Pseudo-allomorphs in Modern Russian

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1 Introduction

In this paper I argue that apparent complementary, phonologically conditioned distribution in a group of affixes with the same function (diminutive) does not necessarily imply that they are allomorphs. I also show, using the example of Russian diminutive suffixes, which were previously considered to be allomorphs, that semantic factors may contribute to the choice of a suffix realization on a par with phonological factors, contradicting the predictions of serialist theories (i.e., Distributed Morphology as in Embick 2010).

The [-ok, -ik, -tɕik] suffixes are classified as non-expressive diminutive suffixes in Vinogradov (1947/1972); all other diminutive suffixes are classified as expressive. Although these suffixes were considered allomorphs in previous studies (Polivanova 1967, Gouskova et al. 2015), they have never been tested for allomorphy. The assumption that they are allomorphs was based on their classification (as non-expressive vs all other diminutive suffixes) and their distribution in Standard Russian (i.e., dictionaries and edited texts), which is close to complementary and can be largely predicted from phonological factors. However, as I will show, in actual modern Russian usage these suffixes have differences in meaning along with phonological preferences, and hence cannot be allomorphs, because they are not synonymous.

I call such suffixes pseudo-allomorphs: they have phonologically conditioned distribution as well as different meanings.

The paper is organized as follows: in Section 2, I introduce the phonological preferences of the three suffixes and show that the suffixes are distributed differently in experimental data than previously reported (mainly based on corpus data). In Section 3, I show that the suffixes [-ok, -ik, -tɕik] each have different meaning nuances and that these semantic factors contribute to a choice of a suffix alongside phonological factors. In Section 4, I suggest a structural analysis for diminutive forms with these suffixes and show that their distribution in the language is exactly as predicted in Aronoff (2016). In Section 5 I conclude.

1.1 Phonological Factors Responsible for the Distribution of [-ok, -ik, -tɕik] Suffixes

In the Standard Russian (according to the prescriptive grammar), the distribution of the three suffixes can be predicted from the stem final segment, the stress pattern of the base noun, and several other factors that have less significant impact. The phonological preferences of suffixes and the changes to the noun stem these suffixes cause are listed in Table 1. The [-ok] suffix is always stressed regardless of where stress falls in the base noun.

As Table 1 shows, the [-ok] suffix also changes a stem-final velar segment to a corresponding palatal segment as in [muˈʑɨk] → [muʑɨˈtɕok] 'man (colloquial)'. The [-ik] suffix does not cause a stress shift but it may cause stem-final velar consonant mutation. Kapatsinsky (2010) argues that stem-final [g] may not mutate before [-ik], while stem final [k] always mutates. The [-ik] suffix always causes secondary palatalization (palatalization as second articulation) of the stem-final segment irrespective of its place and manner, as in [ˈslon] → [ˈslonʲik] 'elephant'. Only retroflex sibilants [ʂ] and [ʐ] do not undergo palatalization before [-ik], as they are never palatalized in Russian. The [-tɕik] suffix does not cause any changes to the stem. Table 1 lists together phonological generalizations made in (Polivanova 1967, Gouskova et al. 2015, Kapatsinsky 2010).

Suffix	Stem-final consonant preference	Base stress position	Other	Changes to the stem	Example
-ok	preferably velar	initial	no hiatus, no final cluster	stem-final velar mutation stress shift to the suffix	muˈzɨk → muzɨˈt͡ɕok 'man (colloquial)' lʲes→ lʲesok 'forest'
-ik	fricative	final		palatalization, may cause stem-final velar mutation if attached to a velar	vapˈros→vapˈrosʲik 'question', ˈfrik→ˈfrit͡ɕik 'freak'
-t͡ɕik	sonorant		no final cluster		vaˈgon→ vaˈgont͡ɕik 'car'

Table 1. Phonological properties of nouns selected by each suffix and the changes they cause.

I studied nouns that do not yet have established diminutive forms (newly borrowed nouns, native nouns that are rarely used in the diminutive, and nonce words similar to them in phonological shape). I focus on these nouns because they do not have established diminutives and the forms therefore show how actual productive grammar works.

1.2 Experiment 1

I conducted a forced choice test with 32 questions to determine which phonological factors influence the distribution of the four suffixes.

