Kitchen Russian:
First-language Object Naming by Russian-English Bilinguals

Barbara C. Malt (barbara.malt@lehigh.edu)
Department of Psychology, Lehigh University, 17 Memorial Drive East
Bethlehem, PA 18015 USA

Aneta Pavlenko (apavlenk@temple.edu)
Department of Curriculum, Instruction, and Technology in Education, Temple University, 451 Ritter Hall
Philadelphia, PA 19122 USA

Abstract

A bilingual's two lexicons are linked rather than isolated from each other. An implication of this linkage is that the contents of one might influence the contents of the other. We examined naming of common household objects by early, childhood, and late Russian-English bilinguals to assess a possible second language (L2) English influence on first language (L1) Russian naming patterns and typicality ratings. L2 influence was evident in the data even for late bilinguals. It was most pronounced with earliest arrival and entailed both narrowing and broadening of linguistic categories.

Keywords: bilingualism; bilingual word use; semantics

Introduction

Bilinguals must be able to understand and communicate more or less the same thoughts using two different languages. At the lexical level, this feat is achieved via a cognitive architecture in which words of the two languages are connected indirectly through links to a common conceptual space and directly through links between word forms (e.g., Kroll & Stewart, 1994). These connections have a consequence for on-line comprehension and production: Activation of words in one language prompts activation of words in the other, requiring the bilingual to inhibit the words of the non-target language for each utterance (e.g., van Hell & Dijkstra, 2002).

Another consequence of the interconnections, only recently beginning to be appreciated, is that the meanings associated with the word forms of one language may be influenced by the existence of the other lexicon. Many roughly corresponding words, even cognates, are not true translation equivalents across languages as used by monolinguals. For instance, the set of objects called *botella* by Argentinean Spanish monolinguals only partially overlaps with the set called *bottle* by American English monolinguals (Malt, Sloman, Gennari, Shi, & Wang, 1999). If there are interconnections between representations when two lexicons co-exist in one mind, the meanings encoded in one lexicon might influence those of the other.

There are three potential directions of lexical influence between a bilingual's two languages. Most intuitively plausible is an influence of the L1 (first-learned language) on an L2 (second-learned language), especially early in acquisition. Learners may import the meaning of an L1 word as their first attempt to connect meaning to an L2 word (e.g., Kroll & Stewart, 1994). More surprising is recent evidence for a mutual influence of two languages when they have been learned in parallel. Bilinguals who have been raised with two languages from birth differ from monolingual users of either language in their patterns of word use; they converge the patterns of their two languages toward each other (Ameel, Storms, Malt, & Sloman, 2005; see also Brown & Gullberg, 2008; Pavlenko & Jarvis, 2002). This effect occurs despite the fact that they have had the benefit of extended exposure to both languages from a young age and have achieved high levels of overall proficiency in both. These factors would seem to predict high mastery of the two lexical systems. Yet it might be that two lexicons being developed in parallel are made vulnerable by interleaved exposure to the words of the languages (possibly initially not even fully distinguished as belonging to different systems), and by the fact that neither lexicon is well-established when the other is being learned.

What, then, should be expected of the third possible direction of influence, namely, an L2 influence on L1? Will speakers who begin life with one language but then acquire a second show any influence of the second-learned language on their use of the first? The considerations just mentioned suggest possibly not: Once one language is reasonably well-established, the content of its lexicon may be relatively invulnerable to any influence from a new one, even if there is competition between them in production. Empirically, however, there is growing evidence of L2 influence on well-established L1s in other linguistic domains from phonology to pragmatics (see, e.g., Cook, 2003; Pavlenko, 2000), indicating that earlier-learned representations can have some vulnerability to influence from later-learned ones. If an influence also exists for the lexical domain, it would suggest that the direct and indirect connections between representations of the two language systems leave them perpetually open to cross-language influence, possibly because of the fact that accessing lexical items of one language activates lexical items of the other. These activations may provide an opportunity for the stored memory traces of one language to be influenced by the other (Ameel, Malt, Storms, & von Assche, in press; Wolff & Ventura, in press).

