



A word-based approach to Russian derivational morphology with the suffix {+κ(a)}

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Abstract

In Russian, there are derivational suffixes which are distinguished by the uniform manner in which they form surface words. These suffixes keep the same phonological/orthographic composition and are found with surface words derived only from a particular base, as seen with {+тель} and {+ость}.

However, the suffix {+к(a)} displays more complexity than the suffixes above. While the Item-and-Arrangement morphemic approach seems acceptable when morphemes are organised in a linear arrangement, such as *демократ* /demokrat/ ‘democrat (m.)’ > *демократка* /demokratka/ ‘democrat (f.)’, this approach cannot be generalised over other coinages due to the mismatch of the following: 1) the orthographic correspondence as illustrated by *болгарин* /bolgarin/ ‘Bulgarian (m.)’ > *болгарка* /bolgarka/ ‘Bulgarian (f.)’; and 2) the semantic relatedness as found with *вода* /voda/ ‘water’ > *водка* /vodka/ ‘vodka’.

Moreover, the formation of this suffix possibly differs from other counterpart suffixes that denote similar functions/meanings. For instance, this suffix expresses the diminutive meaning as found by *дед* /ded/ ‘grandfather’ > *дедка* /dedka/ ‘grandfather (dim.)’. However, the majority of suffixes that denote diminutiveness are masculine, such as {+ок} (*город* /gorod/ ‘city’ > *городок* /gorodok/ ‘small city’); {+ик} (*дом* /dom/ ‘house’ > *домик* /domik/ ‘small house’); {+чик} (*роман* /roman/ ‘novel’ > *романчик* /romanchik/ ‘small novel’), etc.

One of the outcomes of this study is a contribution to the debate on morphological models from a morphological perspective only. Other approaches (e.g. psycholinguistics, frequency of occurrence, corpus-based study, experimental-based study, and prototype-radial model) are employed to determine which model describes the word formation process in Russian. I identify the correlation of productivity of {+к(a)} with its mental representation and frequency factor. Also, I demonstrate the effect of relative frequency on coinages of {+к(a)} using corpus materials. The reaction time of native speakers is tested to evaluate whether coinages of {+к(a)} are mentally perceived according to storage or compositional process. Finally, I provide a new look at the semantic distribution of {+к(a)} based on ‘prototype theory’ which connects multiple meanings/functions of {+к(a)} according to ‘family relatedness’ concept.

My data on {+к(a)} come from a variety of sources, such as dictionaries, corpora, and an online experiment. I make use of data from a number of Russian dictionaries to ascertain the scope of use of this suffix and provide information on its semantics. Corpora data, however, constitute a more representative source of modern language usage, and I use them to assess the importance of frequency of occurrence. Finally, I employ experimental data to test whether the cognitive perception of native speakers supports a single-route account of word-formation.

The suffix $\{+\kappa(a)\}$ has a substantial influence in Russian since it provides a multiplicity of semantic meanings. It is used in forming a larger number of words compared to other suffixes. Its formation includes a variety of linguistic phenomena which are associated with word formation process (e.g. additive morphology, subtractive morphology, allomorphy, and mutation). This complexity requires explanation. After providing such an explanation and comprehensive details about suffixation in Russian, it will be argued that $\{+\kappa(a)\}$ can serve as an appropriate tool in order to assess the performance of models of word-formation; it is therefore used to test our hypotheses.

I find that the word-based approach represented by the Word and Paradigm (WP) gives a more convincing explanation of linguistic phenomena associated with $\{+\kappa(a)\}$ and offers a better explanation for the description of $\{+\kappa(a)\}$ than other approaches, particularly a morpheme-based approach represented by the Item and Arrangement model (IA) or a process-based approach represented by the Item and Process model (IP).

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Abbreviations

AL Allomorphy	M Mean
AML Analogical modelling of language	MS Mean Square
ARC Araneum Rossicum Corpus	N Noun
BB1 Blood brother	RF Russian Federation
BB2 Big brother	RNC Russian National Corpus
BL Brother-in-law	RT Reaction time
C Concreteness	S Substantivisation
CNC Czech National Corpus	SEM Standard Error Mean
D Diminutiveness	SPR Self-paced reading
DF Decomposable frequency	SR Single-route account
DR Dual-route account	SD Standard Deviation
DRT Difference in reaction time	T Truncation
ETM Eye-tracking movement	TiMBL Memory Based-Learner
HB Half-brother	WF Whole-word frequency
IA Item and Arrangement	WFRs Word Formation Rules
ICM Idealized Cognitive Model	WP Word and Paradigm
IP Item and Process	
LB Lay brother	

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1 Chapter: Introduction

1.1 Overview of the study

The Russian language has undergone significant changes and developments over the centuries, which can be seen in word formation. Scholars have acknowledged this process by saying that “thanks to word-formation, the vocabulary is being continuously enriched” (Unbegaun 1957: 33). As stated by Ryazanova-Clarke (1999: 169), word formation has accounted for “about 85 per cent of new forms, while semantic neologisms have accounted for only about 8 per cent and loans for about 7 per cent”. If someone wishes to understand the developments in Russian, s/he must therefore go beyond the study of loan words and examine word-formational morphology.

However, the above process has been a much disputed subject within highly inflected languages, amongst which is Russian. Various morphological models (e.g. IA (Item and Arrangement); IP (Item and Process); and WP (Word and Paradigm)) have been devised to explain the diverse characteristics of different languages. Scholars (e.g. Bloomfield 1935; Matthews 1972; Bybee 1985; Corbett and Fraser 1993; Katamba 1993; Beard 1995; Bubeník 1999; Antić 2010) have posited that certain languages like Turkish with its agglutinative characteristics fit adequately the description of the IA model, whereas English and Russian with their regular usage of inflecting/derivational elements seem better described by the WP model. Therefore, a specific morphological model is associated with certain languages, because their features are in line with that model better than others. However, in order for any one model to be ‘universal’, it has to work for all languages. Although my research will not study all languages, it will evaluate the various models against Russian data containing the suffix {+κ(a)}, in order to determine which model *is generally more satisfactory* (i.e. not just for Russian) in comparison with models that fail to cope well with the Russian data. In other words, if there are three models, and models 1 and 2 cannot handle the Russian data with the suffix {+κ(a)} satisfactorily, then I hypothesize that model 3 is the most adequate, because it is the only one ‘left standing’.

This thesis comprises the following chapters: This chapter introduces the main topic and the importance of word formation process in Russian. This gives a glimpse into how derivational morphology is crucial in coining novel words. It enriches the lexical stock of Russian with new surface words used in multiple applications. Chapter 2 reviews a range of morphological approaches and tries to identify the most convincing one with which to describe the morphological structure of words with the suffix {+κ(a)}. Chapter 3 examines the relationship observed between the productivity of the suffix {+κ(a)} in coining surface words, its mental

realisation, and the frequency factor. This correlation illustrates how the cognitive realisation of $\{+\kappa(a)\}$ is supported by a certain mental account in its description. Chapter 4 aims to discover whether the coinages of $\{+\kappa(a)\}$ are mostly influenced by a certain level of relative frequency. Each level assumes a different description in terms of words' decomposition and processing. Chapter 5 establishes the difference of processing time of surface words with $\{+\kappa(a)\}$ in line with two levels of relative frequency. It seeks to show whether surface words with whole-word frequency level respond faster to their base lexemes than words with decomposable frequency. If yes, this makes coinages of $\{+\kappa(a)\}$ closer to be described by the single-route account. Otherwise, they can be described by the dual-route account. Chapter 6 discovers whether the heterogeneity of meaning and the polysemy of $\{+\kappa(a)\}$ require different treatments by morphological models. Also, this chapter seeks to identify new semantic meaning/submeanings for this suffix, as a result of which I propose that the semantic schema of $\{+\kappa(a)\}$ is better described by 'prototype theory'; radial categories are involved in organising the relatedness of multiple meanings/submeanings to the main prototype. Finally, chapter 7 presents the main findings, recommendations and constraints found in this thesis.

1.2 Research question

In my introduction I explained that the main research question I will attempt to answer in this thesis is: which of the morphological models commonly proposed gives the best account of the data I have on the Russian suffix $\{+\kappa(a)\}$? Each chapter addresses a further related research question indicating various angles of analysis and discussion; they are presented as follows:

1. Which model seems most adequate to classify surface words with $\{+\kappa(a)\}$ as to their morphological source (base lexeme), and which model is most adequate to cover the whole picture of word formation in Russian, which has a highly complex morphological system and rules?
2. Which mental account (a single- or dual-route account) most satisfactorily explains the coinages of the suffix $\{+\kappa(a)\}$? Does the frequency factor have an interaction with the mental accounts, and is there any contrast in accessing and processing words, depending on whether words are frequent or not?
3. Which level of relative frequency is highly represented in the coinages of $\{+\kappa(a)\}$? Is this suffix closer to being described by a morpheme-based or word-based approach?
4. Does processing/memorising words with $\{+\kappa(a)\}$ reflect a difference in word's relative frequency? In other words, does one level of the relative frequency require less/more time in processing than the other one?

- What constitutes an adequate semantic description of $\{+\kappa(a)\}$ in Russian? How well does the old Russian taxonomic approach to semantics of suffixation explain the data compared to the modern view of ‘cognitive semantics’, which organises the semantic meanings of $\{+\kappa(a)\}$ according to their internal connection and relatedness with each other?

