Is Selective Attrition Possible in Russian-English Bilinguals?

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1.   Introduction

   This paper reports the results of the study that investigates the language output in L1 (Russian) in a group of Russian-English speaking adults and children. Specifically, it addresses the issue of attrition. By including two groups of subjects, we examined the interaction between the length of uninterrupted exposure to L1, the use of L1 in everyday situation, and the ability to produce correct grammatical structures in L1. The between group comparison was also prompted by the previous notion that adults may undergo less attrition than children (Pallier, 2006). The focus of this particular study is on the assessment of correct production of aspectual forms, as well as other forms of Russian morphosyntax, through the use of two different tasks: the elicited narrative on a picture story book and a Grammaticality Judgment task. The goal of this study was to examine if there is equal loss of all language-specific morphosyntactic structures, including the possibility of aspectual restructuring.

   Prior research on attrition of L1 Russian in Russian-English bilingual speakers concentrated on the issue of aspectual restructuring, i.e. lexicalization of aspect (Pereltsvaig, 2002). Case marking, lexical and agreement errors were also reported (Polinsky, 2005, Pereltsvaig, in press) in speech production of individuals who continue to use L1 Russian as part of their social interaction. This particular variety of Russian is known as 'American Russian' (e.g., Polinsky, 2005, Pereltsvaig, 2002 and in press) and is severely reduced in all aspects of Russian morphosyntax. The term "heritage speakers" (Valdes, 1995, 2000) has also been applied to the individuals whose L1 acquisition was incomplete or interrupted because of early onset of L2. Gvozdev (1961), suggested that although children may use the basic language-specific structures, such as gender and case marking, by the age of 2;0 (and we maintain that these forms, as an input, are very much present in the every day use of language), and the construction of standard grammatical frames should be evident by the age of 4;0 (Slobin, 1985), the complete system takes much longer to acquire and children continue to make grammatical mistakes up to the age of 6-years. In regards to language acquisition process, Russian requires the knowledge of the case and agreement systems, verb conjugations, and the ability to mark the verbs for tense and aspect. The perfective verbs are derived from the imperfective form by the process of prefixation, therefore forming aspectual pairs.

pel   –   **za***pel*
sang (past tense, imp.) began to sing (past tense, perf.)

During the production of elicited narratives in L1 (Russian), individuals often lose the ability to use the above-mentioned systems, and often maintain only one member of an aspectual pair (Polinsky, in press).

   As far as previous research on the attrition of aspect in Russian speakers of "American Russian is concerned, it was observed that telic verbs (achievement and accomplishment) are typically used in the perfective aspect, e.g., *"sdelat'"* (to do), *"prochitat'"* (to read), *"napisat'"* (to write), etc., whereas atelic verbs , e.g. *"guljat"* (to walk), *"pet' "* (to sing) are used in the imperfective. Aspectual restructuring, observed in "American Russian", refers to the total overlap of telicity and perfectivity, as illustrated below:

1A *American Russian*   * Ja nikogda ne prochitala   ta kniga (Polinsky 1995, p. 53)
                        I never   not read-past-perf that book-nom.
                        "I never read that book"
1B Standard Russian   Ja nikogda ne chitala   etu   knigu
                        " I never not read-impr this-accus book accus."

In terms of Russian grammatical structures, learners must acquire nonadjacent dependencies, such as the relationship between preposition and nouns, as well as morphological grammatical cases in various nominal declensions. To complicate things further, Russian nouns have three genders: feminine, masculine and neuter, which will take different case markers (e.g., *k rek**e*** – dative, fem., but *k stol***u**-dative, masc.), and also marked for number. It has been found that heritage speakers reanalyze the grammatical gender system and therefore eliminate the established three-way distinctions between masculine, feminine and neutral (Akhutina, Kurgansky, Polinsky, & Bates, 1999).