Evidence of an L2→L1 influence to date, though, has been limited. For instance, in Pavlenko's (2002; in press) studies, late Russian-English bilinguals displayed an L2 influence on L1 in lexicalization of emotions but not in lexicalization of motion. Wolff and Ventura (in press) found an influence of L2 English usage patterns for causal verbs on use of L1 Russian causal verbs, but they noted that the verb patterns are linked to differences in what kinds of agents can serve as sentences subjects in the two languages. They suggested that an L2 → L1 influence may be most likely for expressions that lie at the interface of syntax and semantics. Thus, although there is reason to think that the L1 lexicon can be influenced by L2 acquisition, much remains to be understood about the scope of this effect.

The present study evaluates the possibility of an L2 influence on L1 for common, concrete nouns in Russian-English bilinguals. All participants learned Russian in their early years but resided in the United States at the time of testing and used both Russian and English in their daily lives. They varied in the extent to which each language had been dominant for them over their lifetime, as well as their age of immersion in the English-speaking environment. The late bilinguals came to the U.S. as students or professionals and had the most extensive exposure to Russian and the most recent and least extensive exposure to English. The early and childhood bilinguals came in immigrant families and grew up in the U.S., receiving earlier exposure to English and somewhat reduced input in Russian. In the literature, such speakers are referred to as heritage language learners, L1 attriters, or incomplete acquirers. In lay conversations, their L1 competence may be derisively labeled 'kitchen Russian'. We will evaluate whether any or all of these groups show an influence of L2 English naming patterns on their use and knowledge of L1 Russian words, and how age of arrival (with its resultant variation in exposure to the two languages) influences any appearance of an L2 influence on L1.

Method

Russian-English bilinguals were undergraduate and graduate students and staff members at Temple University. The early bilinguals (n = 9) arrived in the U.S. between the ages of 1 and 6 (mean = 3.4) and grew up in Russian-speaking families, using Russian at home and English outside the home. On a self-report proficiency measure using a scale of 1 ("not at all") to 7 ("native or native-like"), their mean rating was 7.0 for English and 4.5 for Russian. The childhood bilinguals (n = 9) arrived in the U.S. between the ages of 8 and 15 (mean = 11.7) and likewise used Russian at home and English outside, but they had lived in Russia longer and had begun their schooling there. Their mean proficiency rating was 6.65 for English and 5.94 for Russian. Late bilinguals (n = 11) arrived in the U.S. between the ages of 19 and 27 (mean = 22.8) and most had completed their undergraduate education in Russia. They used Russian with Russian-speaking friends, colleagues, and family members, and English for work and study and with English-speaking friends. Their mean proficiency rating was 5.41 for English and 6.89 for Russian.

For comparison, 20 largely monolingual native speakers of American English from Lehigh and Temple Universities, and 20 largely monolingual native speakers of Russian from the University of Kazan, Russia also participated[1].

Photographs of sixty common drinking containers were used as stimuli. The set consisted of objects likely to be called *cup*, *mug*, or *glass* in English and *chashka*, *kruzhka*, or *stakan* in Russian. They encompassed a wide range of shapes, size, materials, and specific uses, and included ones made in the U.S. (e.g., a beer stein) and in Russia (e.g., a tea glass in a metal glassholder). Objects were photographed on a neutral background with a ruler to provide size information. Testing was carried out in English for the English monolinguals and in Russian for the Russian mono- and bilinguals. Pictures were presented in a random order on a computer screen, and participants typed in whatever name they thought they would call each one in ordinary conversation. For English speakers, each object was also rated for its typicality with respect to *cup*, *glass*, and *mug*. For Russian speakers, typicality as *chashka*, *kruzhka*, and *stakan* were rated.

Results

Monolingual Naming Patterns

Table 1 shows all the names that were the dominant (most frequent) name for at least one object for the Russian monolinguals, along with the number of objects out of 60 for which each was dominant. It also shows the composition of each Russian category in terms of the names assigned by English monolinguals speakers to its members. The table makes clear that the naming patterns of the two languages have some similarities. For both languages, three names accounted for the bulk of the objects. Also, the set of objects called *kruzhka* by Russians was essentially the same as that called *mug* by English speakers. However, there are substantial differences, too. Russians used several additional names applied to small numbers of objects apiece. Most importantly, although *stakan/glass* and *chashka/cup* are generally treated as translation equivalents, the data show that they are not so closely equivalent, as we now describe.