1.3 Aims and objectives

The main aim of this research work is to discover which morphological model can yield better explanation and description of the word formation process of the suffix $\{+\kappa(a)\}$ in Russian. Each chapter has its own aims and objectives which are presented as follows:

- I start by comparing the three models. As a result of this comparison, I show that WP model seems most suited to be utilised in the morphological classification of surface words to their base lexemes. This approach can handle the data I have collected on lexemes with $\{+\kappa(a)\}$, including places where other approaches exhibit difficulties in dealing with the data.
- In representing the workings of the productive suffix $\{+\kappa(a)\}$, I need to take account of frequency in showing how storage and composition work. My research investigates whether a classic dual-route account will work for derivation in Russian. Having examined the data, I show why single-route account might be better in describing the mental representation of this suffix. This conclusion is based on the fact that the latter account leads to create more types, this explains why the above suffix is productive in Russian. However, the former account seems to be unproductive since the speaker requires more time to spend in processing/producing words due to its prior discrimination to process/produce forms whether they are regular or irregular.
- I aim to show how the effect of relative frequency level can yield different outcomes on coinages of $\{+\kappa(a)\}$. Also, I seek to demonstrate that a corpus enquiry conducted using words with $\{+\kappa(a)\}$ can show effects influenced by the whole-word frequency level. This entails that surface words are recognised and processed as one indivisible unit. This does not allow me to decompose a word into multiple independent morphemes.
- I hypothesise that surface words of $\{+\kappa(a)\}$ with whole-word frequency require less time in processing in line with their base lexemes, while surface words with decomposable frequency take more time in processing to their base lexemes. This hypothesis is based on the fact that if some words are realised as one unit and others are involved in a compositional process, then I may expect the reflection of the latter can be processed/found in longer reaction times. Thus, I argue that surface words with whole-word frequency promote quick comprehension, and they require less time in processing in relation to their base lexemes. However, surface words with decomposable frequency are thought to generate a greater

demand on processing memory resources. Therefore, memorising them requires higher processing load or difficulty in line with their base lexemes.

5. I argue that, based on the data I have seen, WP remains the only model able to deal with the heterogeneity of meaning and polysemy of $\{+\kappa(a)\}$. This approach treats the coinages of $\{+\kappa(a)\}$ on the level of the word itself rather than as a morpheme or a process. Also, I predict that new semantic meanings/sub-meanings of $\{+\kappa(a)\}$ are more easily explained in this analysis. I will use a variety of data types, including corpus data, to identify these new meanings. I will show that their distribution cannot be satisfactorily explained through the old cognitive approach (the structuralist classification). Instead, I will propose using the ‘cognitive semantics’ approach with its radial categories, which link these meanings/sub-meanings based on the closeness of fit of a meaning to the main prototype.

1.4 Method

Numerous materials and resources are used in multiple analyses which reflect how this research work have been conducted. These resources are as follows:

- Morphological handbooks.
- Scholarly literature.
- ‘Obratnyi slovar’ (1974) - a retrograde dictionary of Russian.
- ‘Sovremennyi tolkovyi slovar’ russkogo yazyka’ (Efremova 2000). The most updated dictionary in the contemporary Russian language.
- The Russian National Corpus (RNC).
- The Araneum Rossicum Corpus (ARC) which seems to be the most appropriate source in analysing the implication of relative frequency factor on coinages of $\{+\kappa(a)\}$.
- A self-paced reading experiment.

1.5 Theoretical background of morphological models

The need to explain the diversity of morphological features across languages has led morphologists to devise models that fall into three basic types in the ways they treat word formation. These models, which will be discussed in more detail in the next chapter, are as follows:

Item and Arrangement: The IA model assumes that a word consists of morphemes. In these morphemes, either the form is paired with meaning or their meaning is compositional. This means that they have isomorphic meaning with their morphological structure (e.g. Bloomfield 1933, 1935; Nida 1946; Hockett 1954; Aronoff 1976; Beard 1995; Marantz 2013).

Item and Process: The IP model does not consider affixes as items. Instead, it deals with them as markers of a certain process occurring on the root, stem, or word. Accounts of Matthews (1974) and Anderson (1992) define roots/stems of related words as units. By contrast, they are not in the accounts of Aronoff (1976) and Stump (2001) in which the whole word, whether as input or output, is given this status.

The structure of this model implies using abstract morphemic rules that are realised by actual morphs. The IP model is typically associated with generative models in which morphology is a feature of word-formation or syntax, so they are not word-based in the same way that WP is. The reason IP models are said to be ‘word-based’ is that they allow researchers to take account of the entire word when constructing forms because they are not viewed as ‘linear’ in the way that IA models are.¹

Word and Paradigm: The essence of the WP model is based on traditional features that allocate a central role in the process of word formation to the word. At the same time, emphasis is given to other forms of the paradigm, so that the individual elements attached to the main paradigm of the word, such as affixes, are clearly observed. The above model relates the word form to the paradigm, and thus the morpheme is always ‘created’ (its meaning and function inferred) from the totality of forms constituting the paradigm.

The character of the WP model is entirely non-linear and as yet it is opposed to the IA model. The WP model assumes that morphemes are identified as abstractions over a certain paradigm.² Hence, these morphemes are not units and they cannot be paired with meanings. Therefore, only words are paired with meanings. So the compositionality of the meaning is missing in this model as a word-based approach. Hence, this model only distinguishes between two essential components: the paradigm itself and its new derivative word (e.g. Bybee 1985; Fillmore 1988; Katamba 1993; Langacker 2002; Croft 2004; Fried and Östman 2005; Blevins 2006; Evans 2006; Goldberg 2006; Robins 2001; Booij 2012; Blevins 2016).

Each individual model differs from the others by making use of a distinctive feature. Firstly, the IA uses sequential morphemes in a linear model as the key element. Secondly, the IP assumes that each instance possesses a different form that need not correspond with other surface forms of a word, since each instance contains its own process. As a result, this leads to the creation of a variety of rules for multiple words. Lastly, the WP is one in which the word is

¹- I can account for ablaut as in *eat* > *ate* or changes involving nasality like *chumy* /snimu/ ‘to take off/down (first person form)’ > *чял* /snyal/ ‘to take off/down (singular past form)’ without writing complex rules governed by particular morphophonemic environments.

²- Robins (2001: 128) asserted that the morpheme representation in the WP obtains an abstract role over a paradigm and words associated with this paradigm, so that pairing the morpheme’s meaning with the form is not applicable, as found in the IA model and, to some extent, in the IP model.

considered to be the central point where allomorph, derivation, and inflection are widely presented.

This contrast of the characteristics of the above models results from the disparity of defining the status of unit among them. The IA model gives this status to each component of the internal structure, and so it treats its morphological unit as a small unit represented by a morpheme level. By contrast, in the IP model, the unit status is given to the words based on the notion of input and output. Its morphological unit is considered to be at the word level in some accounts; however, in others at the morpheme level. Meanwhile, in the WP model, this status is given to the word level based on the notion of the paradigm and its new derivative form respectively. This means that the morphological unit is a whole component, whether it is a paradigm or a new surface word.

To conclude, this chapter has presented the main theme of this thesis. It has provided an introduction about word formation process in Russian. Also, a review of three morphological models has been provided. Later, multiple analyses will be conducted reflecting various points of views to explore how data with the suffix {+κ(a)} can yield multiple outcomes with respect to word formation process in Russian. I will start with morphological analysis since morphology interacts with phonological, syntactic and semantic dimensions of a given word. It connects all of these linguistic parts and constitutes the starting point for that interaction.

2 Chapter: Morphological analysis of words with the suffix {+κ(a)}

2.1 Introduction

In this chapter, I will present some of the problems that the suffix {+κ(a)} presents for accounts of morphological structure. I will do so using *morphological analysis*. Morphological analysis is a linguistic technique that investigates the morphological structure of a word. It provides an explanation of the participation of different components in forming a given word, and how a new production is linked to a given morphological model. Also, this analysis can be used to classify words according to their base which might be a noun, a verb, an adjective, etc. (Shanskii 1968: 11).

I require a viable account for instances where the surface form exhibits: 1) multiplicity of potential bases; 2) semantic/orthographic match with the base; and 3) heterogeneity of form/meaning correspondence. Debates over how to represent word formation have led to proposals that favour a linear morphemic approach, a rule- or process-based approach, and a word-based approach. The linear morphemic approach seems acceptable when morphemes are organised in a linear arrangement as it facilitates the identification of the base form. However, this approach cannot be generalised over other formations due to specific reasons which will be discussed in more detail in Section 2.4.2.1.

Hence, I will argue for a word-based approach in this classification. This approach utilises the following criteria: 1) the base form is usually closely semantically related to the surface form; however, it can account for counter-examples in which significant semantic differences appear; and 2) a surface form is generated by similarity to other surface forms stored in memory; sometimes the relationship between the base form and the surface form is one of extension and sometimes the relationship is more complex (what might in other approaches be termed subtractive morphology, mutation, or allomorphy). This chapter therefore seeks to demonstrate the validity of the word-based approach in classifying words that contain the above suffix. This provides support for my main hypothesis, because the word-based approach is regarded as a main pillar of the WP (Word and Paradigm) model.

This chapter contains four major sections.

Section 2.2 investigates an appropriate method for classifying words, and is divided as follows: 2.2.1 The complexity of classifying words; 2.2.2 Analysing complexity; 2.2.3 A proposed method of classifying words; 2.2.4 Constraints observed in the method; and 2.2.5 Support for the proposed method.

Section 2.3 explores various morphological bases for words with the morpheme {+κ(a)}. It contains the following sub-sections: 2.3.1 {+κ(a)} as a part of the word root; 2.3.2 Compound suffixes; and 2.3.3 Words containing the suffix {+κ(a)}.

Section 2.4 includes a discussion which highlights issues raised in this analysis. In section 2.4.1, I look at the complexity of formations with {+κ(a)}, then in section 2.4.2 I address the constraints found during forming words with {+κ(a)}. That raises the questions of whether some views of certain scholars can be rejected. I examine this in section 2.4.3. In section 2.4.4, a comparison arises via formations with {+κ(a)} which shows the pros and cons of three morphological models.