As for bilingual speakers, several factors need to be taken into consideration when assessing their language production in L1: critical period, i.e. the effects of age of acquisition of L2 (Pallier, 2007), mastery of L1 at the time of L2 introduction (Schmitt, 2004), and the intensity of the continuous use of L1 in different situations (Schmid, 2006). Another important factor is the complexity of the grammatical structures of L1 that may undergo convergence with the structures of L2 (Schmitt, 2004). In view of the idea of convergence as a possible explanation for the process of attrition, it is also important to assess whether there is a hierarchical order of attrition of language-specific structures. Bar-Shalom and Zaretsky in an experiment employing narrative retelling, compared the structure of the narratives produced by 14 Russian-English bilingual children to the narratives' retelling of the same story by 14 Russian-speaking monolingual children, matched for age. The results of this study have shown that aspectual knowledge is spared in Russian-English bilingual children even in the presence of case and lexical errors. This suggested that aspect may be the least sensitive category in the process of attrition (Bar-Shalom & Zaretsky, 2007, in revision).

With this in mind, the following additional error types were tested in the present study: agreement, lexical and case errors. Moreover, the present study used the elicited narrative paradigm as part of the protocol, as well as the Grammaticality Judgment (GJ) task in order to provide more insights into the ability of Russian-English bilinguals to produce all obligatory aspects of Russian morphosyntax. Our rationale for employing the two tasks was to see whether the subjects performed differently on them, in particular, whether they showed fewer errors on the narrative task. The GJ task has been considered highly controversial (Altenberg & Vago 2004). Among the most frequently expressed criticisms is the idea that the GJ task might reflect metalinguistic skills and cannot be effective in evaluating attrition (de Bot et al. 1991). Tsimpli at al. (2004) and Tsimpli (2007) argued that GJ task in L2 research, unlike production tasks may address performance, rather than competence. However, Köpke and Nespoulous (2001) showed that GJ task may be more sensitive in detecting attrition than online production tasks. The difference between the current study and the work reported in Tsimpli (2007) is the fact that our GJ task was not timed. Further, the present study compared performance of children and adults with varying length of exposure to L2 (English) on the same tasks. The reason for comparing children and adults is to test the premise of adults undergoing less attrition than children (Pallier 2006).

Baring in mind the questions raised in the reviewed literature, the present study was designed to answer the following questions:

1. Is there a correlation between the length of an uninterrupted exposure to L1 and the use of language-specific grammatical structures?
2. Is there an influence of L1 use in everyday situations (social and educational) and preservation/loss of language-specific grammatical structures?
3. Are there task-dependent differences, i.e., production vs. identification of grammatical structures? If yes, can these differences be observed within groups?
4. Is aspect production the least sensitive category of attrition (as in Bar-Shalom and Zaretsky (op.cit.)?

2. Methodology

Participants

Ten bilingual Russian-English speaking adults and 10 children with Russian as L1 participated in this study. (See Table 1) Children ranged in age between 4;0 and 13;00 years (M=8;5, SD=3.2). They were either born in the US, or brought to the US at a very young age. All children had different periods of uninterrupted exposure to L1, depending on the time of entering day care services, preschool, or kindergarten. For example, a 4-year-old who started day care at the age of 2;0, had only two years of listening to and interacting with others in L1 only. Children who didn't have formal exposure to L2 until kindergarten had a chance of using L1 predominantly until the age of 5- or 6-years-old. Two of the subjects, a 4;0 and 5;0 year-old were immersed in L2 from birth. That does not mean they were actively instructed in English, as L2, but rather experienced it through the interaction with staff and peers, all monolingual speakers of English (L2) at the day care centers. However, time at home was spent interacting exclusively in Russian. Therefore, we calculated the average length of uninterrupted exposure to L1 to be 3.5 (M=3.15, SD=1.97). The adults ranged in age between 19;00 and 53;00 years (M=28;1, SD=12.9). Although all adults were born in Russia, there was a wide range of the age of arrival in the US, and therefore, a wide range of uninterrupted exposure to L1 only (M=15.9, SD=11.4)

