fall asleep to have fallen asleep
Special passive participles are used when passive voice sentences are constructed. Russian has two types of participles - adjectival and adverbial ones. Unlike in English, they do not form combinations with auxiliary verbs to form tense. Adverbial participles have perfective and imperfective forms, whereas adjectival participles have tense and voice, i.e. they can be used in present or past tense with active or passive voice (Cruise, 1993). Both Russian and English have active and passive constructions, however, unlike in English, passive is used rarely in the Russian language. Special passive participles are used when passive voice sentences are constructed. For example,
(10) Кукла одета.

Kukla odeta.

Doll (n., fem, sing., nom.) dressed (adj. part., p.t., fem.)
A doll is dressed.

Russian utilizes reflexive verbs heavily. Reflexives are formed by the $c b / c a$ morpheme that is attached to the end of a verb in any tense. For example, $o \boldsymbol{o r}$ ударился (he bumped himself, masc. perf. past tense); я ударюсь (I will hurt myself, f.t. perf.); я ударяюсь (I keep hurting myself, pr.t.). Sentences where Russian reflexive verbs are usually used can often be translated into English using passive voice constructions. For example:
(11) Ваза
упала
$u$
Vaza
upala

Vase (n., fem., sing., nom.) fell (v., p.t., perf., fem., sing.) and

разбилась.
razbilas'
broke (v., p.t., perf., fem. sing., refl.)
A vase fell and got broken.
Russian does not have any articles. Instead, to indicate definiteness, Russian speakers can utilize a form of demonstrative pronoun this (это - eto, neut., этот - etot, masc., эта- eta, fem., эти - eti, these, pl.) that must agree with the noun or NP it refers to, use prosody or rely on contextual clues or gestures.

## Appendix D

The original IPSyn items

| Original | Explanation |
| :--- | :--- |
| IPSyn No. |  |
| N1 | Proper, mass or count noun |
| N2 | Pronoun or prolocative, excluding modifiers |
|  | Modifier, including adjectives, possessives and |
| N3 | quantifiers |
| N4 | Two word NP: nominal preceded by an article or |
| N5 | Article used before a noun |
| N6 | Two word NP: after verb or preposition |
| N7 | Plurals (regular) |
| N8 | Two word NP: before verb |
| N9 | Three word NP (modifier +modifier +noun) |
| N10 | Adverb modifying adjective or nominal |
| N11 | Any other bound morpheme on noun or adjective |
| N12 | Other |
| V1 | Verb |
| V4 | Populicle or preposition linking two nominals |
| N4 |  |


| Original | Explanation |
| :---: | :---: |
| IPSyn No. |  |
| V5 | Catenative (pseudo-auxiliary) preceding a verb |
| V6 | Auxiliary (to be, to have, to do) in VP |
| V7 | Progressive suffix |
| V8 | Adverb |
| V9 | Modal preceding verb |
| V10 | Third person singular present tense suffix |
| V11 | Past tense modal |
| V12 | Regular past tense suffix |
| V13 | Past tense auxiliary |
| V14 | "Medial" adverb |
|  | Copula, modal or auxiliary for emphasis or ellipsis |
| V15 | (uncontractible context) |
| V16 | Past tense copula |
|  | Other (e.g., bound morpheme on verb or on adjective to |
| V17 | make adverb) |
| Q1 | Intonationally marked questions |
|  | Routine do/go or existence/name questions or wh |
| Q2 | pronoun alone |
| Q3 | Simple negation |
| Q4 | Initial wh-pronoun followed by a verb |
| Q5 | Negative morpheme between subject and verb |

Original Explanation
IPSyn No.
Q6 Wh-question with inverted modal, copula or auxiliary
Q7 Negation of copula, modal or auxiliary
Yes/no questions with inverted modal, copula or

Q8
Q9

Q11 copula/auxiliary/modal)
S1
S2
auxiliary
why, when, which, whose
Tag questions

Two word combinations
Subject verb sequence (SV)
Verb object sequence (VO)

Conjunction
Sentence with two VPs
conjoined phrases

Let/make/watch/help introducer
Adverbial conjunction
Propositional complement
Conjoined sentences
Wh clause