Cup vs. Chashka *Cup* was used more broadly than *chashka*, encompassing more than twice as many objects, but not all objects with *chashka* as the dominant name were labeled *cup* by English speakers. Objects typical of c*up* were generally tapered, handle-less objects for cold drinks but included various materials and shapes and some with handles and intended for hot drinks (see Figure 1). In contrast, all of the objects with *chashka* as their dominant name were short, ceramic, slightly rounded at the bottom, had handles, and were for hot drinks (see Figure 2).

[1] Some had modest knowledge of another language but not the one of interest here, and it was not in use in their daily lives.

Table 1: Linguistic categories for Russian monolinguals and their composition in terms of English monolingual names. *N* = number of objects for which the name was dominant.

Monolingual Russian Name	N	English composition
stakan	23	14 cup, 7 glass, 2 mug
chashka	11	7 cup, 4 mug
kruzhka	9	8 mug, 1 cup/mug
riumka	6	4 glass, 2 cup
fuzher	4	4 glass
bokal	3	3 glass
kuvshin	1	1 mug
lozhka	1	1 cup
piala	1	1 cup
vaza	1	1 glass

Glass vs. Stakan For this pair, English had the more restricted use. Objects with *glass* as their dominant name were almost entirely limited to tapered containers without handles, made of glass, and for cold drinks (see Figure 3). Objects with *stakan* as dominant were also tapered containers without handles, but they included ones that were made out of paper, styrofoam, plastic, metal, or ceramic as well as glass and used for either hot or cold drinks. Some of the most typical *stakan* were *cup* in English (see Figure 4).

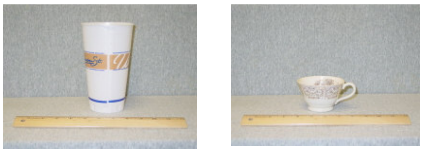

Figure 1: Examples of *cup*

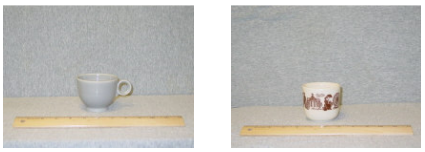

Figure 2: Examples of *chaskha*

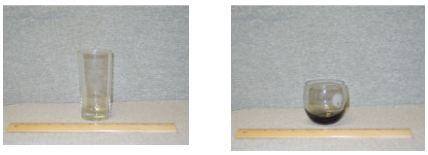

Figure 3: Examples of *glass*

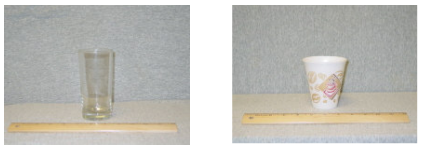

Figure 4: Examples of *stakan*

Bilingual Naming Patterns

Given the differences between the naming patterns for monolinguals, we can now ask whether exposure to English alters Russian name use. We need a measure of correspondence that can provide a baseline level of agreement between the monolingual groups, which can then be compared directly to agreement with bilinguals. In addition, although dominant names give a good intuitive sense of naming patterns, for many objects there is some variability in speakers' name choices. That is, the dominant name is produced by less than 100% of participants. Therefore, following Malt et al. (1999), we used a measure that takes into account all responses to each object and the frequency of each as a response to the object. For each speaker group, we created a matrix in which rows represent the 60 objects, columns represent the names generated by participants (to the whole stimulus set), and each cell entry is the frequency with which a particular name was generated to a particular object by the speaker group. Each object's name distribution (its vector of frequency values for all the names) can then be compared to every other object's using a Pearson correlation in order to see how much the two objects are similar in what they are called. For each speaker group, this measure yields 1770 correlations (from every possible pairing of the 60 objects). The 1770 values for one group can then be correlated with the 1770 values of a different group, even when the actual names produced are in different languages. This second-order measure reflects the extent to which any two speaker groups correspond in the pairs of objects that have similar name distributions. Table 2 provides the resultant correlations.