Children's Group						Adult's Group					
Age			L1 only			Age			L1 only		
M	SD	Range	M	SD	Range	M	SD	Range	M	SD	Range
8.5	3.2	4 – 13	3.15	1.97	0 – 6	28.1	12.9	19 – 53	15.9	11.4	4 - 37

Table 1. General information on the ages and length of uninterrupted exposure to L1 of the participants

Materials and protocol

Two tasks were used in this study for both groups: an elicited narrative of the book "One Frog Too Many" (M. and M. Mayer), as a measure of language production abilities, and a Grammaticality Judgment (GJ) task as a measure of a sensitivity to the Russian sentence structure. The GJ Task consisted of 14 sentences total (11 containing errors and 3 correct), containing aspectual (a), agreement (b, c), case errors (d), lexical errors (e), as well as correct grammatical structures (f) as the examples below show:

a) *Ja kazdoj zimoj prochitala "Annu Kareninu".*
   I every winter read – past perf. "Anna Karenina"

"I read 'Anna Karenina' every winter

Correct form: *Ja kazhdoj zimoi chitala (imp.) "Annu Kareninu"*, aspect

b) Devochka   upal(-),   potomuchto bylo   skol'zko.
   The girl-fem fell-past tense, masc. because   it was slippery.

Correct form: *Devochka upal-a, potomuchto bylo skol'zko*, agreement

*c) Mne ochen'   ponravilas' et**ot**   krasn**yj**   bluzka*
      I   very much   liked   this-masc.   red-masc.   blouse – fem.
      "I liked the red blouse very much"

 Correct form: *Mne ochen' ponravilas' et-a krasn-aja bluzka*, agreement

*d) My ljubili plavat' v   rechk**a**   letom*
     We loved to swim   in river –fem. dative   (in) summer (instrumental)

Correct form: *My ljubili plavat' v rechk-e letom*, case

e) Odin den' Masha   upala so   stula
    One   day Masha   fell   from the chair

   Correct form: *Odhazdy, Masha fell from the chair* , lexical

f) Masha prigtovila horoshij uzhin
    Masha   made   good   súper - **correct**

A questionnaire was used as part of the protocol ranking the participants' daily use of Russian and English, i.e. the language of preference in social situations. The "Language Use" question utilized a 5 point ordinary scale, where 1= "almost never"; 2= "sometimes", 3= "half the time"; 4= "most of the time", and 5="all the time". All of the participants were interviewed first, in order to fill out the questionnaire. The youngest children (4;0 and 5;0-year olds) were interviewed with their parents to get a true assessment of their every day use of L1 (Russian). Then, the participants were asked to listen to the Grammaticality Judgment (GJ) task. The examiner, a native speaker of Russian, explained that the subject will listen to a sentence in Russian and make a decision whether the sentence they just heard sounded correct to them. The answers were recorded as "yes" if the participant judged the sentence to be correct or "no" if they thought the sentence did not sound right to them. For the analysis, each sentence was identified and marked as either "0" (error) or "1" (correct), yielding a total number of correct answers and specific mistakes that the participant made. The sentences were read only once. After the GJ task, the participants were asked to tell a story, based on a picture book. They were allowed to examine the book first, in order to get familiar with the story, and then narrated their story. The narratives produced by the subjects were recorded and analyzed for the number of verbs in the perfective and imperfective aspect, as well as for the evidence of the appropriate the case, gender and number agreement markings according to declension rules, as well as for lexical errors, i.e. the same errors as in the GJ task. Each participant was tested individually.

3. Results

   Nonparametric correlations (Spearman's rho) were used to test the relationship between the uninterrupted exposure to L1 and error production in narratives and the GJ task and the use of L1 in everyday situation. Significant correlation was found between the uninterrupted L1 and performance on GJ in both groups ($r_{children}$=.683, p=.05; r_{adults}= -.863, p=.05). Strong correlations were found between L1 and Lexical and Aspectual errors on GJ task in adults' group only (-.783, p=.01; -646, p=.05 respectively). Strong inter-correlation was observed between Gender errors in narratives and Lexical errors on GJ task for children only (r=-656, p=.05). Only one Aspectual

error was found on the narrative task within the children's group, suggesting preservation of aspect compared to other morphosyntactic structures. Within the children's group, strong correlations were found between the use of L1 in everyday situations (socially and for education purposes) and case errors in narratives (r=-.740, p=.05) and instances of code-switching (r=-.660, p=.05). Within the adult group, the use of L1 did not correlate with performance on either of the tasks.

