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A CASE AGAINST CASE: ACQUISITION OF RUSSIAN CASE IN MONOLIGUAL AND BILINGUAL CHILDREN

Bibi Janssen & Alla Peeters-Podgaevskaja

1 Introduction

1.1 Acquisition of Russian case in monolingual children

Over the past few years, more and more Dutch-Russian children have been born in the Netherlands. Raising them bilingual, Russian parents are often surprised by the fact that certain basic grammatical traits of Russian, such as case or gender, are a great challenge for their offspring. In the literature, however, it is well known that Russian case (and gender) acquisition is relatively difficult not only for L2 learners or bilingual children, but also for monolinguals. According to Peters (1997), there are several factors affecting acquisition of case. First of all, case is difficult to acquire when one single ending carries information on gender, case and number (like in German and in the Slavic languages). Secondly, phonetic distinctiveness plays an important role. When different case endings resemble each other too much (for example because of phonetic reduction in Russian), it is more difficult for children to learn that ending than for languages in which all vocalic case endings are clearly pronounced. Thirdly, the number of homophonic forms (or the degree of syncretism of endings) plays an important role in the speed of case acquisition (Peters 1997: 182).

Slobin supports the idea that homophonic endings as a result of reduction cause problems in acquiring the Russian case system. For example, the unstressed Russian case endings in feminine (the nominative ending *-a*) and neuter (the nominative ending *-o*) are reduced to a 'schwa', and therefore cannot be distinguished from each other. According to Slobin, the lack of transparency and pre-

dictability of the system are the reasons why Russian children need more time to sort out the various case allomorphs and at first use a single salient form for each case, ignoring gender. Slobin calls this 'inflectional imperialism' (Slobin 1985: 1216). The homophonic forms argument is consistent with Kempe and MacWhinney's reasoning. According to them, a high degree of homophony lowers the uniqueness of each inflection and makes the discovery of the dimensions of the paradigm more difficult (Kempe & MacWhinney 1998: 547-549).

However, the general assumption in current research, that acquisition of the Russian case system is late in the child's language development, is not supported by monolingual research and data analyses. Basing herself on diaries and conclusions from her own data, Cejtlin states that a Russian child acquires the basics of the case and gender system at age 2;0-2;6 passing through frozen nominatives (at 1;6) to most differentiated case endings at the end of his/her third year (Cejtlin 2009: 149, 164, 168). This does not mean that the child never confuses individual case suffixes in singular and plural after his/her third birthday. Eliseeva claims that children come to master the irregular case endings between their fifth and seventh year (Eliseeva 2005: 22-23). Judging from the schedule that Eliseeva constructed of the acquisition of the language modules by monolingual Russian children, and from the detailed descriptions of child speech acquisition of Zemskaja (2004) and Cejtlin (2009), we may assume that even though Russian children have some problems with individual case endings, the system as a whole is mastered early.

There thus seems to be an obvious discrepancy between the accounts of Western and Russian researchers. We do not intend here to go deep into the linguistic facts mentioned above, although we have some reservations about the 'yardstick' that was chosen to measure the precise age when the notion of case occurs in a child's speech, as well as about mastery level, experimental conditions, and the interpretation of linguistic data which are often not rich enough to draw solid conclusions.

There are some arguments to support the idea that the influence of phonetic reduction and the lack of transparency are exaggerated and that Russian children

are perfectly able to learn the core of the inflectional system fast and successfully. Firstly, phonetic reduction of case suffixes in Russian is not an all-embracing rule. There are many basic words with stress on the last syllable. Endings bearing stress are never reduced and the sounds are pronounced very clearly. Many words children learn at an early age are words with final stress, like the feminine *ruká* 'hand/arm' and *vodá* 'water', or the neuter *vedró* 'bucket' and *pis'mó* 'letter'. Starting off from the words with final stress, children can learn the distinct neuter or feminine gender patterns and thus build up a clear concept of three genders and case inflection in Russian.

Secondly, the arguments used by Slobin to support the idea that homonymous forms in an inflectional system slow down language acquisition and that the child must select phonologically unique forms as the first realizations of inflection are not supported by the data. For example, in Russian, the ending *-i*, which serves a number of functions (genitive singular, nominative plural, etc.) is among the earliest inflections used by children (compare Smoczyńska 1985: 674).

Thirdly, monolingual Russian children who have acquired the case system as a whole may nevertheless make mistakes in certain case suffixes. These mistakes are lexical. When a child does not know a word, he or she might not understand what type of inflection is needed, and may therefore produce a morphologically incorrect form. In such a case a child is having problems with particular forms of the system, but not necessarily with the core concept of case. According to Cejtlin, Russian children only make mistakes in the overt case endings (overgeneralizations, wrong choice within a number of possible variants), but almost never in the functions of case (at least from the moment that they start using two-word utterances onwards) (Cejtlin 2009: 168).