Participants were 60 native speakers of Russian, 53 female and 7 male, from 8 to 70 years old. The bases consisted of the following:

- 16 real nouns, 16 nonce nouns; 8 loan and 8 loan-like, 8 native and 8 native-like.
- 16 base nouns with stem-final velars and 16 with stem-final dental fricatives (16 = 4 loan + 4 loan-like + 4 native + 4 native-like);
- 16 base nouns with stem-final consonant cluster and 16 without a cluster (16 = 2 loan with velars + 2 native with velars + 2 loan with fricatives + 2 native with fricative + same grouping in nonce words),
- 16 monosyllables, 16 multisyllables (16 = 2 loan with velars + 2 native with velars + 2 loan with fricatives + 2 native with fricative + same grouping in nonce words);
- 8 base nouns with initial stress, 8 with final stress (8 = 1 loan with velars + 1 native with velars + 1 loan with fricatives + 1 native with fricative + same grouping in nonce words)

For example, the noun [baˈtork] is nonce, native-like, has stem final velar, has stem-final cluster, is multisyllabic and has final stress.

I used only bases with a stem-final velar (i.e., prefer [-ok]) or dental fricative (i.e., prefer [-ik]), so according to Table 1, the [-t͡ɕik] suffix should not appear at all. This was done in order to determine if participants would still attach [-t͡ɕik] even when there should be no preference for it.

The task was to finish given sentences with a diminutive form from a given list. If participants did not like any of the forms from the list, they had to pick one anyway and list a suggested form in a blank space

1.2.1 General Results

The experimental data show a different distribution from what a prescriptive grammar would predict. The differences are listed below.

As Figure 1 shows, the phonological factors considered in previous studies (i.e., place and manner of the stem-final segment, stress, stem-final CC) only partially predict the distribution. The suffix [-ok] is used much less often than expected and forms with [-ik] appear more often than the phonological factors predict. The [-t͡ɕik] is not expected in this experiment at all, so the fact that it still appears relatively often is even more surprising, if we consider phonological factors only. In

Magomedova and Slioussar (2015), we show that the distribution can mainly be attributed to transparency – speakers are more faithful to loanwords, and [-ok] requires many changes to the stem, while [-t͡ɕik] brings no changes, which leads participants to disfavor the former and use the latter even when it is completely unpredicted by standard usage.
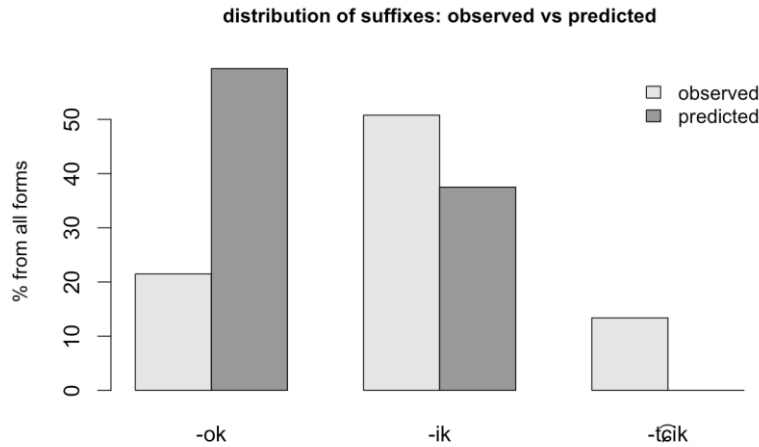
distribution of suffixes: observed vs predicted

Figure 1. [-ok] and [-ik] suffixes in the experiment - observed vs predicted by phonological factors.

2 The Meaning Nuances of the three Suffixes

The difference in meaning of the three suffixes was mentioned by Vinogradov (1947/1972), who refers to Aksakov but provides no source publication. Vinogradov (p. 116) suggests that the [-ok] suffix, which is the oldest, expresses diminutive meaning alone, while the [-ik] and [-t͡ɕik] suffixes have an affectionate nuance. Vinogradov gives no indication of the pejorative nuance of [-ok]. In this section, I argue that each of the three suffixes [-ok], [-ik], and [-t͡ɕik] has a distinct meaning. I also show that even nouns that have well established diminutive forms with [-ok] sometimes also form diminutives with [-ik] for semantic reasons. All these nouns are very frequent. This fact is important because it contradicts previous theories that use diacritics to indicate which suffix is used for a particular base noun (Gouskova et al. 2015). If a diacritic is assigned to every noun based on the lexicon, well established and frequent forms should not show any variation.