One-way repeated measure ANOVA (with L1 use as a factor and all grammatical structures as independent variable) showed significant interaction between the use of L1 and ability to produce more perfective verbs (F=4.953, df=8, p.=.05) and produce less case errors (F=8.421, df=8, p.=.02) in narratives within the children's group. Within the adult group, the interaction was with the production of perfective and imperfective verbs only (F=10.193, df=8, p.=.008 and F=7.309, df=8, p.=.01 respectively)

   Comparison between children's and adults' performance on the GJ task showed significant adults' advantage on the overall number of correct answers (p=.02). Within the grammatical categories, children were more inclined to overlook the aspectual errors (p=.02) and agreement errors (p<.001), compared to adults. (Figure 1.)
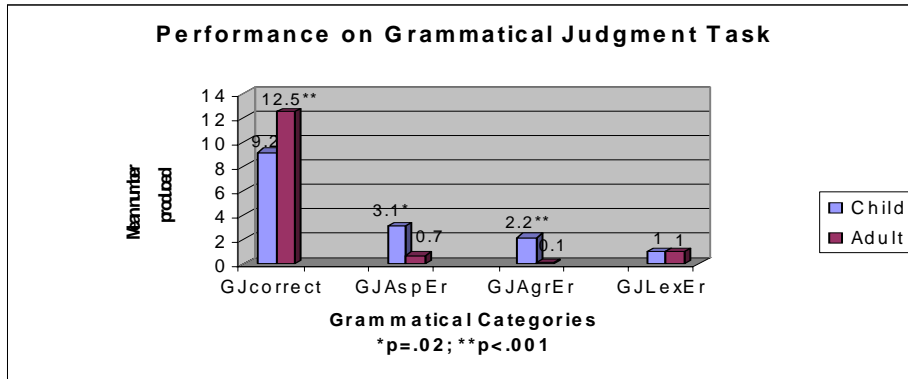

Figure 1. Errors produced by children and adults on GJ task.

An examination of grammatical errors produced in narratives, showed that only in the category of Gender error children performed significantly worse than adults (p=.01) (Figure 2.)
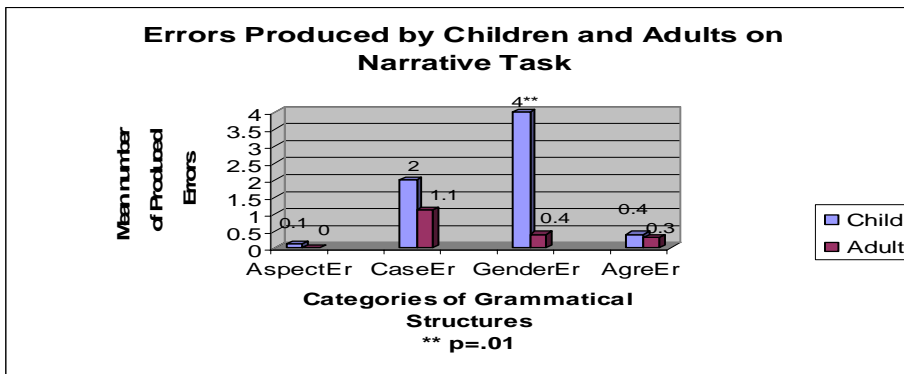

Figure 2. Differences in the pattern of errors between children and adults produced on the narrative task