Other (e.g. questions with negation and inverted

Subject verb object sequence (direct object), SVO only
infinitive without catenative, marked with to

Original Explanation
IPSyn No.

| S14 | Bitransitive predicate (indirect object) - SVO only |
| :--- | :--- |
| S15 | Sentence with 3 or more VPs |
| S16 | Relative clause marked or unmarked |
| S17 | infinitive clause: new subject |
| S18 | Gerund |
| S19 | Fronted or center embedded subordinate clause |
| S20 | Other(passive constructions, tag comments) |

## Appendix E

Measures of language production in Russian and English as derived from the IPSyn

This appendix defines and exemplifies the categories utilized in both the Russian and the English Index of Productive Syntax measures. For purposes of comparison the two measures are presented together.

There are for major groups of categories (Nouns, Verbs, Questions and Negations, and Sentence Structures). To keep things straight, the first column of this Appendix gives each category in the IPSyn a consecutive number. The second column lists the original IPSyn numbers. In the original IPSyn, each category was labeled with a letter that stands for the first letter in the group and a consecutive number. For example, the first category in the Nouns group is labeled N1. The word "Added" in the second column indicates that a category was added to one of the measures during the adaptation process. Next to the word "Added" there is a letter that identifies which instrument the addition was for. Letter $E$ indicates that a category was added for the English version of the IPSyn, $R$ indicates that is was added to the Russian version of the measure, and $B$ indicates that it was added to both measures. When categories are added for the Russian language, the columns where the English language examples are to be placed are left blank. The categories that do not exist in one language or the other are labeled $\mathrm{N} / \mathrm{A}$ in the column where the exemplars are given for that category.

| No. | Original IPSyn No. | Category name | English examples | Russian examples <br> (and translations) |
| :---: | :---: | :---: | :---: | :---: |
| NOUNS |  |  |  |  |
| 1 | N1 | Proper, mass or count noun | Jack, boy, one | Маша (Mary), <br> Мальчик (boy), |
|  |  |  |  | один (one) |
| 2 | N2 | Pronoun or prolocative, |  | Он (he), это (this), |
|  |  | excluding modifiers | there | там (there) |
| 3 | N3 | Modifier, including |  | Маленький |
|  |  | adjectives, possessives | first, all | (small), первый |
|  |  | and quantifiers |  | (first), все (all). |
| 4 | N4 | Two word NP: nominal | A boy, | Маленькая |
|  |  | preceded by an article | small hole | собачка (small |
|  |  | or modifier |  | doggie). |
| 5 | N5 | Article used before a | A boy, the | N/A |
|  |  | noun | boot |  |
| 6 | N6 | Two word NP: after | (They saw) | (Они увидели) |
|  |  | verb or preposition | a tree. | красивое дерво. |
|  |  |  |  | (They saw a pretty |
|  |  |  |  | tree). |


| No. | Original IPSyn No. | Category name | English examples | Russian examples <br> (and translations) |
| :---: | :---: | :---: | :---: | :---: |
| 7 | N7 | Plurals (regular) | Frogs, <br> shoes | Лягушки (Frogs). |
| 8 | N8 | Two word NP: before verb | A frog left | Маленькая <br> лягушка ушла (А <br> small frog left). |
| 9 | N9 | Three word NP (modifier + modifier +noun) | A small <br> room | Очень маленькая лягушка (A very small frog). |
| 10 | N10 | Adverb modifying adjective or nominal | Too hot, right here | Очень жарко <br> (Very hot). |
| 11 | N11 | Any other bound morpheme on noun or adjective | Boy's shoes | Собачкина (Dog's) |
| 12 | N12 | Other |  |  |
| 13 | Added B | Diminutive nouns | Froggie | Лягушечка <br> (Froggie) |
| 14 | Added R | Diminutive adjectives |  | Малюсенький, (tiniest dim.) |