The correlations of the bilingual name similarity matrices with the Russian monolingual speakers' matrix show an orderly shift as a function of age of arrival. The late bilinguals' naming pattern correlates most strongly with the monolingual speakers, followed by the childhood bilinguals, and then by the early bilinguals, indicating that the bilinguals are moving farther from the monolingual Russian pattern with earlier age of arrival in the U.S. The correlations among the bilingual groups themselves are also orderly: The late bilinguals correlate more strongly with the childhood bilinguals than they do with the early bilinguals, and the early bilinguals correlate more strongly with the childhood bilinguals than with the late bilinguals.

There is, however, one aspect of the correlations that is less regular. If the progression away from the Russian monolingual pattern with earlier age of arrival is because speakers are moving closer to the English monolingual pattern, then, looking across the bottom row, one would expect to see correlations with the English pattern

Table 2: Correlation of name similarity measures.

	Mono. Russian	Late Biling.	Child. Biling.	Early Biling.
Mono. Russian				
Late Biling.	0.81			
Childhood Biling.	0.73	0.77		
Early Biling.	0.48	0.43	0.66	
Mono. English	0.37	0.42	0.42	0.37

correspondingly increasing. Late and childhood bilinguals show a small but significantly increased ($p < .05$) correlation with the English monolingual pattern compared to the correlation of Russian monolinguals. However, early bilinguals show only the same level of correlation with English as the Russian monolinguals. One possible explanation is that the bilinguals' Russian word use simply becomes more random (less closely tied to either language), perhaps because they have learned the language less well and use words less systematically. The alternative is that the pattern becomes more like English in some ways but less like English in others. Table 3 provides information about how the size of different Russian lexical categories expands or contracts across groups. Based on this information and consideration of the dominant name for individual objects in each group, to which we now turn, we will argue for the second possibility.

Late Bilinguals The late bilinguals differed from monolinguals in name choices for a handful of objects. The differences mentioned here are those least likely to reflect only noise in the data by virtue of also appearing in the next two groups' choices. Two of the more specialized terms, *kuvshin* (for a round, lidded drinking vessel) and *fuzher* (for ones with narrow stems for alcohol) were replaced by the more general terms *kruzhka* (for mugs) and *bokal (*for glass objects for alcohol with or without a stem). At the same time, one object with a dominant name of *bokal* for monolinguals was preferentially called *stakan* by the late bilinguals. The first of these shifts, assimilating the *kuvshin* and *fuzher* objects to *kruzhka* and *bokal*, has the effect of better aligning the Russian categories with the English but could be simply vocabulary attrition rather than an influence of English. However, the switch of one original *bokal* object to *stakan* represents a trend that is amplified in the next two groups and seems to reflect a more direct influence of English. The original *bokal* objects were three glass vessels for drinking alcohol only slightly tapered in their bottom half, and it is the least tapered of these that was shifted to *stakan* by the late bilinguals. The switch brings the use of *stakan* in closer correspondence with that of *glass*, and it takes place despite the continued and even increased use of *bokal* for other objects with more pronounced stems (the original *fuzher* objects). Similarly, one object named *riumka* by monolinguals was more often called *stakan* by the late bilinguals, consistent with a shift by the other groups and with the English choice of *glass* for it: This object was least distinctively like typical *riumka* (small shot glasses for alcohol) and most like typical *glass*es.

Childhood Bilinguals The childhood bilinguals continued the trend shown by the late bilinguals of dropping out low frequency terms. For them, not only *fuzher* and *kuvshin* but also *piala*, *vaza*, and *lozhka* were replaced with one of the higher frequency names. They also had a higher number of objects (six) with two equal-frequency names. In each case, one name was the one used by monolinguals but the other brought name patterns in closer correspondence to English (e.g., where the preferred monolingual English name was *mug* and the preferred Russian was *chashka*, this group used *kruzhka* as often as *chashka*). In addition, this group named two of the original three *bokal* objects as *stakan*. This shift again brings *stakan* in closer correspondence to the distribution of English *glass* despite familiarity with *bokal* as shown by its continued use for the original *fuzher* objects. They also showed indecision about the original *riumka* object that late bilinguals had tilted toward *stakan*, calling it a variety of names including *stakan*.