The affectionate tone of [-ik] may naturally originate in child pronunciation – the suffix has the front vowel [i] and always triggers secondary palatalization of a preceding non-velar consonant (i.e.,[rot]→[rotʲik] 'mouth'→ 'little mouth'), while velars may be palatalized secondarily or mutate (i.e., [rog]→[rogʲik], [roz̩ik] 'horn'→ 'little horn') (Kapatinsky 2010, Magomedova and Slioussar 2015). Small children have a relatively bigger tongue and smaller front cavity than adult speakers; therefore, they tend to front sounds – front vowels and palatalized (frontized) consonants are pronounced with lesser volume of the front cavity (Kochetov and Alderete 2010).

Russian children prefer [-ik] to other non-expressive diminutive suffixes. (At the moment this is an observation about real children and based on a printed corpus of child utterances (Kharchenko 2012). The corpus is a printed book, therefore, it is hard to make counts from the corpus.)

One example of the affectionate tone of the [-ik] suffix would be the pair [t͡svʲeˈtok - ˈt͡svetʲik] (*flower*). The form [t͡svʲeˈtok] is not a diminutive anymore and means just 'flower'; the normative diminutive for it is [t͡svʲeˈtot͡ɕək]. However, there is a widely used form [ˈt͡svetʲik], characterized as a "folk-poetic" form synonymous with [t͡svʲeˈtot͡ɕək] in Ushakov's dictionary (Ushakov and Nikitina 2009). Speakers in this case apparently recognize the [-ok] suffix in the non-diminutive form [t͡svʲeˈtok] and replace it with the [-ik] suffix to form a diminutive with an affectionate tone.

2.1 Web Study of Well-established Nouns

To determine if the [-ik] suffix has an affectionate meaning I checked on the Internet to determine whether frequent nouns with well-established diminutives with [-ok] also have forms with [-ik], and where these forms may be found. In particular, I was interested in the context – what kind of meaning a diminutive form expressed and if there were many other diminutives in the same sentence or paragraph. I was looking primarily for nouns with stem-final velars, as they must select [-ok] according to prescriptive grammar. I picked three nouns: [snʲeg][1] 'snow' (frequency 125.2, diminutive frequency 4.9)[2] with an established diminutive [snʲiˈʐok], [saˈpog] 'boot' (frequency 62, diminutive frequency 6.4) with an established form [sapaˈʐok] and [xaˈmʲak] 'hamster' (frequency 1.1, diminutive frequency 1.4) with an established form [xamʲaˈt͡ɕok]. I've also searched [sɨr] 'cheese' with established form [sɨˈrok].

Using Google search I found the following non-standard diminutives: [ˈsnʲeʑik], [saˈpoʑik], [xaˈmʲat͡ɕik] and [ˈsɨrʲik], each with at least 500 hits (161000, 537, 1360, 8600 respectively). These numbers are not at all reliable and search results were not filtered and manually processed. However, some of them are clearly diminutives. Once I found that these forms were possible, I searched specific sites: I found 12 hits of [saˈpoʑik] on woman.ru in affectionate context (470 of [sapaˈʐok] – both affectionate and neutral context), 2 hits of [ˈsnʲeʑik] (34 hits with nicknames and pet names; 3428 of [snʲiˈʐok] – these I haven't processed manually), 2 hits of [xaˈmʲat͡ɕik] (10079 [xamʲaˈt͡ɕok]).

These findings show that it is possible for the speakers to use [-ik] in an affectionate context instead of [-ok] even with nouns that have very well established diminutive forms with [-ok]. To find out if this possibility points to an established difference in meaning of the suffixes I performed a wug test.

2.2 Experiment 2

I conducted a forced choice test with three protocols: affectionate context, pejorative context and no context. Participants had to choose one of the three diminutive forms for each word: with the [-ok], [-ik] or [-t͡ɕik] suffix.

81 native speakers of Russian took part in this experiment, 27 for each protocol. I did not collect information about their age and gender in this experiment.