Fourthly, every claim about a very early acquisition of gender and case has to be treated with caution, given the fact that the articulatory system of a little child of 1;6 years old is far from fully developed. On the one hand, for this period omissions of sounds or truncations of unstressed syllables are very typical (Gerken 1994: 274). A brief glance at the transcriptions of child speech as presented in (Smoczyńska 1985; Zemskaja 2004; Cejtlin 2009) is enough to realize that the age of 1;6-1;10 is too premature to make solid claims about the acquisition of case

even in its most basic forms. On the other hand, spontaneous speech data contain little pragmatic and lexical variation (children at age 1;6-1;10 are likely to use rote forms), and do not allow researchers to determine the degree of inflectional productivity (Polišenská 2010: 9).

1.2 Acquisition of Russian case in bilingual children

Although the question whether Russian monolingual children are fast inflection learners or not seems to be difficult to answer, it is evident from the literature that bilingual children with Russian as one of their mother tongues have many problems acquiring case inflections. As mentioned in Peeters-Podgaevskaja (2008: 616-619), between the ages of 5 and 7, when Russian monolingual children have already accomplished the acquisition of the nominal inflection system, bilingual Dutch-Russian children do not (not even occasionally) use the dative and instrumental singular, and the dative, instrumental and locative plural in their speech. In contrast to their poorly developed case and gender system of nouns, which contains many frozen nominatives, the rich verbal inflection is successfully acquired and used correctly.

Scholars investigating Russian language acquisition in bilingual children try to provide an explanation for this phenomenon that is not only based on reduction of vowels and syncretism of case endings or insufficient exposure to the Russian language. As shown in different studies (Franceschina 2005: 49-50; Polišenská 2010: 37; Lieven & Tomasello 2008: 173, 179), input frequency, by itself, is not a crucial causal factor in the acquisition order. There have to be other factors which play an important role in the acquisition of case.

Firstly, a preposition that highlights an underlying relationship between words can override the meaning of the case endings or make it irrelevant (Peeters-Podgaevskaja 2008). Children are more concerned with marking this relationship than with paying attention to the word endings, which they believe are redundant. It is completely in line with the ideas of VanPatten, who states that as long as comprehension remains effortful, learners will continue to focus on the processing of lexical items to the detriment of grammatical markers, given that lexical items maximize the extraction of meaning (VanPatten 2007: 119).

Secondly, problems with case acquisition and processing in bilinguals can be explained by the relative 'weakness' of communicative value carried by case. Most of the communication activities between the child and the adult refer to ongoing or well-known situations. The utterances are not ambiguous since their meaning can be discovered from the situations themselves (Smoczyńska 1985: 678). As long as the child is sure of successful communication without applying grammatical markers, he or she will not feel any need to use case suffixes. The situation changes when the child tries to describe off-stage events which are unknown to the adult, or when conflict situations occur. As soon as the child notices that the adult does not react adequately, he or she will feel urged to take a closer look at the parents' utterances in order to discover if a specific semantic notion is expressed, and will try to refine his/her own utterances and enrich them by using grammatical markers.

All in all, the fact that bilingual children with Russian as one of their mother tongues acquire case more slowly and therefore later than monolingual children, may have several reasons, such as phonetic reduction, morphological syncretism, syntactic structures (prepositional phrases), smaller input and developmental patterns of the child's speech. Until now, the role and interdependence of factors relevant to early bilingual case acquisition has not been clarified. Much more research is needed before we can answer questions concerning the role case plays in the comprehension and production of bilingual children.

2 The Present Study

A point of departure for the current study is the fact that bilingual children with Russian as one of their mother tongues experience problems with the realization of case suffixes, and the assumption that they necessarily also have trouble with comprehending and interpreting case (see Gerken 1994). It is quite possible that bilingual children are aware of specific case markings and thus specific meanings when listening to the message, but still do not have a sufficient command of the overt case suffixes. If they do have problems with interpreting particular case endings but still understand the utterance, we can assume that bilingual children

have little knowledge of case and use other strategies to extract the meaning from a message.

Thus, the main question addressed in this study is: How important is case in the comprehension of monolingual and bilingual children? In order to provide an answer to this question, we designed an experiment based on the structure that is acquired first by children: ‘subject – verb – object’ (see Slobin 1985: 1175; Cejtlin 2009: 148). We also formulated more specific questions, such as: Are monolingual and bilingual children able to correctly assign the subject and the object of the sentence under a given set of conditions? and What kind of strategies do both monolinguals and bilinguals follow when they have to answer basic questions of the type ‘Who did or does it? or What did or does it?’.

2.1 Comprehension Models

In order to provide an answer to the questions formulated above, we employ some key points from the Competition model of MacWhinney and the Input Processing model of VanPatten. Despite the assumption of MacWhinney (Kempe & MacWhinney 1998: 545; MacWhinney 2005: 52) that case inflections are a powerful cue to underlying thematic roles and pragmatic functions in languages like Russian and have a very high validity, we have good reason to think that the case cue in bilingual acquisition of Russian is of less importance than other comprehension strategies, as described by VanPatten and summarized in a number of principles such as the ‘Meaning before Form’ principle, the ‘First Noun’ principle, the ‘Event Probability’ principle, and the ‘Sentence Location’ principle (VanPatten 2007).