| No. | Original IPSyn No. | Category name | English examples | Russian examples <br> (and translations) |
| :---: | :---: | :---: | :---: | :---: |
| 15 | Added R | Noun/adjective agreement |  | Маленькая <br> лягушка (small <br> frog) |
| 16 | Added R | Short adjectives |  | Мал (small), <br> красив (beautiful) |
| 17 | Added B | Comparative degree of adjectives | Smaller | Меньше (smaller), <br> краше (more <br> beautiful) |
| 18 | Added B | Superlative degree of adjectives | Smallest | Самый маленький (the smallest), наикрасивейший (the most beautiful) |
| 19 | Added B | Cardinal numerals | One | Один (one) |
| 20 | Added B | Ordinal numerals | First | Первый (first) |
| 21 | Added B | Irregular plurals | Children | Друзья |
| VERBS |  |  |  |  |
| 22 | V1 | Verb | Go, was, jumped | Идти (to go), <br> прыгнул (jumped), <br> был (was) |


| No. | Original IPSyn No. | Category name | English examples | Russian examples <br> (and translations) |
| :---: | :---: | :---: | :---: | :---: |
| 23 | V2 | Particle or preposition | to (go), in, from | B (in), на (on), не (not), же (emphatic particle) |
| 24 | V3 | Prepositional phrase | Into the woods, from the house | в банку (to the jar), из речки (from the spring) |
| 25 | V4 | Copula linking two nominals | It was late; This is a boy. | Refer to page 20 of this document. OH был маленький (He was small) |
| 26 | V5 | Catenative (pseudoauxiliary) preceding a verb | They tried to run. | Хочу спать. (I want to sleep). |
| 27 | V6 | Auxiliary (to be, to have, to do) in VP | The bees are chasing the dog. | Refer to page 20 of this document. OH будет смотреть (He will watch). |
| 28 | V7 | Progressive suffix | The bees are chasing the dog. | N/A |


| No. | Original | Category name | English | Russian examples |
| :---: | :---: | :--- | :--- | :--- |
|  | IPSyn No. |  | examples | (and translations) |
| 29 | V8 | Adverb | He ran fast. | Он бежал быстро |
| 30 | V9 | Modal preceding verb | He can run. | Он может упасть |
| (He ran fast). |  |  |  |  |


| No. | Original | Category name | English | Russian examples |
| :---: | :---: | :--- | :--- | :--- |
|  | IPSyn No. |  | examples | (and translations) |
| 35 | V14 | "Medial" adverb | It was | Они почти нашли |


| No. | Original IPSyn No. | Category name | English examples | Russian examples <br> (and translations) |
| :---: | :---: | :---: | :---: | :---: |
| 40 | Added B | Future tense verbs | He will be | Они будут |
|  |  |  | there. They | смотреть везде |
|  |  |  | will find | (they will be |
|  |  |  | him. | looking |
|  |  |  |  | everywhere). |
| 41 | Added B | Perfective aspect verbs (past tense) | They have | Они побежали |
|  |  |  | talked to | (they've run). |
|  |  |  | him. He has | Он залез (he's |
|  |  |  | found his | climbed). |
|  |  |  | friend. |  |
| 42 | Added B | Perfective aspect verbs | They will | Они побегут (they |
|  |  | (future tense) | have found | will run). |
|  |  |  | his friend. | Они залезут |
|  |  |  |  | (They'll get in). |
| 43 | Added B | Passive voice | What is this | Лягушку нашли |
|  |  |  | called? | (The frog was |
|  |  |  |  | found). |
| 44 | Added B | Irregular past tense | Left, came | Залез ([He] |
|  |  | verbs |  | climbed in) |


| No. | Original IPSyn No. | Category name | English examples | Russian examples <br> (and translations) |
| :---: | :---: | :---: | :---: | :---: |
| 45 | Added R | Reflexive verbs | Please refer to page 18 of this document | Проснулся (woke up), свалился (fell), попалась (got caught). |
| QUESTIONS AND NEGATIONS |  |  |  |  |
| 46 | Q1 | Intonationally marked questions | He left? | Он ушел? <br> (He left?) |
| 47 | Q2 | Routine do/go or | What? | Что? (what?) |
|  |  | existence/name questions or wh | Where does he go? | Где он живет? <br> (where does he |
|  |  | pronoun alone |  | live?) |
| 48 | Q3 | Simple negation | I don't know | Я не знаю. (I do not know) |
| 49 | Q4 | Initial wh-pronoun followed by a verb | When was that? | Кто был там? <br> (who was there) |
| 50 | Q5 | Negative morpheme between subject and | I'm not going. | Я не знаю. (I do not know). |