I took as stimuli 10 nonce nouns that were identical for all protocols. All were monosyllabic, four nouns had stem-final velars (prefer [-ok]), four had stem-final fricatives (prefer [-ik]) and two nouns had stem-final [n] (prefer [-t͡ɕik]). There were four nouns with stem-final clusters and four with stem-initial clusters. Sample sentences for affectionate and pejorative contexts are listed in Table 2.

2.2.1 General Distribution

Figure 2 shows the general distribution of suffixes within the three protocols, divided by stem-final segment place/manner. The width of the bars shows how many nouns with a given stem-final segment were in the experiment (four velars, four fricatives and two [n]). The [-ik] suffix (dark grey) is generally more productive than the [-ok] suffix, which confirms the findings of Section 1. [-t͡ɕik] is not very productive in this experiment due to the choice of stimuli: all words are monosyllabic and [-t͡ɕik] prefers multisyllabic stems, mostly loanwords (see Section 2.1); only two of ten words have stem-final sonorant consonants.

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[1] Here and after stem-final segments are listed as in the UR.
[2] All frequencies are cited from Lyashevskaya and Sharov (2009).

Affectionate context	[-ik]	[-ok]	[-t͡ɕik]
Смотри, я купила новый ферк! Классненький такой, Look, I bought new [fʲerk]! Cool-DIM such, аккуратненький – как раз в сумочку помещается. Neat-DIM – just in bag-DIM fits. Look, I've bought a new [fʲerk]! Such a cooly one, neaty – just fits in my handbaggy.	ферчик fert͡ɕik	ферчок fert͡ɕok	феркчик ferkt͡ɕik
Pejorative context	[-ik]	[-ok]	[-t͡ɕik]
Одолжи мне твой фрис на недельку, а? А то надоело Lend me your [frʲis]for week, eh? Just annoyed уже возиться со своим старым дохлятским … already deal with own old dead-PEJ Lend me your [frʲis] for a week, eh? I'm so fed up with my old dead …	фрисик frʲisʲik	фрисок frʲisok	фрисик frʲist͡ɕik

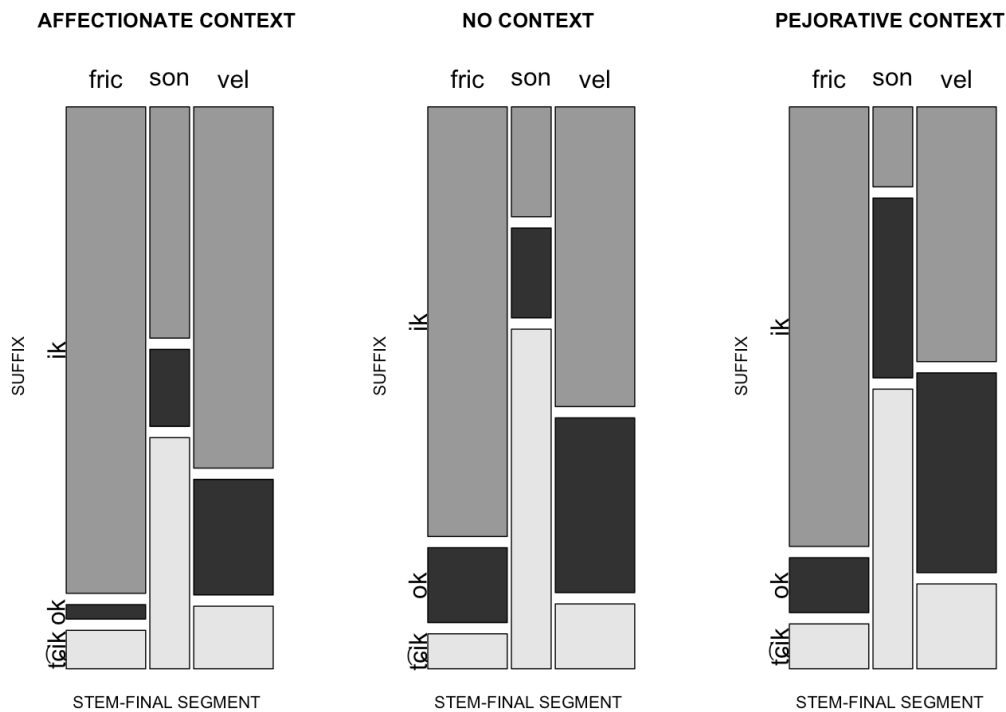Table 2. Examples of affectionate and pejorative sentences.