In particular, the ‘First Noun’ principle is important for this study. When understanding the meaning of a sentence, a child often interprets the first noun heard as the subject (compare with VanPatten 2007: 122). For some languages, this is the only word order allowed, while for Russian adhering to the ‘First Noun’ principle too strictly may cause misinterpretation of a sentence. Although the canonical word order in Russian is Subject-Verb-Object (SVO), other word orders are allowed. For example, in narratives (fairy-tales) the word orders VSO

and VOS are common and sound natural. For this study the VSO/VOS word order is selected.¹

In fact, for a correct interpretation of a sentence, a combination of principles is needed (VanPatten 2004: 19). The ‘Meaning before Form’ and the ‘Event Probability’ principles are relevant in this respect. On the basis of these principles, a hearer will interpret the sentence while using his or her knowledge of the lexicon and the world. Instead of taking into account word order and case inflections, the listener assigns grammatical and semantic roles within the sentence according to what he or she knows about reality.

2.2 Hypotheses and predictions

In order to correctly interpret the validity of the principles and cues of MacWhinney and VanPatten, we have to control for interfering cues and strategies. Firstly, if we follow MacWhinney’s assumption that case markings are a very important cue, we have to neutralize this variable to find out whether there are other cues that can be relevant. We can do this by using ‘frozen nominatives’ or nonsense words with correct case suffixes. Under the first condition children have to rely on canonical word order and/or their knowledge of the world to decide whether the noun they heard first has a function of the subject. Under the second condition children have to rely only on the inflection since they do not know nonsense words and cannot discover the meaning from semantics. Secondly, if we follow the ideas of VanPatten that the noun heard first will always be interpreted as the subject, we have to choose a reversed or less canonical word order that causes a delay in the decision of the informants by forcing them to listen till the end of the utterance.

Taking the aforementioned points into consideration we constructed four different forced-choice picture tasks aiming at determining the importance of case in comprehension strategies of monolingual and bilingual children.

In task 1, with grammatically correct sentences, we tested the case comprehension of the children under normal conditions. The cues tested here were case, word order, and knowledge of the world (event probability). We

predicted that the young bilinguals might experience some difficulties since their case proficiency is still being developed.

Task 2, with both subject and object in the nominative case, aimed at testing the preference of the first noun as a subject and the role of event probability (some situations are more likely than the other ones). For this task, we predicted the noun heard first would be selected as correct. The subjects would rely strongly on the principles of 'First Noun' and 'Event Probability'.

In task 3, in grammatically correct sentences with nonsense words, children had to focus on the endings to give a correct interpretation, because they could not know the meaning and thus could not rely on their knowledge of the world. We predicted that the monolinguals would outperform both bilingual groups since they have a good command of case.

In task 4, with morphologically correct items with manipulated sentence stress, the children could rely on the case cue and their knowledge of the world, but could not rely on the sentence stress, which was put in both the correct and the 'wrong/illogical' place in the sentences. We hypothesized that children would be misled by an illogical sentence stress, and therefore would consider the word bearing sentence stress to be the subject of the sentence, and so the correct answer to the question. We expected the task with an illogical sentence stress would be difficult and produce worse results than task 1.

3 Method

3.1 Participants

A total of 43 monolingual and bilingual children of 6-9 years old from urban middle-class parents took part in the experiment. The Russian monolingual children (control groups) all lived in Saint Petersburg but did not (all) attend the same school. For bilingual participants we established a few selection criteria: they had to be simultaneous bilinguals learning both Dutch and Russian in a natural way from birth; they had to be born and raised in the Netherlands with at least one Russian-speaking parent; they had to be exposed to Russian for two to three hours a day; they had to attend Dutch preschools and schools; and they had to attend the Russian Saturday school in Amsterdam.²

The participants were divided into four groups in the following way:

| Groups | Country | Age | N |
|------------------|-----------------|-----|----|
| bilinguals NL-RU | The Netherlands | 6/7 | 10 |
| bilinguals NL-RU | The Netherlands | 8/9 | 12 |
| monolinguals RU | Russia | 6/7 | 10 |
| monolinguals RU | Russia | 8/9 | 11 |

Information provided by the teachers at the Amsterdam Russian school and our own observations led us to the conclusion that the case proficiency of bilingual children younger than 6 years old was not sufficient to successfully take part in this experiment. Their knowledge of the Russian case system was at this age very rudimentary: they still made many mistakes in using the most basic forms of accusative and genitive singular, let alone other case suffixes (see also Peeters-Podgaevskaja 2008). This is why the age of the participants in this experiment is higher than that in monolingual research focusing on case.