Early Bilinguals The early bilinguals showed the sharpest departures from the monolinguals. Surprisingly, along with lack of the other more specialized terms, they dropped use of *kruzhka*, calling each of the nine original *kruzhka* objects either *stakan* or *chaskha*. It is this loss of the entire *kruzhka* category, so closely aligned with English *mug* for monolinguals, that causes the reduced correlation with the English naming pattern. Because the monolingual use of *kruzhka* is so similar to that for *mug*, this loss cannot be attributed to an L2 influence. However, other changes point to an L2 influence. The early bilinguals completed the renaming of the original *bokal* objects, calling all three *stakan*, while still showing productive use of *bokal* for the original *fuzher* objects. Again, this shift brings the distribution of *stakan* in closer correspondence to English *glass*. They also preferred *stakan* for the original *riumka* object that the other groups shifted. Strikingly, they also renamed 7 of the original *stakan* objects *chashka*, plus used *chashka* equally as often as *stakan* for two more. In each case, the English dominant name is *cup* and the shift brings the Russian use of *chashka* in closer correspondence to *cup* (and, simultaneously, the use of *stakan* in closer correspondence to *glass*). Their naming patterns thus seem to reflect a substantial influence of exposure to English.

Table 3: Number of objects (out of 60) for which a given name is dominant across Russian-speaking groups. "Mixed" indicates objects having two equally frequent names.

	Mono. Russian	Late Bilingual	Childhood Bilingual	Early Bilingual
stakan	22	23	22	19
chashka	11	12	12	27
kruzhka	9	12	10	0
riumka	6	2	5	5
fuzher	4	0	0	0
bokal	3	6	5	3
lozhka	1	1	0	0
piala	1	1	0	0
vaza	1	1	0	0
kuvshin	1	0	0	0
stopka	0	1	0	0
(mixed)	1	1	6	2

Bilingual Typicality Ratings

The typicality ratings of each group provide additional information about whether the meanings associated with *chashka*, *stakan*, and *kruzhka* shifted for bilinguals. See Table 4a for correlations with monolingual English judgments of each object as *cup*, *glass*, and *mug*, and 4b for correlations with the monolingual Russian judgments of *chashka*, *stakan*, and *kruzhka*.

Table 4a: Correlations of monolingual English typicality ratings with Russian typicality ratings. Boldface numbers are discussed in the text.

		Monolingual English		
		cup	glass	mug
Monolingual	chashka	**0.06**	-0.45	0.79
Russian	stakan	0.49	**0.21**	-0.36
	kruzhka	-0.06	-0.40	**0.94**
Late	chashka	**0.10**	-0.48	0.70
Bilingual	stakan	0.20	**0.59**	-0.60
	kruzhka	-0.15	-0.45	**0.96**
Childhood	chashka	**0.22**	-0.47	0.73
Bilingual	stakan	0.26	**0.62**	-0.52
	kruzhka	-0.05	-0.39	**0.93**
Early	chashka	**0.36**	-0.59	0.78
Bilingual	stakan	0.41	**0.41**	-0.33
	kruzhka	0.15	-0.46	**0.92**

These tables show that the judgments for *chashka* increase in correspondence with judgments for *cup* across the three bilingual groups, and judgments for *stakan* increase in correspondence compared to the monolingual Russian judgments (though, for some reason, not monotonically). Conversely, the bilingual judgments show slight decreases across the three groups with monolingual *chashka* and *stakan* judgments. (The correspondence of bilingual *kruzhka* judgments to monolingual *kruzhka* and *mug* show little change, suggesting that even the early bilinguals have passive knowledge of the meaning of *kruzhka*.) Thus, typicality judgments support the idea that the bilingual groups, including the late bilinguals who were young adults at the time of their immersion in English, show an influence of exposure to English in their Russian lexical knowledge.

Table 4b: Correlations of monolingual Russian typicality ratings with bilingual Russian ratings. Boldface numbers are discussed in the text.