Figure 2. Distribution of the suffixes in three contexts.

2.2.2 Context Matters

I modeled the experimental data with mixed-effects logistic regressions, two for each suffix. Each regression evaluated the likelihood of occurrence of one of the suffixes (coded as 1) versus the two others (coded as 0). The presence of pejorative or affectionate context was treated as a fixed effect. For the predictors I used contrast coding: pejorative or affectionate context was coded as 1/5; absence of a context as -1/5. Random slopes by participant and by item were also included in the models.

I found that pejorative context significantly increases the chances of [-ok] and decreases the chances of [-ik]. Affectionate context significantly increases the chances of [-ik] and decreases the chances of [-ok]. The [-t͡ɕik] suffix remains unaffected.

Phonological factors were also significant, as expected: stem-final velars increase the chances of [-ok] and decrease the chances of [-ik]; stem-final fricatives increase the chances of [-ik] and decrease the chances of [-ok]; stem-final nasal increase the chances of [-t͡ɕik] and decrease the chances of [-ok] and [-ik]; stem final consonant clusters increase the chances of [-ik] and decrease the chances of [-ok]; initial consonant clusters increase the chances of [-ok] and decrease the chances of [-ik].

2.2.3 Interaction of Semantic and Phonological Factors

Let us look first at the protocol with the affectionate context that favors the [-ik] suffix. The experimental data show that phonological factors that favor [-ok] (stem-final velar, initial cluster) help nouns to resist the context and take the pejorative [-ok] instead of affectionate [-ik]. In Figure 3, of the four nouns with stem-final velars, two have an initial consonant cluster (as shown in Table 3). One of the words that has both a stem-final velar and initial cluster also has a front vowel that disprefers the affectionate suffix [-ik] in an OCP-like pattern. The more phonological properties preferring [-ok] are present in a noun, the more likely it is to take [-ok] despite the affectionate context of the sentence and despite pejorative tone of the [-ok] suffix, which is contrary to the speakers' initial (affectionate) intentions.
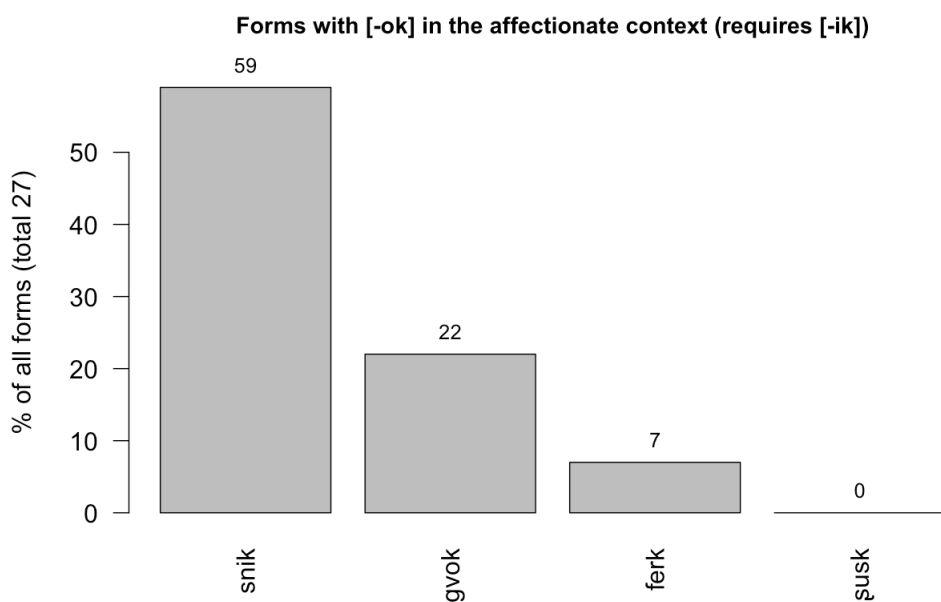

Forms with [-ok] in the affectionate context (requires [-ik])

Figure 3. Phonological factors that require [-ok] help resistance to the affectionate context.