3.2 Experimental tasks

Materials. The experiment consisted of four forced-choice picture tasks with a total of 86 items. Task 1 comprised morphologically correct items and aimed at testing the case comprehension of the children under normal conditions. The selected sentences were duplicated, and put in the reversed word order and/or case. For example, a sentence like *Prizval car'*_{Nom} *soldata*_{Acc} 'The tsar ordered the soldier to come' was presented in a schematic way as VN¹_SN²_O, VN¹_ON²_S, VN²_SN¹_O and VN²_ON¹_S.³

In task 2 where both subject and object were presented in the nominative case, which meant that only two variants of each sentence were possible: VN¹_{S/O}N²_{S/O}, VN²_{S/O}N¹_{S/O}. For example: *Prizval car' soldat* could mean 'The tsar ordered the soldier to come' or 'The soldier ordered the tsar to come', and *Prizval soldat car'* could mean 'The soldier ordered the tsar to come' or 'The tsar ordered the soldier to come'. Sentences with homophonic case suffixes (for the nominative and the accusative) were excluded from the test.

Task 3 tested the relevance of case in combination with nonsense words that had correct Russian inflections. The items were presented in the following schematic word and role combinations: $VN^1_s N^2_o$ and $VN^2_s N^1_o$. The utterances were of the type *Vidit krab_{Nom} raklob'a_{Acc}* 'The crab sees the raklob', where *raklob'* was a nonsense word (masculine singular, animate). For the nonsense words, the phonemes of one of the nouns in the sentence were jumbled. Ambiguous forms were avoided: e.g. nonsense words that seemed to be feminine nominative singular were not combined with masculine accusative singular animate, as that would yield two words ending in *-a*.

For task 4, morphologically correct items with manipulated sentence stress (sometimes exaggerated, sometimes logically wrong) were chosen, such as: *Ždět, ždět Vasilisu soldat* 'The soldier waits for Vasilisa' with the combinations $VN^1_s N^2_o$, $VN^1_o N^2_s$, $VN^2_s N^1_o$ and $VN^2_o N^1_s$.⁴

Apparatus and software. The presentation of the stimuli was controlled by the E-Prime software system (Schneider, Eschman, & Zuccolotto 2002a, 2002b). The utterances were recorded in .wav format and adapted with the help of PRAAT, a software program for the analysis of phonetic features of the human speech (Boersma & Weenink 2005). The visual stimuli were down-loaded from the Internet and further developed with the program Corel Paint Shop Pro Photo XI.

Procedure. The four forced-choice picture tasks were presented in a fixed order. Within the task, the order of the items was completely randomized by E-Prime. Each sound sample could only be picked once per participant. In each task, the participants heard a series of sentences in Russian. After the sound sample was played, they saw a picture on the screen with two characters divided by a vertical line. The participants had to decide which side of the picture depicted the subject of the sentence and thus provided an answer to the principal questions of the experiment 'Who did or does it?' or 'What did or does it?'. The picture remained on the screen until the children had pressed one of the two buttons (marked by two colorful shiny stars on the far left and on the far right side of the keyboard). Once they had chosen, the next sound sample was presented. There were no intervals between the sound sample, the visual stimulus and the response.

The language of instruction was Russian. All participants were instructed in advance not to simply respond as fast as they could, but to take adequate time over their responses. The same instructions were given to each child individually, but if someone did not understand what he or she was supposed to do, the instructions were repeated and elaborated upon until the participants understood them properly. On completion of the test, they were given a small present.

As a warm up, every child was given four practice utterances (two difficult and two easy) that were not included in the test. The difficult items enabled us to provide children with detailed instructions and to see whether they really understood the task. The easy sentences were given in order to avoid the children being discouraged by the more difficult stimuli. 'Pressing the buttons' was also practiced with each of the participants individually in advance of the test. All children wore headphones during the test, both to ensure a good sound quality, and to make sure they were not distracted by any background noise. Special attention was paid to the position of the children in front of the computer. They were asked to sit straight in front of the computer, so that their posture would not cause them to have a preference for one button over the other.

Stimuli. The sentences with VSO/VOS order used in the experiment were all selected from two children's books containing fairy-tales (Gubanova 2000a, 2000b).⁵ All children recognized the structure and did not perceive this word order as incorrect or strange. Sentences with nouns with homophonic suffixes in different cases, and sentences with the dative or accusative case governed by prepositions were not included. The items that were used were simple and contained only familiar words and characters.

The sound samples were recorded by a female native speaker of standard Russian, in the soundproof studio of the Phonetics department at the University of Amsterdam. The visual stimuli consisted of collages of pictures of fairy-tale characters which were easy to distinguish on the pictures. Sentences involving two similar characters were avoided. In the task with nonsense words the picture which depicted the non-existing word was displayed as a question mark.

Measures. Participants' case comprehension proficiency was measured in terms of the accuracy and reaction time of their responses on the four tasks. For accuracy, the correct answer was logged in E-Prime and later compared with the response given by the participant. For reaction time, the period between the moment the visual stimulus appeared on the screen and the participants' response was measured.

4 Results

Table 1 shows the descriptive statistics of accuracy and reaction time between groups on four tasks.