Section 2.5 contains the conclusion which summarises the most significant issues found in this analysis.

2.2 Investigation for an appropriate method

2.2.1 The complexity of classifying words

Tracing the base of a word is not a straightforward process in Russian since a word may have multiple possible bases. This causes confusion when trying to choose a specific variant over other potential variants.

For example, the word *гранка* /granka/ ‘small border, edge’ has various potential bases, such as *грань* /gran'/ ‘border, edge’; *гранить* /granit'/ ‘to cut’; and *граница* /granica/ ‘border, boundary’. Any of these can be a potential base for the word *гранка*. This causes uncertainty in affiliating this word to one of the above variants. Nevertheless, most explanations assign *грань* as the base form because *гранка* denotes the diminutive meaning of the former, so both the semantic and phonological correlation is found (Tolkovyj slovar' 1935 – 1940: 618).

Similarly, the word *лицемерка* /litseminka/ ‘hypocrite, dissembler (f.)’ might be linked to various variants, such as *лицемер* /litsemer/ ‘hypocrite, dissembler (m.)’; *лицемерить* /litsemeryt'/ ‘to hypocrite, dissemble’; and *лицемерный* /litsemernyi/ ‘hypocritical’. All three variants could serve as suitable base words from which the word *лицемерка* could be derived. Nonetheless, the variant *лицемер* is typically assessed as the most appropriate base form for the above word (*лицемерка*), due to the semantic identity and the simplicity of morphological operations involved (Akademicheskii slovar' 1958: 257). Interestingly, the multiplicity of morphological bases is identified by Hathout (2014: 184) under the concept of ‘Lexical under-marking’. This concept assumes that a certain derivative word might obtain multiple possible bases, as exemplified by *localize* which can potentially be related to *local*, *locality*, or *location*.

A specific root in multiple surface forms can be linked to the same morphological base regardless of having different affixes, as illustrated by the word *краска* /kraska/ ‘painting,

dyeing' which originated from the verbal basis, that is *красить* /krasit'/ 'to paint, dye'. Other surface forms, which have the same root {+крас+}, possibly originate from similar verbal bases, such as *покрасить* /pokrasit'/ 'to paint, dye' > *покраска* /pokraska/ 'paint, dye'; *закрасить* /zakrasit'/ 'to paint over, begin to paint' > *закраска* /zakraska/ 'painting over, start painting'; *подкрасить* /podkrasit'/ 'to tint, colour, touch up' > *подкраска* /podkraska/ 'tint, colouring, touching up'; *окрасить* /okrasit'/ 'to stain' > *окраска* /okraska/ 'staining'; *докрасить* /dokrasit'/ 'to finish painting' > *докраска* /dokraska/ 'finish painting'; *прокрасить* /prokrasit'/ 'to paint over, cover with paint' > *прокраска* /prokraska/ 'painting over, covering with paint'; *выкрасить* /vykrasit'/ 'to paint, dye' > *выкраска* /vykraska/ 'painting, dyeing'; and *раскрасить* /raskrasit'/ 'to colour' > *раскраска* /raskraska/ 'colouring'.

The word *носка* /noska/ 'carrying' has been formed from the verbal base found in *носить* /nosit'/ 'to carry'. Other derivative words, which share the same root {+нос+}, possibly can be linked to similar verbal bases, as is the case for *вносить* /vnosit'/ 'to carry in' > *вноска* /vnoska/ 'carrying in'; *подносить* /podnosit'/ 'to carry up' > *подноска* /podnoska/ 'carrying up'; *переносить* /perenosit'/ 'to transport, transfer' > *переноска* /perenoska/ 'transporting, transferring'; *разносить* /raznosit'/ 'to deliver/distribute' > *разноска* /raznoska/ 'delivery, distribution'; *ноносить* /ponosit'/ 'to carry for a while' > *ноноска* /ponoska/ 'carrying for a while'; *сносить* /snosit'/ 'to pull down, take down' > *сноска* /snoska/ 'pulling down, footnote'; *относить* /otnosit'/ 'to carry away/off' > *относка* /otnoska/ 'carrying away/off'; and *выносить* /vynosit'/ 'to carry out/away, take out/away' > *выноска* /vynoska/ 'carrying out/away, taking out/away'.

Words with an identical root {+брос+} and different prefixes can belong to the same verbal base, as shown by *забросить* /zabrosit'/ 'to throw' > *заброска* /zabroska/ 'throwing'; *подбросить* /podbrosit'/ 'to throw up' > *подброска* /podbroska/ 'throwing up'; *перебросить* /perebrosit'/ 'to throw over, transfer, shift' > *переброска* /perebroska/ 'throwing over, transfer, shift'; *разбросить* /razbrosit'/ 'to scatter' > *разброска* /razbroska/ 'scattering'; *сбросить* /sбросит/ 'to throw down, drop' > *сброска* /sbroiska/ 'throwing down, dropping'; *отбросить* /otbrosit'/ 'to throw back/off' > *отброска* /otbroska/ 'throwing back/off'; and *выбросить* /vybrosit'/ 'to throw out, reject' > *выброска* /vybroska/ 'throwing out, rejection'.

On the other hand, words sharing the same root might have differing base forms. In other words, having the same root in multiple surface words does not impose the requirement that all of them should belong to a similar morphological source. This is illustrated by the following words: *закладка* /zakladka/ 'laying, filling'; *закладочка* /zakladochka/ 'small filling'; and *кладовка* /kladovka/ 'small pantry', which perhaps originate from different bases despite

sharing the same root: {+клад+}. The first is related to a verbal base and expresses the action meaning of the verb *закладывать* /zakladывать/ ‘to lay, put, fill’. Meanwhile, *закладочка* belongs to the nominal base *закладка* and denotes its diminutive meaning, whereas *кладовка* is connected to the adjectival base *кладовой* /kladovoi/ ‘pantry, store’ and denotes its diminutive meaning. There are still the examples of *милка* /milka/ ‘beloved, sweetheart’; and *милочка* /milochka/ ‘dear, darling girl’. These words despite having the same root {+мил+}, differ with respect to their morphological base word. The first one belongs to the adjectival base *милый* /milyi/ ‘nice, lovely, sweet’ which expresses a similar meaning to its base form, while the second one has a denominal base *милка* which denotes its affectionate meaning.

2.2.2 Analysing complexity

Tracing the base form seems problematic, especially with the multiplicity of morphological sources. What thus leads language users to choose the word *грань* /gran'/ as an appropriate base for the word *гранка* /granka/ over e.g. *гранить* /granit'/, and *граница* /granica/? Or, as seen earlier, what is the reason for determining *лицемерка* /litsemmerka/ to be morphologically affiliated with *лицемер* /litsemmer/ despite the fact that other words, such as *лицемерить* /litsemmerit'/, and *лицемерный* /litsemernyi/ seem suitable sources for the above word? Similarly, why is it that words that share an identical root, such as *краска* /kraska/, *покраска* /pokraska/, *закраска* /zakraska/, *подкраска* /podkraska/, *окраска* /okraska/, *докраска* /dokraska/, *прокраска* /prokraska/, *выкраска* /vykraska/, and *раскраска* /raskraska/; *носка* /noska/, *вноска* /vnoska/, *подноска* /podnoska/, *переноска* /perenoska/, *разноска* /raznoska/, *поноска* /ponoska/, *сноска* /snoska/, *относка* /otnoska/, and *выноска* /vynoska/; and *заброска* /zabroska/, *подброска* /podbroska/, *переброска* /perebroska/, *разброска* /razbroska/, *броска* /sbroiska/, *отброска* /otbroska/, and *выброска* /vybroska/ belong to the same (verbal) base despite differing prefixally? Conversely, other words share the same root, such as (*закладка* /zakladka/, *закладочка* /zakladochka/, and *кладовка* /kladovka/); and (*милка* /milka/, and *милочка* /milochka/), and yet they differ in their base.

We need to discover a straightforward method which offers solid criteria to affiliate surface words to their morphological base. This method should enable researchers to explain any divergence and match in terms of phonology and semantics between derivative words.

2.2.3 A proposed method of classifying words

The semantic connection can be a crucial factor in tracing the morphological base of derivative words. This notion is supported by Bybee (1985: 13) and her proposal of the concept of ‘relevance’ in her account of Network Morphology, which she defines as follows: “A

meaning element is relevant to another meaning element if the semantic content of the first directly affects or modifies the semantic content of the second". Rastle and Davis (2008: 943) also indicate that the morphological structure is guided by semantic knowledge. This supposes that word structure is generally viewed within the context of semantic meaning.

The semantic connection might offer a solution in choosing a specific word class to be regarded as a base lexeme for a certain surface word despite having multiple potential base forms. This gives an accurate explanation as to why, for example, the word *гранка* has been derived from the word *грань*, and yet not from *граничить* or *граница* as explained earlier. Also, why the word *лицемерка* has been derived from *лицемер* and not from either *лицемерить* or *лицемерный?*

It is logical that words sharing the same root, such as *краска*, *покраска*, *закраска*, etc.; *носка*, *вноска*, *подноска*, etc.; and *заброска*, *подброска*, *переброска*, etc. belong to the same verbal base, since all of them denote the action meaning of their base word (the verb). Conversely, other words that share the same root, such as *закладка*, *закладочка*, and *кладовка*, as well as *милка*, and *милочка* differ as to their morphological base. This is explained by the disparity of meaning/function by which they are linked to the base word. For example, *закладка* has a verbal base (*закладывать*) because it expresses the action meaning of the latter (Tolkovyj slovar' 1935 – 1940: 946), whereas *кладовка* belongs to an adjectival base *кладовой* because it provides the diminutive meaning of the latter (Tolkovyj slovar' russkogo jazyka 1995: 270). Similarly, *милка* has an adjectival base because its meaning is so close to *милый* (Tolkovyj slovar' 1935 – 1940: 213); and *милочка* possibly belongs to a nominal base since its meaning denotes the affectionate meaning of *милка* (Akademicheskii slovar' 1958: 369).