| No. | Original IPSyn No. | Category name | English examples | Russian examples <br> (and translations) |
| :---: | :---: | :---: | :---: | :---: |
| 51 | Q6 | Wh-question with | What do you | Где были дети? |
|  |  | inverted modal, | think? | (where were the |
|  |  | copula or auxiliary | Where was I? | kids?) |
| 52 | Q7 | Negation of copula, | I can't hear. | Он не мог уйти |
|  |  | modal or auxiliary | I don't like. | (he could not go). |
| 53 | Q8 | Yes/no questions | Do you hear | Ты меня |
|  |  | with inverted modal, | me? | слышишь? (Do |
|  |  | copula or auxiliary | How are you? | you hear me?) |
| 54 | Q9 | why, when, which, | Why? When are | Почему (when)? |
|  |  | whose | you going? | Когда ты идешь |
|  |  |  |  | (Where are you |
|  |  |  |  | going)? |
| 55 | Q10 | Tag questions | It's going to be | Они найдут ее, |
|  |  |  | a deer, OK ? | да? (They will find |
|  |  |  |  | her, right?) |
| 56 | Q11 | Other (e.g. questions | Why didn't you |  |
|  |  | with negation and | say so? |  |
|  |  | inverted |  |  |
|  |  | copula/auxiliary/ |  |  |
|  |  | modal) |  |  |


| No. | Original | Category name | English | Russian examples |
| :---: | :---: | :---: | :--- | :--- |
|  | IPSyn No. |  | examples | (and translations) |
| 57 | Added R | Negation with | N/A | Никого нет (No |
|  |  | genitive (including |  | one is here. Нету |
|  |  | partitive) |  | лягушки. (The |

## SENTENCE STRUCTURES

58

59

60

S4

S5 Conjunction
Verb objec sequence (VO)

61

62
62

He fell. I think.
Они читали (They read).

Мы идем (we are walking).
asleep.
Give me. I like it. me).

Он нашел лягушку (Не found a frog).


| No. | Original IPSyn No. | Category name | English examples | Russian examples <br> (and translations) |
| :---: | :---: | :---: | :---: | :---: |
| 67 | S10 | Adverbial conjunction | Then, so, because. | Потом (Then) |
| 68 | S11 | Propositional complement | I know you broke it. | Я знаю ты разбил банку (I know you broke the jar). |
| 69 | S12 | Conjoined sentences | He wanted to find the frog so they set out to | Он хотел найти лягушку и они пошли в лес |
|  |  |  | look for it. | искать (He wanted to find the frog and they went to the forest to search). |
| 70 | S13 | Wh clause | I think I know what is going to happen next. | Я знаю что будет дальше ( I know what happens |
|  |  |  |  | next). |
| 71 | S14 | Bitransitive predicate (indirect | He gave the dog a smile. | Он улыбнулся собаке (He smiled |
|  |  |  |  |  |
| 72 | S15 | Sentence with 3 or | He told the dog | Он звал лягушку |
|  |  | more VPs |  | и потом они |


| No. | Original IPSyn No. | Category name | English examples | Russian examples <br> (and translations) |
| :---: | :---: | :---: | :---: | :---: |
|  |  |  | so they can find the froggie. | пошли в лес искать еe (He was calling the frog and then they went to the woods to search for it). |
| 73 | S16 | Relative clause marked or unmarked | He found the frog that was his. | Он взял ту <br> лягушку которая <br> убежала (he took <br> the frog that ran away). |
| 74 | S17 | Infinitive clause: new subject | I need you to help. | Я знаю как помочь тебе (I know how to help you). |
| 75 | S18 | Gerund | Looking for the frog was not easy. | Жужание пчел рассердило собаку (Buzzing of the bees angered the dog). |