Table 1.

Descriptive statistics. Comparison of Accuracy and Reaction Time between Groups on Four Tasks.

| Task | Group | N | ACC mean (%) | ACC range (%) | SD ACC | RT mean (ms) | RT range (ms) | SD RT |
|------|-----------|----|-----------------|------------------|-----------|-----------------|------------------|-------|
| 1 | NL-RU 6/7 | 10 | 55 | 21–83 | .18 | 3473 | 1593–6627 | 1455 |
| | NL-RU 8/9 | 12 | 70 | 45–93 | .14 | 2395 | 1396–3742 | 836 |
| | RU 6/7 | 10 | 84 | 76–100 | .08 | 3934 | 1448–6808 | 1804 |
| | RU 8/9 | 11 | 83 | 59–97 | .12 | 2333 | 1257–4869 | 987 |
| 2 | NL-RU 6/7 | 10 | 67 | 29–86 | .18 | 2785 | 1257–5256 | 1234 |
| | NL-RU 8/9 | 12 | 72 | 50–93 | .14 | 2153 | 1231–3358 | 680 |
| | RU 6/7 | 10 | 62 | 36–93 | .19 | 3677 | 1041–7564 | 1946 |
| | RU 8/9 | 11 | 67 | 43–93 | .14 | 2791 | 1350–4817 | 1136 |
| 3 | NL-RU 6/7 | 10 | 58 | 33–78 | .15 | 3048 | 950–4811 | 1288 |
| | NL-RU 8/9 | 12 | 59 | 50–78 | .09 | 2525 | 1409–4778 | 945 |
| | RU 6/7 | 10 | 58 | 39–78 | .14 | 3907 | 1504–8934 | 2441 |
| | RU 8/9 | 11 | 67 | 33–83 | .15 | 2209 | 819–5192 | 1271 |
| 4 | NL-RU 6/7 | 10 | 57 | 28–84 | .19 | 2530 | 1254–5439 | 1293 |

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|-----------|----|----|-------|-----|------|-----------|------|
| NL-RU 8/9 | 12 | 70 | 48-92 | .16 | 1975 | 982-3345 | 831 |
| RU 6/7 | 10 | 78 | 52-96 | .14 | 2714 | 1081-5546 | 1392 |
| RU 8/9 | 11 | 76 | 32-96 | .20 | 1951 | 1132-3102 | 526 |

Task 1, with correct sentences, was expected to be the easiest one, and therefore to be the task with the highest accuracy. However, the results here vary massively between groups. Whereas the young bilinguals groups got lower scores (about 55%), the monolingual groups scored much better (83-84%). The reaction time of the young monolinguals (3934 ms) differs most strongly from the older groups, who were both relatively fast in this task. In addition, the variation in accuracy within the bilingual groups is large. Although some young bilinguals performed as well as their monolingual peers, their worst score (21%) is much lower than that of the control group (76%).

Task 2 shows that when respondents have no grammatical means of deciding which of the two nouns presented is the subject they select the first noun. All sentences were presented at least twice. So, even if the participant heard a sentence in another word order, he or she did not select the same character as the subject, but again the first noun presented. When looking at the items of task 2, we find four sentences which are more likely in terms of event probability and cannot be interpreted based on the 'First noun' principle. (For example, it is more logical that the tsar commands the soldier to come, or the princess embraces the rabbit rather than the other way around.) In a thorough analysis of personal scores through the whole task we see these items consistently to be chosen according to the 'Event Probability' strategy. Still, there are 10 subjects (from 43 participants) who had no clear strategy in indicating the subject of the sentence, and 5 children who chose the second noun as the subject in the vast majority of items. This is, however, not group dependent.

The reaction time for task 2 shows some interesting patterns. The group NL-RU 8-9 is by far the fastest group in this task, and the RU 6-7 group is by far the slowest one. Obviously, young monolinguals needed much more time to associate the syntactic role to the nouns they had heard. Interestingly, a few participants noticed that some sentences were odd, and said that they cannot answer 'this kind

of question'. The reaction time of groups NL-RU 6-7 and RU 8-9 seems to be nearly identical. What is also interesting is that in the task with the nominative only both bilingual groups reacted faster than in the task comprising correct sentences.

Task 3 was performed worse in terms of accuracy than we had expected. It seems that the children were not focused on the case cues but were more occupied with assessing the semantics of the nouns they heard in the utterance. The accuracy on average of all groups is only 60%. Also the reaction time for this task is higher than for the tasks 1 and 4. Apparently, the unknown words with correct case endings were difficult for the children. However, there are some subjects with an average score of 78% and even 83% (for the RU 8-9 group). Unlike other groups, the older monolinguals had the same average score on accuracy as they had in task 2, but were faster than in task 2.