Noun	Stem-final velar	Initial cluster	OCP (front)
snʲik	X	X	X
gvok	X	X	
fʲerk	X		X
ʂusk	X		

Table 3. Phonological factors that require [-ok] help resistance to the affectionate context.

The [snʲik] wug has stem-final velar segment [k], stem-initial CC: phonological factors that require [-ok] - and a front vowel [i] that disprefers [-ik] in an OCP kind of pattern. However, the affectionate context requires [-ik] and penalizes [-ok], as [-ok] has pejorative meaning. Therefore, there is variation: [snʲik] has 60% of its diminutive forms with [-ok] in an affectionate context that favors [-ik], 33% with [-ik] and 7% with [-tɕik], which is semantically neutral.

The [gvok] wug has a stem-final velar and a stem-initial CC that favors [-ok], but does not have the front vowel that disprefers [-ik]. As a result, there are fewer forms with [-ok] (20%) and more forms with [-ik] (70%).

The [fʲerk] noun has a stem final velar and a front vowel [e], but does not have an initial CC that favors [-ok]. On the contrary, it has a stem-final CC that requires [-ik]. Therefore, it has only 10% of its forms with [-ok].

[ʂusk] has a stem-final velar, but this is the only factor that would favor [-ok]. As

Figure 3 shows, it cannot resist the affectionate context at all and has no forms with [-ok].

The same gradient character of resistance to the pejorative context is exhibited by phonological [-ik] takers, as shown on Figure 4 and Table 4. The only difference is that [-ik] is overall much more productive than [-ok] in modern Russian (see 2.1.1); therefore, there are more forms with [-ik] in pejorative context than forms with [ok] in affectionate context.
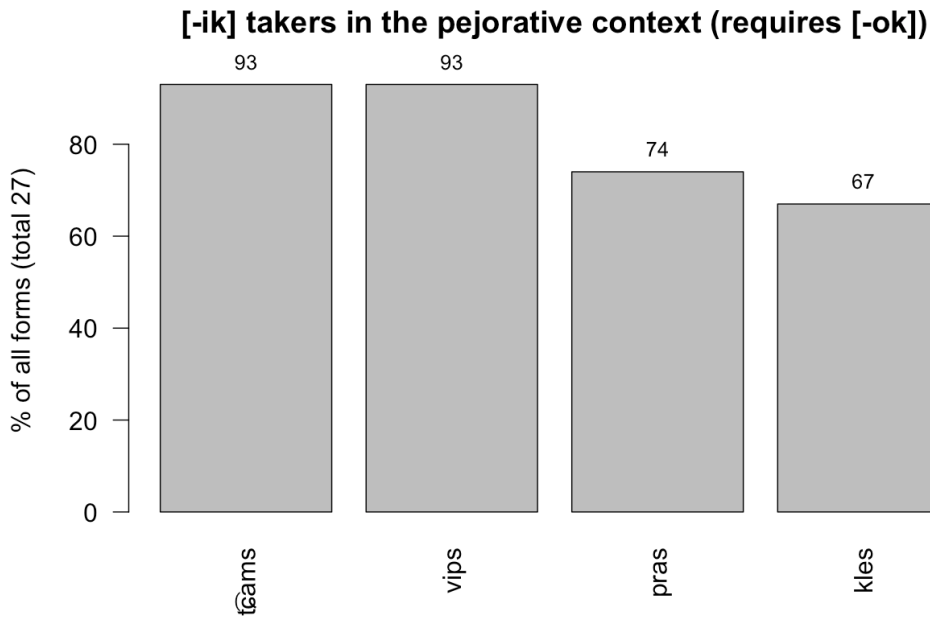

Figure 4. Phonological factors that require [-ik] help resistance to the pejorative context.

Noun	Stem-final fricative	Final cluster	Back vowel
tɕams	X	X	X
vʲips	X	X	
pras	X		X
klʲes	X		

Table 4. Phonological factors that require [-ik] help resistance to the pejorative context.

3 Discussion

3.1 Structural Analysis

Serial architecture suggests that processing is organized in modules, where speakers' intentions, which belong to the semantic module, are input to the syntactic module, which incorporates them in a tree, which in turn is input to the morphological module, where the morphemes that satisfy features indicated in the tree are picked. The tree with abstract morphemes in it is an input to the phonological module where, for each morpheme that has several realizations, an exact realization is chosen based on phonological factors (Embick 2010).