| No. | Original IPSyn No. | Category name | English examples | Russian examples <br> (and translations) |
| :---: | :---: | :---: | :---: | :---: |
| 76 | S19 | Fronted or center | After they | Когда поиски |
|  |  | embedded | found the frog, | закончились, они |
|  |  | subordinate clause | they went | вернулись домой. |
|  |  |  | home. |  |
| 77 | S20 | Other (passive | Here's the frog, | Ты не против, |
|  |  | constructions, tag | I think. | нет? (you don't |
|  |  | comments) |  | mind, do you?) |
| 78 | Added B | address | Frog! | Лягушка! (Frog!) |
| 79 | Added B | Imperatives | Look! | Смотри! (Look!) |
| 80 | Added B | Conditional mood | If you find the | Если ты найдешь |
|  |  |  | book, I will | книжку, я |
|  |  |  | play with you! | поиграю с тобой! |
|  |  |  |  | (If you find the |
|  |  |  |  | book, I will play |
|  |  |  |  | with you). |
| 81 | Added B | subjunctive mood | I wish he were | Я хочу чтобы он |
|  |  |  | under the log. | был здесь ( I wish |
|  |  |  |  | he were here). |
| 82 | Added B | Sentences without | Fell asleep. | Темнело (It was |
|  |  | subject | Gone. | getting dark). |


| No. | Original IPSyn No. | Category name | English examples | Russian examples <br> (and translations) |
| :---: | :---: | :---: | :---: | :---: |
| 83 | Added B | Exclamations | Hey! Look! | Эй ты! (hey, you!) |
|  |  |  | No! | Нет! (No!) |
| 84 | Added B | Direct Speech | He said: "I do | Он сказал: «Я не |
|  |  |  | not know where | знаю где |
|  |  |  | the frog is!" | лягушка!» (Не |
|  |  |  |  | said: 'I do not |
|  |  |  |  | know where the |
|  |  |  |  | frog is). |
| 85 | Added B | Not coded | Oh. Hgm. Xx | Ага. Угм. Ай. (uh- |
|  |  |  | Mou// | ha, ugm, ouch) |

## Curriculum Vitae

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| 1994 | Upsala College, East Orange, NJ |
|  | Major: Business Administration |
|  | Minor: Computer Information Systems |
|  | Degree earned: BS (Summa Cum Laude) |
| 1986-1991 | Pedagogical Institute of Foreign Languages |
|  | Tashkent, Uzbekistan, USSR |
|  | Major: English |
|  | Degree earned: none |
|  | Semester Hours Completed: 86 (GPA: 3.75) |

## Work Experience:

| September 2007-present | Adjunct (September 2007 - May 2008) <br> Assistant Professor (September, 2008-present), <br> Education Department <br> Caldwell College, Caldwell, NJ |
| :--- | :--- |
| September 2006 - May 2007 | Teaching Assistant, Graduate School of Education <br> College Avenue Campus, Rutgers University <br> New Brunswick, NJ |
|  | Project manager, Video Cases Online project <br> Department of Educational Psychology, <br> Graduate School of Education, Rutgers University <br> New Brunswick, NJ |
| 1997-2005 $1996-2000$ | Teacher of Russian Language <br> Craigmont Middle/High School, Memphis, TN |
|  | Instructor of Russian Language, <br> Department of Foreign Languages <br> University of Memphis, Memphis, TN |
|  |  |

## PUBLICATIONS:

Hmelo-Silver, C.E., Chernobilsky, E., Nagarajan, A. (2009). Two sides of the coin: Multiple perspectives on collaborative problem solving in online problem-based learning. In Kumpulainen, K., Hmelo-Silver, C. E, Cesar, M. (Eds.). Investigating classroom interaction: Methodologies in action. (pp. 73-98), Rotterdam, Netherlands: Sense publishers.

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[^0]:    ${ }^{1}$ Shift in consonants means that the consonant changes from one to another when a suffix is added. For example in the word 'kniga' -a book, the consonant $/ \mathrm{g} /$ is changing to /__/' that can accept diminutive suffix -k to make 'knizhka' - a small book.

[^1]:    ${ }^{2}$ In this particular count, the categories that tally the use of various word orders in Russian were combined. For example, the category subject verb sequence (SV only) was combined with the category subject verb sequence (any other order).

[^2]:    ${ }^{3}$ In this intra-word mixing case, Nika takes the English word baby and attaches a Russian genitive plural suffix to it.