We had expected that task 4 would be difficult and confusing for the children and would, therefore, lead to lower scores than the other ones. This turned out to be incorrect. The average score on accuracy for monolingual groups is 76% with the best score being 96% of correct responses. The young bilinguals here score 57% that is slightly higher than their accuracy score for task 1 with correct sentences (55%). Not only did the participants reply correctly more frequently on utterances with an illogical stress, they also reacted faster. The reaction time of the groups seems to differ mostly on the first three tasks, but not so much on the fourth – and last – task. It seems that all groups were roughly equally fast in this final task. Apparently, a manipulated prosodic structure does not affect the comprehension as much as other changes.

Looking at the reaction time, we can conclude that most children really had to think before choosing one of the two possible responses. Surprisingly, the young monolinguals in particular needed much more time answering the questions. Taking into consideration the relatively low scores of the young participants on at least half of the tasks, we can conclude that the test was quite challenging for them.

4.1 Scores above chance

To determine whether or not the different groups scored above chance in all tasks, for every group a One-Sample T-test (two-tailed) was conducted.

Table 2.

Statistical analysis. Scores above Chance on Accuracy for Four Groups; n = 43, df = 39, p < .05 and p < .01.

| task | NL-RU 6-7 (n = 10) | | | NL-RU 8-9 (n = 12) | | | RU 6-7 (n = 10) | | | RU 8-9 (n = 11) | | |
|-------|-----------------------|----------|-----|-----------------------|------|-----|--------------------|----------|-----|--------------------|------|-----|
| | t | Sig. | MD | t | Sig. | MD | t | Sig. | MD | t | Sig. | MD |
| 1 | .85 | .418, ns | .05 | 5.00 | .000 | .20 | 12.74 | .000 | .34 | 9.16 | .000 | .33 |
| 2 | 2.93 | .017 | .17 | 5.36 | .000 | .22 | 2.05 | .070, ns | .12 | 3.95 | .003 | .17 |
| 3 | 1.71 | .121, ns | .08 | 3.40 | .006 | .09 | 1.84 | .099, ns | .08 | 3.73 | .004 | .16 |
| 4 | 1.19 | .265, ns | .07 | 4.39 | .001 | .20 | 6.50 | .000 | .28 | 4.31 | .002 | .25 |
| Total | 1.85 | .098, ns | .08 | 6.67 | .000 | .18 | 7.26 | .000 | .23 | 6.62 | .000 | .25 |

Judging from Table 2 that represents the scores above chance on accuracy of each group individually, we conclude that the two older groups (NL-RU 8-9 and RU 8-9) scored significantly above chance ($p < .05$) on all tasks, and the two young groups scored above chance on one or two tasks.

The group NL-RU 6-7 scored above chance only on task 2 with nominative case only, $t(9) = 2.93, p < .05$. It seems that they have chosen the ‘First Noun’ strategy and identified the noun they heard first as the subject of the sentence. However, there are three participants who consistently opted for the ‘Second Noun’ strategy. In all other tasks, the young bilinguals did not score significantly above chance. Further, the accuracy of the young bilinguals in the experiment as a whole was not significantly above chance.

The young monolinguals (group RU 6-7) also did not score significantly above chance for accuracy in all tasks. Interestingly, they scored above chance on task 1 with correct sentences, $t(9) = 12.73, p < .01$, and on task 4 with an illogical sentence stress, $t(9) = 6.5, p < .01$; and thereby on the experiment as a whole, $t(9)$

= 7.26, $p < .01$. Apparently, they did not see the illogical sentence stress as distracting. Their score on tasks 2 and 3 was not significantly above chance.

Aside from determining whether or not the groups scored above chance in all tasks, it is interesting to see if there are significant differences between groups in terms of accuracy and reaction time. Judging from the data on the variation between the young participants (groups NL-RU 6-7 and RU 6-7) retrieved with an ANOVA test we can assume that the young groups differ significantly from each other. The monolinguals scored better on the accuracy of task 1 with correct sentences, $F(1,19) = 21.52$, $p < .01$, and in task 4 with an illogical sentence stress, $F(1,19) = 7.84$, $p < .05$. On the accuracy of the experiment as a whole, the monolinguals scored better too, $F(1,19) = 7.97$, $p < .05$. There are no significant differences in reaction time between the young groups.

A one-way ANOVA test comparing groups NL-RU 8-9 and RU 8-9 shows that the only significant difference between those groups is on the accuracy of task 1, $F(1,22) = 5.43$, $p < .05$, where Russian monolinguals scored best. All other differences between the older groups are not significant.

5 Discussion and Conclusions

From the results of this experiment, some interesting conclusions can be drawn about the comprehension of case in 6-9 year old monolingual and bilingual Dutch-Russian children.