2.2.4 Constraints observed in the method

Classifying related words based on semantic correlation seems practical when attempting to match surface words with their morphological base. However, controversy arises with surface words which have diverged in meaning from their base. Consequently, it is questionable how someone can trace the source of these words. For example, *описка* /opiska/ ‘error, erratum’ has a verbal base as found in *описать* /opisat'/ ‘to present, describe’; however, it does not express any semantic connection to the latter. Similarly, the word *белка* /belka/ ‘squirrel’ possibly originated from the base of *белый* /belyi/ ‘white’, and yet it does not share semantic elements with the latter.

Miceli and Caramazza (1988: 25) point out that the word meaning may be subject to alteration while derivation is taking place. Similarly, Shanskiĭ (1968: 144) notes that the relationship between the parent and derivative stem can be subject to disruption, with the

derivative word ceasing to relate to its parent stem in meaning. Shanskiĭ cites words like *красный* /krasnyi/ ‘red’ and *рабома* /rabota/ ‘work’ which can reflect this disruption. These examples express different meaning compared to their origins which are *краса* /krasa/ ‘beauty’ and *раб* /rab/ ‘slave’. This heterogeneity of meaning led some scholars, such as Jacob, Fleischhauer and Clahsen (2013: 930) to argue that “morphological facilitation cannot be explained in terms of the convergence of semantic and orthographic/phonological codes”.

How do I decide that *описка* originated from *описать*; *белка* from *белый*; *красный* form *краса*; and *рабома* from *раб* despite the fact that the semantic connection is lost? To explain this, the word-based approach hinges on a paradigmatic relationship between the paradigm itself and its forms. This relationship is not only represented by the semantic correlation, but is also seen by the phonological similarity that exists between the base and surface form. This approach presupposes that the semantic and phonological correspondence can be violated between related words (the surface word and its base lexeme). However, they still correspond to each other by the virtue of the following paradigmatic formula/pattern: [X] > [X_a]. This possibly explains why the above words are morphologically linked to words which differ in meaning.

Multiple works dedicated to examining the processing of morphological material by readers help to describe the relationships between related words. For example, McCormick, Rastle, and Davis (2008: 308) point out that word recognition is stipulated by morpho-orthographic and semantic connections. The former can be regarded as the reflection of the early stage of visual word processing, while the latter is used to reflect the central semantic component accessed later in processing. Thus, in written language, recognizing a base form is associated with two factors: 1) morpho-orthographic; and 2) semantic connection.

In particular, scholars (e.g. Rastle et al. 2000; Longtin, Segui, and Halle 2003; Rastle and Davis 2003; Boudelaa and Marslen-Wilson 2004; Longtin and Meunier 2005) have emphasized the morpho-orthographic factor, stating that associating derivative words with their base relies on the accessibility of morphological surface structures. For example, Rastle and Davis (2008: 942) consider visual word processing to be involved in word recognition, such as *safe* > *safety* > *unsafety*. The earliest theoretical approach (Taft and Forster 1975) proposed that morphological decomposition is achieved by analysing sublexical orthographic data. This approach thus is based on a morpho-orthographic notion; it assumes that a visual lexical connection plays an essential role in the linking process whether there is semantic relevance, such as *dark* > *darkness* or pseudo-morphological relatedness in particular *corn* > *corner*.

However, it is not at all obvious that there is a semantic link between *corn* > *corner* just there is a visual identity in the root of these words. By contrast, Antić (2010: 21) mentions that only

a word-based model is suitable for “representing a word with identical parts, but different overall meaning”. This would explain why derivative words may diverge in meaning with their base words. Also, it becomes obvious why scholars, such as Shanskiĭ (1968: 6) posit that a correct and precise assignment of a morphological structure is impossible without taking into account either the phonological or semantic correlation between the parent and derivative stem. This correlation is a fundamental principle in classifying words as to their morphological source.

2.2.5 Support for the proposed method

Semantic correlation plays a pivotal role in linking new surface words to their morphological base. This point has been emphasized by Vinogradov (1951: 9) who considered the possibility of associating a certain word with its morphological base to be dependent in many cases upon the semantic property of that word. This facilitates tracing the source of a certain derivative word by relying on the semantic association with its base word.

Also, Rastle, Davis, and New (2004: 1091) indicate that the latest theories of morphological processing have embraced the conceptualization of morphology (e.g. Marslen-Wilson and et al. 1994; Rueckl and Raveh 1999; Giraudo and Grainger 2000; Plaut and Gonnerman 2000; Davis, van Casteren, and Marslen-Wilson 2003; Gonnerman, Seidenberg, and Andersen 2007). This concept suggests that lexical representations interact with morphemic constituents of complex words when a semantically transparent relationship exists between the base and surface word. Therefore, complex words with *semantically transparent* features can be observed if the meaning of the complex form results from the meaning of their constituents (e.g. the meaning of *nucамель* /pisatel'/ ‘writer’ is derived from morphemic elements of *nuca[mъ]* /pisat'/ ‘to write’ plus *mель*).³ Complex words can also have a *semantically opaque* relationship if they are not related to their constituent meaning (e.g. the meaning of the word *ониска* ‘error, erratum’ is not related to its constituents meaning: *onuc[amъ]+ка*).

A ‘Network Morphology’ account proposed by Bybee (1985) can be another way to manifest the association of meaning and form. Derivative words are connected to their base words; this connection is manifested in two ways: semantically and phonologically. When this connection parallels in a word, it is easy to identify the identical semantic and phonological parts of a word and this connection may be used as a tool to see the level of strength between the base and the derivative word as shown by *nucамель*. The concept of ‘degree of relatedness’

³- The nominal agent of the verb is not created from the form *nucамь* here, but rather the activity represented by the stem {пис-а-}. Subsequently, the meaning/function of the suffix {+тель} is derived from the meaning of the base form.

is used by Bybee (1988: 126) to characterize how closely words are connected. Other accounts like ‘Paradigm Function Morphology’ (Stump 2001); ‘Extended Word and Paradigm’ (Anderson 1982); and ‘Construction Grammar’ (e.g. Fillmore 1988; Fried and Östman 2005; Croft 2004; Evans 2006; Goldberg 2006) share a similar concept. Their basic idea is to pair the form of a word in parallel with its meaning at a word level. Therefore, the semantic connection might be used as a tool to trace the morphological sequence of words during the word formation process.

2.3 Various morphological bases for words with the morpheme {+κ(a)}

I counted **7365** words formed with the morpheme {+κ(a)} in the *Obratnyi slovar'*. This figure is not solely derived from words where {+κ(a)} appears as the only derivational suffix. Compound suffixes (e.g. {+ашка}, {+очка}, {+овка}, etc.) and words in which the morpheme {+κ(a)} is an essential part of the stem, are included in the above figure. Since there was not an available electronic copy in order to extract data from the above dictionary, I have manually recorded the whole words ending in the morpheme {+κ(a)} in an Excel sheet format file and then annotated them according to the above three categories after checking the morphological relatedness between the base lexeme and its derivative form. So, each word has to be written manually, followed by an investigation of its morphological source in multiple Russian dictionaries, such as (e.g. Akademicheskii slovar' - Slovar' russkogo yazyka v 4 tomakh 1957, 1958, 1959, and 1961 ; Tolkovyi slovar' russkogo yazyka 1935 – 1940; Slovar' sovremennoi russkogo literaturnogo yazyka v 17 tomakh 1948 -1964; Tolkovyi slovar' russkogo yazyka 1949 – 1992; Ozhegov and Shvedova 1995; Efremova 2000). Later, I have annotated each category with different variables. For instance, I have allocated four variables (Noun, Adverb, Interjection, and Conjunction) for the first category above. These variables indicate the word class of words which {+κ(a)} is an essential part of their stem. In the second category, 12 variables are marked to indicate the multiplicity of compound suffixes which share the ending of {+κ(a)}. In the last category, I have annotated four main variables (Noun, Verb, Adjective, and Other parts of speech) representing the type of base lexeme which participate to form surface words with the suffix {+κ(a)}. Within each variable, I have allocated different values, such as ‘Simple formation’, ‘Truncation’, ‘Allomorphy’, ‘Mutation’, and ‘Compound formation’ to mark various phonological and morphological processes occurring while forming derivative words with the suffix {+κ(a)}. This procedure produced a detailed and structured work of data containing the above suffix. Consequently, a new comprehensive classification of these words based on three categories is introduced below.

2.3.1 {+к(a)} as a part of the word root

The sequence {+к(a)} may belong to the root of the word and would not be considered to be a derivational suffix. These words are considered non-derived words, e.g. *наука* /nauka/ ‘science’ in which {+к(a)} belongs to its root. I counted 98 such non-derived words; they can be divided into the following groups:

- 1- Nouns as exemplified by *аптека* /apteka/ ‘pharmacy’; *рука* /ruka/ ‘hand’, etc.
- 2- Adverbs as illustrated by *пока* /poka/ ‘for the present’; *нашармака* /nasharmaka/ ‘without paying’, etc.
- 3- Interjections as shown by *ну-ка* /nu-ka/ ‘now!/come!'; *эврика* /evrika/ ‘eureka!', etc.
- 4- Conjunctions as found only in *на-тка* /na-tka/ ‘here you are!'; and *эка* /eka/ ‘what!'.