A comparison of the overall between-tasks error patterns in both groups showed that the GJ task was the most sensitive measure in detecting the signs of attrition of grammatical categories. Within both groups, the difference in production of aspectual and lexical errors in the GJ task vs. the narrative task was highly significant (p<.01). (Figure 3.)
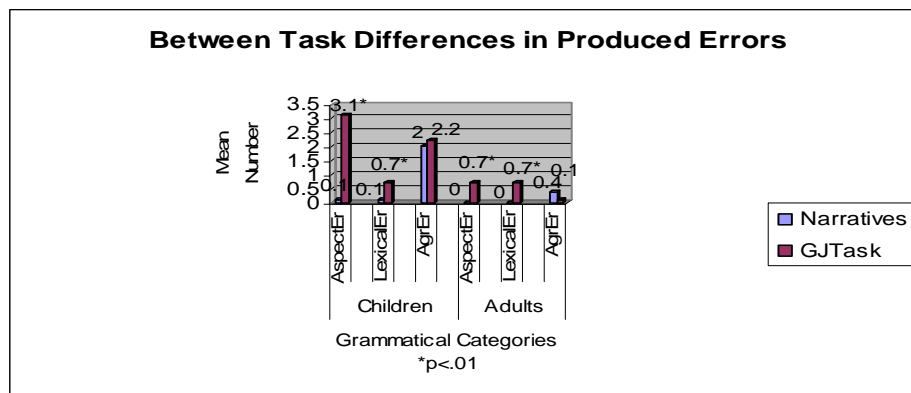

Figure 3. Error pattern in performance of children and adults in GJ and Narrative tasks.

To address our initial objective of a possible hierarchy of attrition of grammatical categories in children with less uninterrupted exposure to L1, a post-hoc analysis (t-test) of the overall error production by children revealed that aspectual errors were the least affected grammatical category, i.e., children were observed to produce significantly more case and gender errors in all tasks (t=-2.526, df=9, p=.03 and t=-2.899, df=9, p=.01, respectively).

4. Discussion

This study was conducted with specific questions in mind: 1) Will the length of uninterrupted L1 and the use of L1 influence children's and adult's ability to produce and judge grammaticality of morphosyntatic categories? 2) Does the continuous use of L1 in everyday situations lessen the effects of attrition? and 3) Is there a possible hierarchy in attrition, i.e., which grammatical category if any, is less sensitive to the process of attrition?

These questions arose from previous research in the area of L1 attrition. Those individuals, who have fully acquired their native language but do not maintain it due to socioeconomic and pragmatic factors, are classified as attriters (De Bot, 2001, Seliger & Vago, 1991). A specific issue concerning the status of language attrition in L1 Russian revolves around the proposition that bilingual L1 Russian speakers undergo aspectual restructuring, i.e., the lexicalization of aspect (Perletzveig, 2002). This particular feature of attrition has been proposed to affect both groups of L1 speakers, i.e., adults and children, in addition to the loss of other aspects of Russian morphosyntax, such as agreement and case marking (Polinsky, 2005). Pallier (2006) suggested that adults may show less attrition of L1, because they have fully acquired their native language before the exposure to L2, suggesting the notion of critical period in terms of acquisition and maintenance of language-specific grammatical structures. Supporting evidence for this is also found in research of Jia and Aaronson (2003), who suggested that the arrival after the cutoff period (between the 9 and 12 years of age) results in a better long-term L1 proficiency and lesser proficiency in L2. The opposite pattern is observed for individuals who arrive in a new country before the cutoff age. One of the explanations for the better L1 maintenance among later arrivals immersed in L2 can be drawn from longer uninterrupted exposure to L1. Longer exposure to L1

allows acquisition of grammatical dependencies, such as different types of agreement patterns (i.e., subject-verb or adjective-noun), declensions and conjugations prevalent in that language (Newport & Aslin, 2004). It also seems appropriate to postulate that the continuous use of L1 (Russian in this case) may lead to a better acquisition, more accurate and proficient use of that language, and subsequently, lessen the effect of attrition. However, Schmid (2006) provided evidence for no correlation between the frequency and intensity of L1 use in daily life and attrition. Her evidence effectively showed that the frequency of L1 use, unlike the mode of L1 use, has no predictive value on attrition. Considering the complexity of Russian morphosyntactic system, it is of interest to examine the possibility of hierarchy of attrition, i.e. to show evidence that certain grammatical structures are less susceptible to the process of attrition.