First, we had expected that all groups would score above chance on the task with correct sentences. This seems not to be true for young bilinguals. Taking into consideration that the experiment was about very basic relations in language and cognition that is acquired first by children (Slobin 1985: 1175; Cejtlin 2009: 148), and that the young bilinguals were almost 7 years old, we can conclude that they still had a very rudimentary knowledge of Russian morphology at this age, and that the case cues played only a small role in their correct interpretation of the message and comprehension strategies. The old monolinguals outperformed the other groups on this task: they were as accurate as the young monolinguals, but the fastest of all groups. The old bilinguals obtained also a good score in this task (though, 13% lower than the monolinguals). This means, that at age 8-9 Dutch-

Russian bilinguals already use adequate comprehension strategies and pay attention to the form (case suffixes). Interestingly, there is almost no difference in accuracy on this task registered in monolinguals (83-84%). This means that when all necessary conditions (word order, semantics and case) are present in an utterance, monolingual children at age 6 and older do not have problems with comprehending the message.

The task containing only nominatives caused some surprise. The bilingual groups more consistently followed the 'First Noun' principle, which, perhaps, is favored by their experience with Russian (in everyday life they more often hear utterances with VSO order) and their first mother tongue (Dutch), where subject-verb inversion is allowed. The monolinguals, however, and the young monolinguals in particular, tried to match their knowledge of the world with the meaning of the utterance. At age 6 a monolingual child has enough knowledge of his first language morphology to understand that two nominative forms in one sentence are less likely. That confuses him or her and provokes reactions such as 'I cannot answer this kind of question'. Having no strong expectations about canonical word order, since all combinations can occur in Russian, he or she focuses then on the semantics and the interpretation of the whole situation that obviously costs more time and causes misinterpretations.

The task with nonsense words was the only one where children had to rely strongly on the case cue. The bilingual children were expected to rely less on the case cue than the monolingual children, given that their knowledge of case inflection in Russian is probably insufficient. However, for all groups, the task with nonsense words seemed to be significantly more difficult. All children relied less on case than on other cues: they gave less than 60% correct responses, except the older monolinguals who gave 67%. This task shows that the case cue as such is not relevant in the comprehension strategy of children at this age. Under normal circumstances (that is: canonical word order, well-known words and situations), children do not primarily rely on case. When one or more of these features are unavailable or insufficient, children experience serious difficulties in appointing the subject/object of a sentence.

This finding is consistent with observations based on monolingual German material and made by Lieven and Tomasello who demonstrated in their experiment that only children starting from age 7;0 could correctly identify agents and patients in the utterances with reversed word order and (non-)contrasting case marking. Younger children failed to perform this task correctly. They needed both cues, or ‘a coalition of cues’ (MacWhinney’s term), to build up a representation of a prototypical transitive construction (Lieven & Tomasello 2008: 181). This important observation shows that schematization and form-function abstraction strongly depend on the age of children and are sensitive to developmental patterns. From our study it becomes obvious that even (monolingual) children of 8-9 years old are still not able to perform without errors. Nevertheless, as children are getting older and more experienced, their capacity to schematization and form-function abstraction increases.

The task with a wrong or strange stress in the sentence was not distracting in terms of message comprehension. It seems that an illogical sentence stress is not perceived as hindering comprehension as much as unknown words do. Does this mean that unknown words are problematic per se? It would be interesting to find out how older children (10-12 years old) perform a task involving nonsense words.

Second, the strategies of the older bilingual children do not seem to be different from the strategies of the older monolinguals. Interestingly, the young bilinguals rely most strongly on the ‘First Noun’ principle. That is completely in line with conclusions of Cejtlin (2009: 167), who states that the young child relies on word order and places the subject in front of the object and/or the verb when not mastering differentiation between the subject and the object by means of inflection marking. This observation concerns children of 1;11 years old. The same strategy has been applied to the tasks carried out by our participants, who are much older than the children observed by Cejtlin.

The young monolinguals and both of the older groups seem to rely most strongly on their knowledge of the world. They look at semantics rather than form. Their command of case morphology is, of course, much better than that of young bilinguals, but we can still assume that their meta-linguistic knowledge lags

behind. From the experiment, it became clear that for all groups taken together, knowledge of the world and the expected word order are more important in their comprehension than case marking and sentence stress. We expect that the relevance of morphological cues in comprehension will increase with the age, but until then the mechanisms and strategies mentioned above are more relevant for comprehension.

Third, surprisingly, monolingual children had more difficulties understanding the tasks than the bilinguals. From this, it is tempting to conclude that bilingual children are more flexible with language than their monolingual peers. This can be seen in their overall meta-linguistic development. Also, they are more used to unknown words, and have in general more experience with languages than monolingual children. Because they switch between languages all the time, they are more aware of language.

Fourth, from the results of our experiment, we can assume that even though most children scored significantly above chance for most of the tasks, they all still misinterpret or do not understand (a part of) the information offered. The young children in particular either miss a lot of information, or misinterpret the information they receive, even if the situation described is familiar to them. We did not expect monolingual children of 8-9 years old to also misinterpret simple messages, but they did. Thus, correct language production does not necessarily mean 100% correct comprehension. It would be very interesting to find out which strategies they use (in daily life) to make up for the loss of information caused by misinterpretation of the language utterance: Do they guess? Do they ask for the information to be repeated? Also, it would be very interesting to find out whether and to what extent older children (for example ages 10-13) would interpret sentences with nonsense words better than the present participants.