		Monolingual Russian		
		chashka	stakan	kruzhka
Late	chashka	**0.93**	-0.50	0.71
Bilingual	stakan	-0.63	**0.85**	-0.58
	kruzhka	0.75	-0.40	**0.94**
Childhood	chashka	**0.92**	-0.32	0.77
Bilingual	stakan	-0.58	**0.82**	-0.50
	kruzhka	0.77	-0.33	**0.94**
Early	chashka	**0.88**	-0.21	0.79
Bilingual	stakan	-0.40	**0.81**	-0.29
	kruzhka	0.82	-0.21	**0.93**

Discussion

Summary of Evidence for an L2→L1 Lexical Influence

The loss of *kruzhka* from the early bilingual naming is not easily accommodated by the notion of an L2 influence on L1, since *kruzhka* so closely maps onto *mug*. It is likely that objects called *kruzhka* were present in their home environment but this group's somewhat reduced exposure to Russian was simply insufficient to put this word into their productive vocabulary. More ambiguous with respect to an L2 influence is the loss of some of the more specialized drinking vessels terms starting with the late bilinguals; this loss might reflect insufficient input for productive mastery, or it could reflect a realignment of the Russian categories with the smaller number of English ones. However, the shifting rather than disappearing use of *bokal* suggests that some L2 influence is present even for the late bilinguals. These bilinguals, who came to the U.S. as young adults with presumably well-developed Russian vocabulary, showed the beginnings of a terminology shift for stemmed glasses that was systematically enhanced across the other bilingual groups and that resulted in closer alignment of *stakan* with English *glass*. The shift of one *riumka* to *stakan* beginning with the late bilinguals is similar in nature. These two observations suggest that even for the late bilinguals, a

small English influence was taking place. The childhood bilinguals showed only slightly more evidence of changes in their naming patterns through an additional shift of *bokal*. The typicality data, however, bolster the interpretation of both the late and childhood bilinguals as experiencing a genuine and increasing, although small, L2 influence: Their ratings for two of their most productive terms, *chashka* and *stakan*, show changes consistent with an influence of the English *cup* and *glass* categories. The late bilinguals show the greatest L2 influence in the considerable adjustments to their use of *stakan* and *chashka* to more closely mirror *glass* and *cup*, and in changes to their typicality ratings that are consistent with these shifts in naming patterns.

Implications for the Generality of an L2→L1 Lexical Influence

Our findings suggest that an L2 influence can occur even for familiar, concrete nouns naming common household objects. The evidence for an L2 influence in this familiar and concrete domain suggests that even when one lexicon is established before significant exposure to a second, vulnerability to influence from the newer one may be unavoidable. Information stored in memory is rarely unalterable. The direct and indirect connections between the two language systems, which can cause cross-activation of stored knowledge, may leave the lexicons perpetually open to cross-language influence.

The effects we observed were strongest in the early bilinguals for whom the chronological L2 had become the dominant language. It is noteworthy, though, that the late bilingual group showed some L2 influence given that they were mature language users before leaving Russia, their exposure to English was relatively limited, and their (self-rated) mastery of English was incomplete. This finding suggests that a modest L2 influence may occur for virtually any group of speakers given moderate exposure to the L2.

Since, for the most part, our late bilinguals had been in the U.S. only a short time, their L2 influence might increase with longer immersion. However, the childhood bilinguals showed a relatively small increase in L2 influence, despite a substantially longer period of stay in the U.S. and higher self-rated proficiency in English. The largest L2 influence, and the biggest jump from the previous group, was in the case of the early bilinguals, who rated themselves only slightly more proficient in English than the childhood bilinguals but substantially less proficient in Russian. It may be the incomplete mastery of the L1 (with, perhaps, memory representations that are not well-consolidated) that leaves it most vulnerable to L2 influence, rather than the degree of exposure to or mastery of the L2.

Finally, we note that consistent with Ameel, Malt, and Storm's (2008) developmental study, changes do not seem to be limited to either narrow categories broadening or broad categories narrowing. Shifts go in both directions, influenced by both the nature of the L1 and L2 categories involved. *Chashka* is a rather narrow category centered on small cups with handles for hot liquids and admitting little else, whereas *cup* is a much more diverse category. In this case, the Russian usage moved from the narrower Russian-like pattern to a broader, more English-like pattern. On the other hand, *stakan* is a category that is broader than *glass*, at least on the dimension of material. In this case, the Russian usage moved from the broader use toward greater constraint on the material dimension, consistent with English. There may be few lexical categories that are immune to such shifts.

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