Let us look at the Distributive Morphology approach as in Embick (2010). As both semantic and phonological factors contribute to the choice of a suffix, but neither of them completely predicts it, one cannot assume that the processing in this case has a serial architecture. Let us imagine that the processing is serial, following Distributed Morphology. Now let us imagine that a speaker is talking about something very precious and wants to express an affectionate meaning by attaching a diminutive affectionate suffix [-ik] to a noun. Let us suggest that for this noun, like for the [snʲik] wug from Section two (

Figure 3, Table 3), the phonologically preferred suffix would be [-ok], which is a diminutive pejorative suffix. However, the speakers' intentions are clearly affectionate, which requires [-ik]. Without competition of phonological requirements and semantic requirements (intentions), there is no way to explain the observed variation.

Now, let us suppose that there is some trading in semantic features for phonological well-formedness at the DIM node level. For example, let us consider the wug [snʲik] in the affectionate context.

Figure 5 illustrates possible structure.

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                    N
                   / \
                  N   DIM
                 / \   expr,aff
              snik   N
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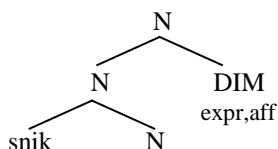
Figure 5. Possible structure of a [snʲik] affectionate diminutive form.

In case of forced choice test as in Section 3.2, only suffix [-ik] satisfy both features of the DIM node: {+expressive} and {+affectionate}. The [-ok] suffix bears {+expressive, +pejorative} and [-t͡ɕik] is {−expressive}. Then, the more specific affectionate feature may be traded for phonological well-formedness in a way to keep more general {+expressive}, despite the fact that pejorative nuance is actually right opposite to the speaker's original intention. The experimental data (see 2.2) support this analysis – the neutral [-t͡ɕik] suffix is not used as a first option instead of [-ik] or [-ok], although one could expect it for semantic/pragmatic reasons. The trading goes mostly between [-ik] and [-ok] suffixes.

This predicts more competition goings inside the {+expressive, + affectionate} group of suffixes if more than one suffix is available. (Let us recall that the [-ok, -ik, -t͡ɕik] suffixes were previously considered non-expressive, as opposed to the many expressive diminutive suffixes that exist in Russian.) The forced choice test as in Section 3.2 does not provide participants with other affectionate or pejorative suffixes. However, it can be extended to test the above analysis. If I add an affectionate suffix that would make a phonologically well-formed diminutive to the choices, based on the above analysis, I expect that the pejorative [-ok] will not appear in affectionate context. If it still appears considerably often, I would suggest that the above analysis is wrong.

3.2 Competition

While Distributed Morphology focuses more on the internal structure of words, the Competition approach sheds light on the origins of pseudo-allomorphy. It assumes that suffixes compete for realization in a changing language environment (Aronoff 2016). According to this approach, there is no stable grammar either for the majority of speakers or for an individual speaker. Individual units

of language are in competition with each other and observed regularity (i.e., complementary distribution) is a result of a competition on a particular field of play. A competition can be resolved in two ways: by *extinction*, when one of the suffixes completely (or almost completely) loses productivity, or by *differentiation*, when one of the suffixes (if there are two) becomes specialized in meaning or distribution.

The case of the non-expressive diminutive pseudo-allomorphs follows this pattern precisely. Each of the three Russian masculine diminutive suffixes [-ok, -ik, -t͡ɕik] has particular properties (i.e., phonological preferences and nuances in meaning) which make it easier for each suffix to attach to a noun from a group that fits these properties. Normally, there is variation on the borders of these fields of influence, where some of the preferences overlap. This is predicted by the model of Gouskova et al. (2015) and observed (by them) in the corpus data and experimental data when using real established nouns. (The experimental data, showed more variation – see Gouskova et al. 2015: 17 and 25.) However, change in the language (like massive borrowing from English) affects the environment for the diminutive suffixes and results in changes in their distribution and then preferences. At the present moment we have the opportunity to observe in real time a realignment due to the technology boom and massive borrowing from English. The [-ok] suffix is losing productivity dramatically in spoken language compared to the written corpus (see Gouskova et al. 2015 for corpus study and Section 2.1 for spoken language) while the [-t͡ɕik] suffix attaches to new borrowings and largely expands. At the same time with losing productivity, the [-ok] suffix gained a pejorative tone. Therefore, both predicted processes, differentiation and extinction, take place. This fits perfectly with the claims in Aronoff (2016).