As our results indicate, and consistent with the critical period hypothesis (Pallier, 2006, Schmitt, 2004), there is a correlation between the length of an uninterrupted exposure to L1 and the overall production of grammatical errors. Both groups of participants showed this particular correlation on their performance on GJ task. This finding suggests that the GJ task is very sensitive in picking up signs of language attrition. As the inter-correlation between gender errors in narratives and lexical errors on the GJ task within the group of children only suggests, children may be more susceptible to the notion of the convergence between the L1 and L2 structures, i.e., children are more advanced in the lexicon of L2 and follow the grammatical requirements of L2.

Regarding the issue of the importance for the continuous use of L1 (Schmitt, 2004) to lessen the effect of attrition, some conclusions can be drawn based on our results. It appears that children who use L1 socially and for educational purposes, i.e., taking group lessons and learning to read in L1 and observing a strict rule of using L1 only in home situation) made significantly less case errors in their narratives, and used less code-switching. Moreover, less use of L1 in everyday situations directly related to significantly reduced ability to judge grammaticality of syntactic structures, i.e., decision making on GJ task, among children. Within the adult group, the use of L1 did not correlate with performance on either of the tasks. Therefore, the assumptions put forward by Schmid (2006) that there is no direct evidence between the use of L1 and the attrition of that language, may be applicable to the children, but not to the adults. Our results support the previous research findings regarding the ability to maintain morphosyntactic structures of L1 (Jia & Aaronson, 2003): Adults who fully acquired L1 and were exposed to L2 later in life, will continue to use L1 in a variety of social situations, and therefore will retain correct grammatical structures. Children, on the other hand, will increase their use of L2, in addition to the possibility of a lesser developed L1 in the first place, to the detriment of L1, and hence errors in the use of case markings.

Of the most interest to us in this study was the question of possible hierarchy in attrition. As our results show through the comparison of the errors' production in narrative and GJ task among children and adults, aspect production was not affected, whereas all other language specific categories were found to be more susceptible to the process of attrition. For example, only one aspectual error was found in the narrative task within the children's group (n=10). These results suggest that the aspect is better preserved compared to other morphosyntactic categories and allow us to conclude that aspect may be the least sensitive structure in the process of attrition.

Regarding the issue of sensitivity of specific tasks to detect and judge the effects of attrition, we can draw particular conclusions. As our results indicate, there were significant differences in both groups between elicited production and judgment of the grammaticality of sentence

structures. These results support the idea that the GJ task is more sensitive measure in detecting attrition (Köpke & Nespoulous, 2001). During the elicited narrative task an individual is not only in control of the lexical, morphological and grammatical choice in their output, they are also liable to self-correct, if they sense that the original word or morphosyntactic structure may be incorrect. The GJ task relies on the perception of the language, and it requires an individual to have full competence in his/her native language. It is also possible that metalinguistic ability is also involved in the process of judging what is acceptable or not acceptable in that language. Since adults in our study were more proficient in their L1 than children and quite possibly possessed more mature metalinguistic skills, their ability for making judgments about correctness of linguistic structures were better than that of children. This fact may have contributed to fewer overall errors on their part.

5. Summary and Conclusions

This study effectively showed that the process of attrition is contingent on the length of uninterrupted exposure to L1 and the use of L1 in every day situation for social and educational purposes. Moreover, we showed that there is a possibility of a hierarchy in the process of attrition, i.e., aspect may be the most salient feature of language and therefore is less affected than the loss of other language-specific grammatical structures of Russian as L1. More research is needed in the future to understand why aspect is less vulnerable to attrition than other grammatical structures. This may be possible through a tighter control over the ages of the participants, more in depth interviews with the subjects regarding their overall knowledge of L1 (including a possibility of using a standardized test battery in assessment of lexical and grammatical knowledge), and longitudinal collection of data among a group of adults and children at different entry points in their acquisition of L2.

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