2.3.2 Compound suffixes

The intuition of the speaker may not distinguish between words with the suffix {+к(a)} and other rival suffixes which share similar phonemic material. At first glance, when encountering words such as *блошка* /bleshka/ ‘small flea’ and *ладошка* /ladoshka/ ‘small palm’, the speaker may decide that these words contain only one suffix, {+к(a)}. However, this is not the case as the semantic and phonological correlation between the parent and derivative words shows that the former relates to the word *блока* /blokha/ ‘flea’ to indicate the diminutive meaning (Akademicheskii slovar' 1958: 116), while the latter contains an additional suffix {+ошка} and relates to the word *ладонь* /ladon'/ ‘palm’, denoting a diminutive of it (Tolkovyj slovar' 1995: 312). Words with compound suffixes that include {+к(a)} number 1456; these suffixes are divided into the following categories:

- 1- {+ашка/ешка/ёшка/ишка/ошка/ушка/ышка/юшка/яшка}: *болтун* /boltun/ ‘chatterer’ > *болтунишка* /boltunishka/ ‘small chatterer’; *борода* /boroda/ ‘beard’ > *бородушка* /borodushka/ ‘beard (dim.)’, etc.
- 2- {+ака/ока/ека/ёка/ика/йка/ука/ыка/юка}: *акробат* /akrobat/ ‘acrobat’ > *акробатика* /akrobatika/ ‘acrobatics’; *холод* /kholod/ ‘cold’ > *холодюка* /kholodyuka/ ‘very cold’, etc.
- 3- {+анка/енка/ёнка/инка/онка/янка}: *беглец* /beglets/ ‘fugitive (m.)’ > *беглянка* /beglyanka/ ‘fugitive (f.)’; *бумага* /bumaga/ ‘paper’ > *бумажонка* /bumazhonka/ ‘scrap of paper’, etc.
- 4- {+а}: *акустик* /akustik/ ‘sound technician’ > *акустика* /akustika/ ‘acoustics’; *механик* /mekhanik/ ‘mechanician’ > *механика* /mekhanika/ ‘mechanics’, etc.
- 5- {+лка/алка/олка/елка/илка/улька/ялка}: *зажигать* /zazhigat'/ ‘to light’ > *зажигалка* /zazhigalka/ ‘lighter’; *курить* /kurit'/ ‘to smoke’ > *курилка* /kurilka/ ‘smoking room’, etc.

- 6- {+ичка/ечка/очка}: *бомба* /bomba/ ‘bomb’ > *бомбочка* /bombochka/ ‘small bomb’; *дядя* /dyadya/ ‘uncle’ > *дядечка* /dyadechka/ ‘lovely uncle’, etc.
- 7- {+авка/ёвка/овка/ивка/явка}: *вор* /vor/ ‘thief (m.)’ > *воровка* /vorovka/ ‘thief (f.)’; *пошить* /poshit'/ ‘to sew’ > *пошивка* /poshivka/ ‘sewing’, etc.
- 8- {+енька/инька/онька/ынька}: *батя* /batya/ ‘dad/father’ > *батенька* /baten'ka/ ‘lovely dad/father’; *голова* /golova/ ‘head/mind’ > *головонька* /golovon'ka/ ‘lovely head/mind’, etc.
- 9- {+тка/атка/етка/ётка/отка/утка/ютка}: *танк* /tank/ ‘tank’ > *танкетка* /tanketka/ ‘small tank’; *роза* /roza/ ‘rose’ > *розетка* /rozetka/ ‘rosette’, etc.
- 10- {+арка/ерка/ёрка/орка/ирка/урка/юрка/ярка}: *дочь* /doch'/ ‘daughter’ > *дочурка* /dochurka/ ‘little daughter’; *этаж* /etazh/ ‘floor, storey’ > *этажерка* /etazherka/ ‘bookcase, shelves’, etc.
- 11- {+аска/еска/иска}: *одаль* /odal'/ ‘a little way away, aloof’ > *одалиска* /odaliska/ ‘odalisque’; *сосать* /sosat'/ ‘to suck’ > *сосиска* /sosiska/ ‘small sausage’, etc.
- 12- {+ёжка/яжка}: *зубрить* /zubrit'/ ‘to cram’ > *зубрёжка* /zubryozhka/ ‘cramming’; *портной* /portnoi/ ‘tailor’ > *портняжка* /portnyazhka/ ‘little tailor’, etc.

2.3.3 Words containing the suffix {+к(a)}

Surface words containing the suffix {+к(a)} number 5811. These words vary with respect to their morphological base, so they are derived from various parts of speech. Accordingly, they are divided into the following:

- 1- Words derived from nominal bases: these formations number 3165. Interestingly, the formation of these words is traditionally described using various linguistic terms: 1) Simple formation: *абонент* /abonent/ ‘subscriber (m.)’ > *абонентка* /abonentka/ ‘subscriber (f.)’; 2) Truncation: *болгарин* /bolgarin/ ‘Bulgarian (m.)’ > *болгарка* /bolgarka/ ‘Bulgarian (f.)’; 3) Allomorphy: *буква* /bukva/ ‘letter’ > *буковка* /bukovka/ ‘small letter’; 4) Mutation: *бляха* /blyakha/ ‘plate’ > *бляшка* /blyashka/ ‘platelet’; and 5) Compound formation: *англоман* /angloman/ ‘an Anglophile (m.)’ > *англоманка* /anglomanka/ ‘an Anglophile (f.)’.
- 2- Words derived from verbal bases: these formations number 2091. Multiple phenomena are also observed here: 1) Truncation:⁴ *варить* /varit'/ ‘to cook/boil’ > *варка* /varka/ ‘cooking/boiling’; 2) Mutation: *выпахать* /vypakhat'/ ‘to plow’ > *выпашка* /vypashka/ ‘plowing’; 3) Allomorphy: *гнать* /gnat'/ ‘to chase/hunt’ > *гонка* /gonka/ ‘chasing/hunting’;

⁴- The truncation occurs on the verbal stem (the part before the infinitival inflectional morph {t^j}).

- and 4) Compound formation: *зубочистить* /zubochistit'/ ‘to clean teeth’ > *зубочистка* /zubochistka/ ‘toothpick’.
- 3- Words derived from adjectival bases: these formations number 530; they are traditionally described using the terms: 1) Simple formation: *любой* /lyuboi/ ‘any’ > *Любка* /Lyubka/ ‘female name’; 2) Truncation: *осторожный* /ostorozhnyi/ ‘careful/cautious’ > *осторожка* /ostorozhka/ ‘care/caution’; 3) Allomorphy: *нежный* /nezhnyi/ ‘tender/delicate’ > *неженка* /nezhenga/ ‘sensitive person’; 4) Compound formation: *двухлетний* /dvukhletnii/ ‘of two years’ > *двухлетка* /dvukhletka/ ‘two-year period’; and 5) Abbreviated formation: *кредитный* /kreditnyi/ ‘credit’ > *кредитка* /kreditka/ ‘credit card’.
- 4- Words derived from other parts of speech: these formations relate to the remaining parts of speech; they are fewer in number than the others: 1) Number bases, which contribute to 16 words, such as *двоє* /dvoe/ ‘two’ > *двойка* /dvoika/ ‘two’; 2) Adverb bases, which lead to the creation of three words as exemplified by *авось* /avos'/ ‘perhaps/may be’ > *авоська* /avos'ka/ ‘string-bag’; 3) Conjunction bases, which are part of three words, such as *иль* /il'/ ‘either/or’ > *илька* /il'ka/ ‘(North American) mink’; 4) A pronoun base, which gives rise to only one word: *кой* /koi/ ‘which’ > *койка* /koika/ ‘cot, bed’; 5) An interjection base, which results in only one word: *люли* /lyuli/ ‘good’ > *люлька* /lyul'ka/ ‘cradle’; and 6) A preposition base, which leads to the formation of one word: *кроме* /krome/ ‘except’ > *кромка* /kromka/ ‘edge; list’.

2.4 Discussion

Applying the word-based approach in classifying words has revealed significant issues and phenomena relating to the word formation process. This implication is discussed taking the following points into account:

2.4.1 The complexity of formations with {+κ(a)}

Certain Russian suffixes are characterised by their straightforward derivational process. Their inclusion does not cause any phonological/orthographic change to the base word, as indicated earlier with {+тель} and {+ость}. The former is found exclusively in words with verbal bases: *писать* > *писатель*), while the latter creates words derived only from adjectives: *вечный* /vechnyi/ ‘eternal’ > *вечность* /vechnost'/ ‘eternity’. However, the suffix {+κ(a)} displays a complexity compared to suffixes above. This complexity is shown in the following points:

- 1- The morpheme {+κ(a)} generates multiple categories as displayed in Figure 2.1:

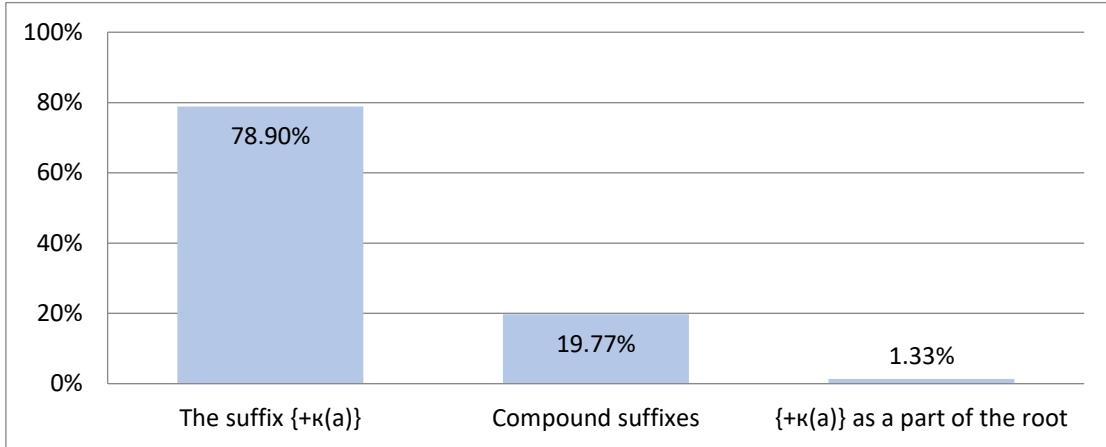


Figure 2.1 Words containing the morpheme {+κ(a)}

Many words have been created by the inclusion of compound suffixes which share the same {+κ(a)} formant. Figure 2.2 illustrates the diversity and proportion of these suffixes:

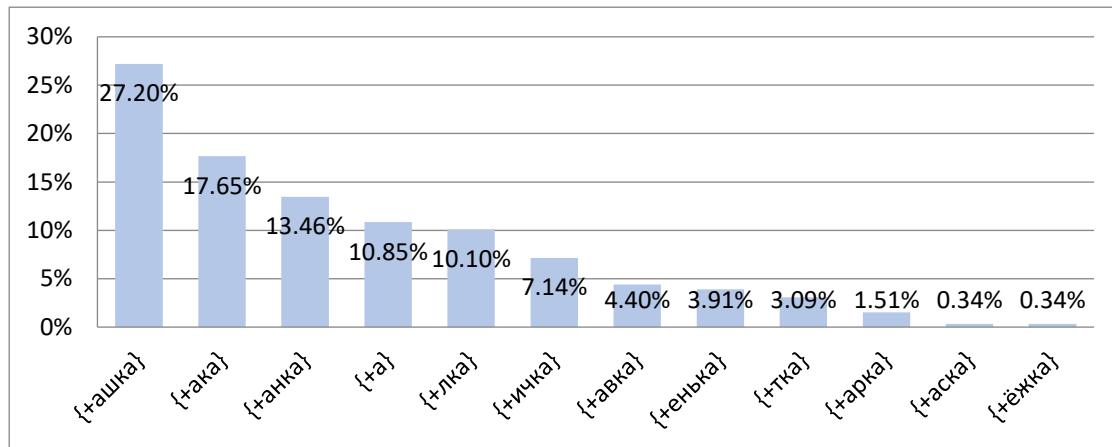


Figure 2.2 Distribution of compound suffixes

For some words, the sequence {+κ(a)} in some cases constitutes a crucial part of the root rather than as a derivational suffix. These formations are classified into different word classes which is shown in Figure 2.3:

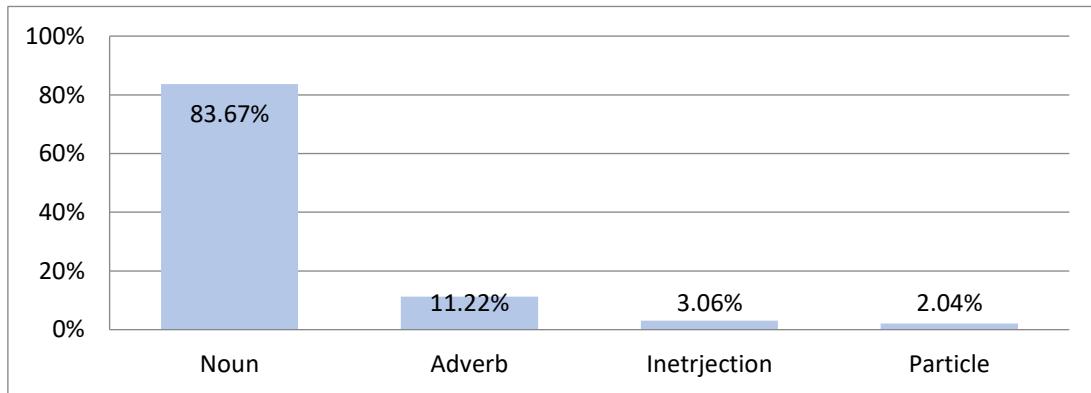


Figure 2.3 Non-derived words ending in {+κ(a)}

Hence, words with the morpheme {+к(a)} undergo a complex issue. This complexity is represented by various categories. Therefore, at first glance, I must be cautious when saying that a specific word belongs to a certain category.

- 2- Words with the suffix {+к(a)} are derived from various word classes; this diversity has been shown by multiple scholars (e.g. Cubberley 1994; Hluhanov 1975; Danilenko 1977), as seen in Figure 2.4:

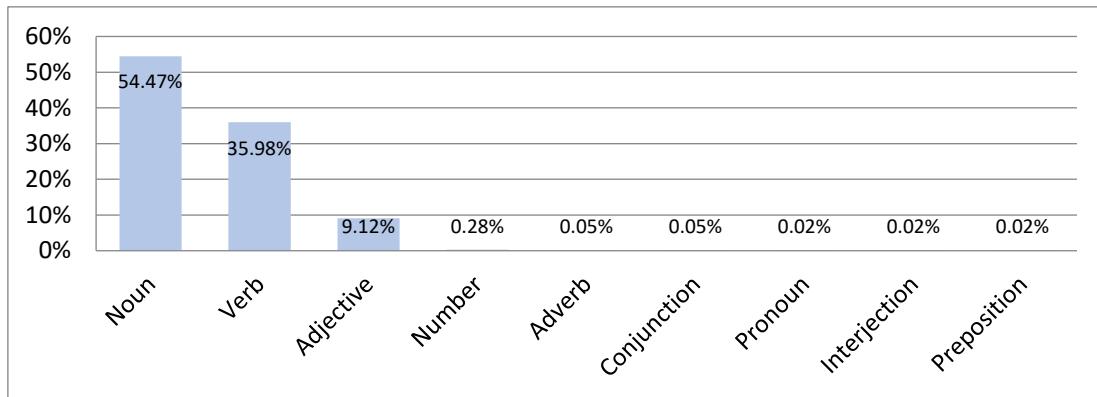


Figure 2.4 Various bases of words with the suffix {+к(a)}

Its high type frequency suggests that the suffix is productive. This productivity may result from having a variety of bases, which makes its formation more complex than the other suffixes seen above, particularly {+тель} and {+ость}. This productivity is possibly demonstrative of the fact that “the wider and more varied the connections of a given affix with words and stems, the more productive it is, and vice versa” (Shanskiĭ 1968: 69).

- 3- Base lexemes reflect differences in terms of frequency of using specific affixes to form words with the suffix {+к(a)} in data extracted from the *Obratnyi slovar'*. The two types of frequency are marked: type and subtype frequency. The former relates to the number of base words ending in a certain affix, while the latter indicates the contribution of these affixes to form surface words expressing different meanings. These meanings are divided into the following: 1) *Diminutiveness* (D) which is assigned for diminutive formations; 2) *Feminisation* (F) which is assigned for shifting the gender from male to female; 3) *Substantivisation* (S) which is assigned for formations denoting an action meaning; and 4) *Concreteness* (C) which is assigned for formations indicating specific materialistic objects or characteristics of certain things. The frequency of the affixes is shown in the following three tables:

Table 2.1 The distribution of denominational affixes to which {+к(a)} can be attached

No.	Affix type	Type frequency	Subtype frequency			
			D	F	S	C
1-	{+ист}	234		234		
2-	{+ец}	231	2	216		13
3-	{+ина}	199	175			24
4-	{+ак/ик/як}	84		77		7
5-	{+ин/анин/янин}	110	2	99		9
6-	{+ант/ент/янт}	53		53		
7-	{+ер/ёр}	54	1	48		5
8-	{+ица}	49	38			11
9-	{+ар/арь}	33		23		10
10-	{+ат}	32	1	29		2
11-	{+ац}	10		10		
12-	{+ник}	5		5		
13-	{+иш}	2		2		

Table 2.2 The distribution of stems ending with verbal affixes to which {+к(a)} can be attached

No.	Affix type	Type frequency	Subtype frequency			
			D	F	S	C
1-	{+ать/ить/еть/ыть/ять/оть}	1496		1	3	1337 155
2-	{+овать/авать/ивать/ывать/ евать/ёвать}	380			363	17
3-	{+ировать/аровать/еровать/ уровать}	210			208	2
4-	{+нуть}	7			4	3
5-	{+аться/иться}	4			3	1

Table 2.3 The distribution of stems ending with adjectival affixes to which {+к(a)} can be attached

No.	Affix type	Type frequency	Subtype frequency			
			D	F	S	C
1-	{+овый/свый/ёвый}	134				133
			1			
2-	{+ный}	291				291

Type frequency refers to whether the participation of a specific affix is productive or not according to the number of unique lexemes created. However, subtype frequency results in a certain affix being more predictable and representative of a certain meaning/function. Thus, on the one hand, I may consider the nominal affix {+ист} to be more productive than

the affix {+ищ} in producing words containing the suffix {+к(а)}. On the other hand, I may consider the former ({+ист}) to be more predictable than the latter ({+ищ}) for the creation of feminine nouns ending in {+к(а)} as shown in Table 2.1 (see above).

Accordingly, the complexity of {+к(а)} is reflected by the variety of affixes with multiple morphological sources shown above. Also, this variety of affixes creates various meanings/functions that the suffix {+к(а)} reflects. These meanings/functions are discussed later in details in Figure 2.11 – page 49. This makes this suffix more complex than other rival suffixes in Russian.

- 4- Compound words contributed to the creation of words with the suffix {+к(а)}. This formation can be seen in *киноартист* /kinoartist/ ‘film actor’ > *киноартистка* /kinoartistka/ ‘film actress’; two words (*кино* and *артист*) are set together to form *киноартистка*. However, other compounds have been formed by a combination of an abbreviated adjective with a complete noun as exemplified by *физкультурка* /fizkul'turka/ ‘physical culture’ which is composed of an adjective *физическая* /fizicheskaya/ ‘physical’ and a noun *культура* /kul'tura/ ‘culture’. Notably, the formation of other compounds reflects an abbreviation of adjectives with nouns though; where a noun like *комната* /komnata/ ‘room’ is dropped, coinciding with attaching the suffix {+к(а)} to the shortened adjectival stem: *дежурная* /dezhurnaya/ ‘on duty’ to form *дежурка* /dezhurka/ ‘the duty room’.