Fifth, as shown in this study, although the case cue might be a very strong cue to correctly understanding a sentence, its validity still depends on certain age-related developmental factors. It may play a very important role in adult language acquisition and processing of complex and conflicting messages, but it is of less relevance in children's language where comprehension is dependent on a combination of strategies that function as such and cannot be separated (Lieven

& Tomasello 2008). If one of such cues is omitted, the child experiences great difficulties in comprehending the message.

We believe that many more experiments and much more data research are needed to support our findings.

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Notes

- 1 Generally, the subject is in nominative case and the object is in accusative or dative case. See Appendix 1 for more details about case endings.
- 2 Though children from mixed Russian-Dutch marriages were preferred for this experiment, there was one child with an American father and a Russian mother, and one child from an Iraqi father and a Russian mother (growing up in a Dutch speaking environment).
- 3 N¹ and N² are the two nouns fulfilling the role of subject (S) and object (O).
- 4 The underlined word marks the place of the sentence stress.
- 5 See Appendix 2 for more details about stimuli.

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Appendix I

Table 1.
The Russian case marking system (the singular endings bearing stress)

| Case | Feminine | Masculine non-animate | animate | Neuter |
|--------------|-----------------|--------------------------|-----------|-----------|
| Nominative | setrá | stól | starík | oknó |
| Genitive | sestrý | stolá | stariká | okná |
| Dative | sestré | stolú | starikú | oknú |
| Accusative | sestrú | stól | stariká | oknó |
| Instrumental | sestró j | stolóm | starikóm | oknóm |
| Locative | o sestré | o stolé | o stariké | o(b) okné |

sestrá 'sister', *stól* 'table', *starík* 'old man', *oknó* 'window'

Table 2.
*The Russian case marking system (the singular unstressed endings)**

| Case | Feminine | Masculine non-animate | animate | Neuter |
|--------------|--------------------------|--------------------------|---------------|-----------------------|
| Nominative | princéssa | les | soldát | kréslo [a] |
| Genitive | princéssy | lésa | soldáta | krésla |
| Dative | princéssu [i] | lésu | soldátu | krés <u>l</u> u |
| Accusative | princéssu | les | soldáta | kréslo [a] |
| Instrumental | princéss o j [aj] | lésom [am] | soldátom [am] | krés l om [am] |
| Locative | o princéssu [i] | o lése [i] | o soldáte [i] | o krésle [i] |

princéssa 'princess', *les* 'forest', *soldát* 'soldier', *kréslo* 'armchair'

* The case suffix *-e* is realised as [i], whereas *-o* is realised as [a].

Appendix II: Test items

There are presented 13 examples out of 90 items, grouped by task type. Nonsense words in task 3 are in *Italic*. Stressed words in task 4 are underlined.

Practice sentences

- 1 Otdaët koldunu syna starik.
gives wizard-Dat son-Acc old man-Nom
'The old man gives his son to the wizard.'

Task 1 - Correct sentences

- 2 Vidit koldun'ja prekrasnuju carevnu.
sees witch-Nom beautiful princes-Acc
'The witch sees the beautiful princess.'
- 3 Vidit koldun'ju prekrasnaja carevna.
sees witch-Acc beautiful princess-Nom
'The beautiful princess sees the witch.'
- 4 Vidit prekrasnaja carevna koldun'ju.
sees beautiful princess-Nom witch-Acc
'The beautiful princess sees the witch.'
- 5 Vidit prekrasnuju carevnu koldun'ja.
sees beautiful princess-Acc witch-Nom
'The witch sees the beautiful princess.'

Task 2 - Sentences with subject and object in the nominative case

- 6 Prizval car' soldat.
commanded to come tsar-Nom soldier-Nom
'The tsar/soldier commanded the soldier/tsar to come.'
- 7 Prizval soldat car'.
commanded to come soldier-Nom tsar-Nom
'The soldier/tsar commanded the tsar/soldier to come.'

Task 3 - Sentences with nonsense words

- 8 Prizval dolosta car'.
commanded to come dolosta-Acc tsar-Nom
'The tsar commanded the dolost to come.'
- 9 Prizval dolost car'ja.
commanded to come dolost-Nom tsar-Acc
'The dolost commanded the tsar to come.'

Task 4 - Sentences with an illogical sentence stress

- 10 Povstrečal koldun Ivana Careviča. (normal)
Met wizard-Nom prince Ivan-Acc
'The wizard met the prince Ivan.'
- 11 Povstrečal Ivan Carevič kolduna. (normal)
Met prince Ivan-Nom wizard-Acc
'The prince Ivan met the wizard.'

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- 12 Povstrečal Ivan Carevič kolduna.
Met prince Ivan-Nom wizard-Acc
'The prince Ivan met the wizard.'
- 13 Povstrečal koldun Ivana Careviča.
Met wizard-Nom prince Ivan-Acc
'The wizard met the prince Ivan.'