An unsolved problem for the competition approach is the formalization of the competition field: how close should the units be in order to undergo competition. In Aronoff (2016), the condition for the competition is strict synonymity (i.e., sharing all the features and distribution). The present work shows that even not completely synonymous suffixes may be in competition.

4   Conclusion

In this paper I have demonstrated, based on the example of Russian diminutive suffixes [-ok, -ik, -t͡ɕik], previously considered to be allomorphs, that phonologically conditioned distribution of suffixes does not imply allomorphy. I call phonologically conditioned but semantically different affixes pseudo-allomorphs. I suggested a structural analysis for this kind of suffixes that involves trading semantic features for phonological well-formedness. This analysis predicts that more specific features (i.e., affectionate) may be traded in for a suffix that satisfies more general feature (i.e., expressive) even in case when 1) the suffix bears an opposite meaning (i.e., pejorative vs affectionate, both expressive) and 2) a neutral (non-expressive) suffix is available. In other words, the feature structure makes speakers produce a form that contradicts their intentions. This analysis should be further tested.

I also demonstrated that distribution of these suffixes in modern Russian is exactly predicted by the Competition approach (Aronoff 2016).

References

Aronoff, Mark. 2016. Competition and the lexicon. In *Livelli di Analisi e fenomeni di interfaccia. Atti del XLVII congresso internazionale della società di linguistica Italiana*. Ed. by A. Elia, C. Iacobino, and M. Voghera, 39–52.

Bates, Douglas, Martin Maechler, Ben Bolker, and Steve Walker. 2014. lme4: Linear mixed-effects models using Eigen and S4. R package version 1.1-7, URL: http://CRAN.R-project.org/package=lme4.

Embick, David. 2010. *Localism versus globalism in morphology and phonology*. Cambridge, MA: MIT Press.

Gouskova, Maria, Luiza Newlin-Łukowicz, and Sofya Kasyanenko. 2015. Selectional restrictions as phonotactics over sublexicons. *Lingua* 167: 41-81.

Kharchenko, Vera 2012. *Korpus detskih vyskazyvanij.* Moscow: Izdatel'stvo literaturnogo instituta im. Gor'kogo.

Kochetov, Alexei, and John Alderete, 2011. Patterns and scales of expressive palatalization: Experimental evidence from Japanese. *The Canadian Journal of Linguistics/La revue canadienne de linguistique*, 56(3): 345–376.

Ljashevskaja, Olga, and Sergei Sharov. 2011. *Chastotnyj slovar' sovremennogo russkogo jazyka (na materialakh Nacional'nogo korpusa russkogo jazyka)*. Moscow: Azbukovnik.

Magomedova, Varvara. 2013. Lingui-Pingui script collection for linguistic search, Ms., St. Petersburg State University URL https://linguistics.stonybrook.edu/students/varvara.magomedova.

Magomedova, Varvara, and Natalia Slioussar. 2015. Stem-final consonant mutations in modern Russian. In *Proceedings of FASL 24,* ed. Yohei Oseki, Masha Esipova and Stephanie Harves. Michigan Slavic Publications.

Polivanova, Anna.1967. Obrazovanie umen'shitel'nyx suschestvitel'nyx muzhskogo roda. In *Russkij jazyk v natsional'noj shkole*. (reprinted in Anna K. Polivanova, 2008. *Obschee russkoe jazykoznanie: Izbrannye raboty*, volume 4. Moscow: RGGU).

R Development Core Team. 2013. R: A language and environment for statistical computing. Vienna, Austria. URL: http://www.R-project.org.

Ushakov, Dmitrij, and Tat'jana Nikitina. 2009. *Bol'shoj tolkovyj slovar' sovremennogo russkogo jazyka: 180000 slov i slovosochetanij.* Moscow: Al'ta-print.

Vinogradov, Viktor. 1972. *Russkij jazyk: Grammaticheskoe uchenie o slove*. Moscow: Vysshaja shkola.

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