Zemskaya and Shmelev (1966: 58-59) indicate that this sort of formation is widely used in informal language – spoken and artistic language. Other scholars (e.g. Vinogradov, Istrina, and Barkhudarov 1952; Ignatova, Lifshic, and Guseva 1960; Shmelev 1964; Potikha 1970; Townsend 1975; Ryazanova-Clarke 1999) have noticed this formation which can also be found in *зачётка* /zachyotka/ ‘record-book’ (*зачётная книжка* /zachyotnaya knizhka/); *землянка* /zemlyanka/ ‘earth-house’ (*землянное жильё* /zemlyanee zhil'yo/), etc.

Moreover, other compounds consist of acronyms of adjectives and nouns as found in *комсомолец* /komsomolets/ ‘member of the Young Communist League (m.)’ > *комсомолка* /komsomolka/ ‘member of the Young Communist League (f.)’; in which *комсомолец* means: member of the *Коммунистический Союз Молодёжи* /kommunisticheskii soyuz molodyozhi/ ‘the Communist Union of Youth’. This type of formation was widespread during the Soviet period due to the bureaucracy and the way in which journals were written (Lenngren 1978: 47).

Thus, various methods of forming compound words as shown above add more complexity to coinages of the suffix {+к(а)}. This makes it as a complex instance to reflect a variety of forms of compound words in Russian.

- 5- The suffix {+к(a)} seems to be unstressed in all formations. Notably, some denominal stems to which {+к(a)} can be attached have mobile stress in their base words, and yet others have fixed stress that is not affected by the suffix. To exemplify this, words like *голова* /golová/ ‘head’ > *голóвка* /golóvka/ ‘small head’; *гора* /gorá/ ‘mountain’ > *горка* /górk/a/ ‘hill’, etc. reflect this mobile stress in their formations, whereas *рябина* /ryabína/ ‘rowan (tree) or pock’ > *рябíнка* /ryabínska/ ‘small rowan (tree) or pock’; *рабóma* /rabót/a/ ‘work/job’ > *рабóтка* /rabótka/ ‘work/job’, etc. indicate that the stress remains on the same syllable. Similarly, deverbal and deadjectival words vary in terms of having a mobile stress. While the stress remains in the same place in *вдéлать* /vdélat/ ‘to fit/set into’ > *вдéлка* /vdélka/ ‘fitting/setting into’; *горáчий* /goryáchii/ ‘hot’ > *горáчка* /goryáchka/ ‘fever’, the stress shifts about in *бинтováť* /bintovát/ ‘to bandage’ > *бинтóвка* /bintóvka/ ‘bandaging’; *винтовóй* /vintovói/ ‘spiral’ > *винтóвка* /vintóvka/ ‘rifle’, etc. Accordingly, mobile stress seems to have an elusive role; the whole issue of how to cope with stress patterns in an account of morphology is highly complex in a language like Russian.

2.4.2 Constraints found during forming words

Morphological models (IA - Item and Arrangement, IP - Item and Process, and WP - Word and Paradigm) differ as to whether and how rules are posited to describe the process of producing words. The following sections will display the disparity found in the above models in terms of their treatment of the coinages of the suffix {+к(a)}.

2.4.2.1 Observations found in the IA model

The IA model utilises additive morphology: morphemes are added one by one. Thus, classifying words according to the morphemic approach works when the derivational sequence of some words tends to be automatically comprehended, such as *автомобилист* /avtomobilist/ ‘motorist (m.)’ > *автомобилистка* /avtomobilistka/ ‘motorist (f.)’; *аматёр* /amatyor/ ‘amateur (m.)’ > *аматёрка* /amatyorka/ ‘amateur (f.)’; *демократ* /demokrat/ ‘democrat (m.)’ > *демократка* /demokratka/ ‘democrat (f.)’; *дипломат* /diplomat/ ‘diplomat (m.)’ > *дипломатка* /diplomatka/ ‘diplomat (f.)’, etc. In these formations, adding the suffix {+к(a)} in a linear pattern to the denominal stem simply facilitates identifying the base form which is *автомобилист*, *аматёр*, *демократ*, and *дипломат*. However, this approach cannot be generalised over other formations for the following reasons:

2.4.2.1.1 Observation 1: Difficulties of definition

A certain word may be composed of only one component (the root) or multiple building elements (the root and affixes). Morphologically, the root is considered to be the essential

component of any word. Non-derived words are composed of the root and the ending. Their root and stem tend to be identical. The stem consists of the root and other participants, such as prefixes (preceding the root) and suffixes (located after the roots). Townsend (1975: 14) indicates that “the stem is all of a word except the ending”. This ending serves to indicate the syntactic properties of a word, so the relationship of a word is indicated to other words within the sentence by this ending. The distribution of various morphemes within the word may be presented in the hierachal paradigm by Figure 2.5:

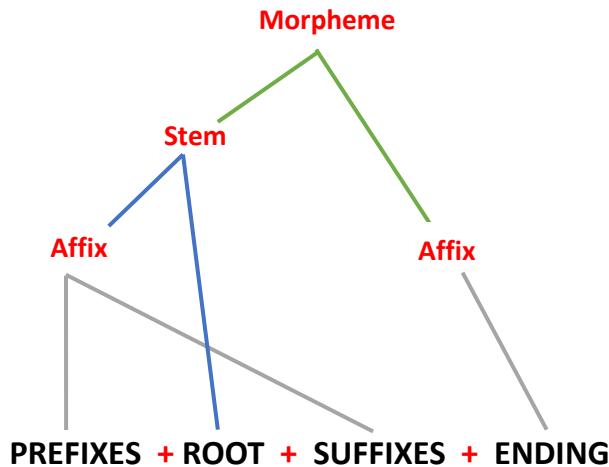


Figure 2.5 The distribution of morphemes

In Figure 2.5, I can see a relatively simple item-and-arrangement view of word formation (IA model), which will be subject to further interrogation and analysis. However, relying on the morphemic approach raises questions about how to define the basic building elements of words across languages. The definitions and the status of certain concepts, particularly *morpheme*, *root*, and *affix*, can vary between one language to another, as will be shown below. This adds difficulty in generalising one specific definition to be suitable for all languages.

In the following subsections (a, b, and c), I will commence my interrogation about the validity of definitions of the above concepts across languages. Afterwards, the analysis is carried out specifically on data with the suffix {+κ(a)}.

2.4.2.1.1 *Definition of ‘morphemes’*

The common definition for the morpheme is the smallest meaningful and functional unit (e.g. Nida 1949; Hockett 1958; Townsend 1975; Prideaux 1984; Katamba 1993; Bubeník 1999; Haspelmath 2002).⁵ Another definition for morpheme is “a linguistic form which

⁵- Morphemes are defined as “the smallest units of meaning and grammatical function” (Katamba 1993: 5). Similarly, Hockett (1958: 123) defines morpheme as “the smallest individually meaningful element in the

bears no partial phonetic-semantic resemblance to any other form, is a *simple* form or *morpheme*" (Bloomfield 1935: 161). According to the latter definition, the different forms of the same morpheme, in particular {+ish} in the following words: *selfish*; *boyish*; and *girlish* display partially identical phonemes and semantic representation. By contrast, other morphemes may partially acquire phonetic and meaningful similarity, such as the morpheme {+er} when attaching to the verbs, for instance *worker*, *reporter*, *dancer*, etc. This morpheme primarily indicates the meaning of agent of the action, so it possesses semantically a common feature in all forms. However, the above suffix may not indicate a similar meaning (agent of the action), in particular *deeper*, *bigger*, *smaller*, etc. Its application here is to form a comparative form in association with these words. As a result, this suffix acts phonetically as a homophonous one and morphologically as a homonymous one.

The above common definition of morpheme so far seems general since it assumes that each morpheme must represent a semantic meaning. But this causes controversy when analysing a given word, thereby segmenting its morphemes. For instance, when splitting the word *жилетка* /zhiletka/ ‘waistcoat’ into two different morphemes: 1) the stem {жилет+}; and 2) the suffix {+к(a)}. Both elements reflect a specific function. However, it is not accurate to consider the morpheme {+к(a)} as a meaningful unit as mentioned previously in the definitions of the above scholars. This suffix has not been assigned any meaning in the above coinage of *жилетка*; the base lexeme (*жилет* /zhilet/ ‘waistcoat’) has the same meaning.

This fact has been observed by Hockett (1958) when certain morphemes are not able to obtain a meaningful representation within the composition of words. Hockett (1958: 128) posits that each segment of the word can represent a morpheme if it cannot be split into further smaller meaningful units; a single phoneme cannot be subjected to further dissection. In this sense, Aronoff “treats words as signs: that is, not just as forms, but as meaningful forms. It is therefore concerned with words which are not simple signs, but which are made up of more elementary ones” (Aronoff 1976: 1). So Aronoff opposes considering the morpheme as the smallest meaningful unit, as some morphemes do not express any meaning.

utterances of a language”. Also, Prideaux (1984: 71) defines “morpheme as a minimal unit of meaning”. Bubeník (1999: 16) points out that morphemes can be traditionally defined as “the smallest meaningful elements in a language”. In addition, Haspelmath (2002: 3) states that a certain word comprises morphemes that can be defined as “the smallest meaningful constituents”.

Thus, I must be cautious about applying the common definition of morphemes to other languages, particularly Russian, and especially when I encounter specific words which supposedly contain either ‘zero morphs’ or ‘empty morphs’. So, this definition requires modification: a morpheme is a unit of form and meaning as well, but it does not necessarily indicate both functions simultaneously. In other words, a morpheme may express either auto-semantic meaning or function; it does not need to express both. This definition seems practical to adopt when I encounter words containing non-meaningful morphemes within the composition of certain words.

2.4.2.1.1.2 Definition of ‘roots’

The root is described as an epiphenomenon over a word (Antić 2010: 1). Bloomfield (1935: 243) points out that in most languages, roots possess a uniform structure. In English, they are composed of one item with one syllable, as exemplified by *act* /ækt/; *buy* /bai/, etc. Many of these words are considered free forms, namely root-words.

Bloomfield (1935: 243) also notes that Russian roots seem to be monosyllabic with some exceptions that add the letters <p> and <л> between a set of vowels /e/ and /o/, as exemplified by *город* /gorod/ ‘city’; *голод* /golod/ ‘hunger’, etc.

Interestingly, a feature of Semitic languages is that the root comprises three consonants that are regarded as an unpronounceable sequence of sounds. Hence, in the Arabic language the root usually affiliates to the verbal base. So, when forming a new word, the morpheme attaches either a prefix, suffix or ending to this root in order to form a new word, as illustrated by the next examples: the verbal root {k-t-b} – {كتب} has the following phonological realization: /'katab/ ‘s/he wrote (in the past tense)’. The word {yaktb} – {يكتب} obtains the following phonological realization: /'yaktub/ ‘s/he writes (in the present tense)’. The word {katb} – {كتاب} obtains the following phonological realization: /'ka:tib/ ‘the writer (person)’. The word {ktab} – {كتاب} possesses the following phonological realization: /ki'ta:b/ ‘book’. Finally, the word {maktaba} – {مكتبة} acquires the following phonological realization: /'maktaba/ ‘library’.

Each language possesses a consistent root structure and all languages need a process for forming words from non-derived words, namely roots. By virtue of affixes (prefix, suffix and ending), new derivative forms emerge in any language and enrich it with multiple applications and meanings. This is found with the above Arabic word where the red letters refer to the participation of these morphemes. The first word is formed by the aid of the suffix {ya+}, the second and third ones are formed by the infix {+a+}, the fourth one formed by the combination of the prefix {ma+} and the ending {+a}.

English scholars give the root an independent status by considering all English roots to be free; Carstairs-McCarthy (2002: 18) argues that only roots can be free and affixes are necessarily bound since they cannot stand on their own meaning without combining with other morphemes. The above view seems practical to differentiate between the basic morphemes (roots) and subsidiary ones (affixes) in certain languages like English. For instance, the root of the words *act* and *buy* leads to the formation of other derivative words with slightly different meanings, such as *actor*, *actress*, *action*, etc.; and *buyer*, *buying*, etc. Similarly, in Arabic, I have seen that the root of the word *k-t-b* produces other related forms that indicate a similar meaning. This can be found by *yaktb*, *katb*, *ktab*, *maktba*, etc. The root so far represents the basic meaning of these words in addition to participation of other morphemes, which result in slight modifications to the meaning. So the difference between the above terms of basic and subsidiary morphemes is explained in English and Arabic by considering the root as a free morpheme and others (prefix, suffix and ending) as bound, since the root provides the main meaning of the word. These bound morphemes do not have the ability to represent any meaning unless they combine with the root of the word. Thus, their role is either to enhance, modify, or sometimes shift the meaning of the word as illustrated by *safe* > *unsafe*.

To some extent, this definition fits the status of the root in Arabic and English. I have seen in the above examples that the root represents the core of meaning for its derivative coinages, so it reflects independent free status of meaning and function respectively. However, generalising this statement over many languages, particularly Russian, seems problematic.

Carstairs-McCarthy's definition does not work for Russian to the extent that it does for English and Arabic. The concept of 'free' and 'bound' morphemes would play quite a different role, or require a substantially modified definition, as opposed to the rather simple and intuitive one used for English and Arabic since Russian is a highly inflected language. To illustrate the point further, words, such as *мера* /mera/ 'measure'; *мерка* /merka/ 'measurements'; *мерить* /merit'/ 'to measure (with)'; and *непремерить* /peremerit'/ 'to remeasure' have an identifiable root {+mep+}, which cannot express a basic meaning without a participation of other morphemes (except when it comes as a plural form of the genitive case as a response to the grammatical rules of the sentence). Thus, in what sense is {+mep+} a 'free' morpheme when almost everywhere it requires an inflectional suffix?

To solve this, the Russian root is divided into 'free' and 'linked' ones according to the level of semantic value that the root obtains (Shanskii 1968: 62). 'Free roots' can express their own meaning without the need to combine with other morphemes. Conversely, the meaning

of ‘linked roots’ cannot be completed unless they combine with other auxiliary morphemes of a word. Consequently, the usage of linked roots can be found only in conjunction with other affixes (Feldman et al. 2004: 32).

Antić (2010: 2) suggests that the Russian root obtains a hierarchy of status starting from completely 1) ‘bound’; 2) ‘modified’; and 3) ‘free’. So, an additional status has been added to the Russian root that is, the modified ones. This type of root can be seen in the following example: *беседа* /beseda/ ‘talk/conversation’ > *беседка* /besedka/ ‘summer-house; bower’ > *беседочка* /besedochka/ ‘small summer-house’. The ‘modified root’ is reflected by *беседочка* where the inclusion of suffix {+к(a)} to the modified root of *беседка* has caused a mutation of /k/ into /ch/, coinciding with occurring allomorphy represented by using the phoneme /o/ during producing *беседочка*.

However, Antić’s suggestion may be open to criticism. Instead of proposing that there is a ‘modified root’ in the above coinage of *беседочка*, one might suggest that this word is produced by the inclusion of the compound suffix {+очки(a)}. This suffix can deliver a similar diminutive function like the suffix {+к(a)} to its coinages. Therefore, it can be posited that this word contains only ‘linked root’ plus the suffix {+очки(a)} in its composition.

Consequently, the root status seems controversial across languages. Positing that all roots are free can work with certain languages including English and Arabic. However, this statement is not valid for Russian with the existence of several types of roots as found in, and reflected by, the above examples.

In Russian, it is easier and more reliable to rely on semantic freedom than on structural freedom, as the latter seems quite arbitrary in Russian (e.g. *мера* could be considered free, because the genitive plural *мер* can stand alone, but *доля* /dolya/ ‘portion, share’ would not be, because there is no form *долъ* /dol'/, which is an accident of the Russian declensional system). But then the notion of semantic freedom – usually called autosematicity – is an issue in itself, and not a simple one.

2.4.2.1.1.3 Definition of ‘affixes’

The semantic value of affixes is also inconsistent across languages. Affixes are defined in English and Arabic as bound morphemes as found earlier by Carstairs-McCarthy’s definition. However, I have seen that the status of affixes in Russian would play a different role or it implies a different definition in contrast to English and Arabic.

In Russian, affixes are given a different treatment by regarding them either as ‘regular’ or ‘irregular’. ‘Regular affixes’ are defined by Shanskii (1968: 63) as morphemes that are

reproduced in the composition of the word in which the whole meaning of a word depends on their combination with ‘linked roots’. On the contrary, ‘irregular affixes’ are those affixes which cannot add a contribution to the meaning of the word. So, the basic meaning of the word does not rely on their participation within the composition of the word. Hence, it becomes clear in some words above, why the root indicates the basic meaning, such as *жилетка* since it is composed of the ‘free root’ {жилет+} plus the ‘irregular suffix’ {+к(a)}. By contrast, the root cannot express a complete meaning unless it combines with other morphemes, as found earlier by *мера* and *беседа*. The composition of these words contains either a ‘linked root’ (Shanskiĭ 1968) or ‘bound root’ (Antić 2010) that is {мер+} and {бесед+} plus the ‘regular ending’ {+a}. This implies that there is a contrast in the semantic meaning of the roots and auxiliary morphemes in Russian. The level of this contrast determines whether a particular root is ‘free’ and ‘linked/bound’ or a particular affix is ‘regular’ or ‘irregular’. Therefore, this difference indicates that roots obtain objectively logical meaning as a basic element. Although the ‘linked/bound roots’ cannot express the free semantic meaning, they are still pinpointed in the composition of the word. By contrast, affixes obtain grammatically complementary function as auxiliary elements either by form or meaning.

2.4.2.1.2 Observation 2: Difficulties of distinction between {+к(a)} and other compound suffixes

It appears to be difficult to distinguish between the suffix {+к(a)} and other compound suffixes (e.g. {+лк(a)}, {+овк(a)}, {+очк(a)}, {+инк(a)}, etc.) while applying the morphemic view in classifying words. Accordingly, when decomposing a certain word, there is no distinction as to whether this word is formed by the suffix {+к(a)} or other analogous suffixes; the linear arrangement of morphemes would consider all words ending in {+к(a)} as being formed only by the suffix {+к(a)}. For example, the formation of both the following words: *соломинка* /solominka/ ‘small straw’; and *снежинка* /snezhinka/ ‘snowflake’ would only be made apparent by the participation of the suffix {+к(a)}. However, this is not the issue; the former has been coined by the above suffix to denote the diminutive meaning of *соломина* /solomina/ ‘straw’, while the latter has been produced by the inclusion of another compound suffix {+инк(a)}, which relies on the base form (*снег* /sneg/ ‘snow’) to express its diminutive meaning. Hence, using the morphemic approach would not differentiate between the suffix {+к(a)} and other analogous suffixes.

2.4.2.1.3 Observation 3: Difficulties of decomposition process

Decomposing the word into various morphemes possibly illustrates the word class of each derivative stage. The problem arising from this process is that in Russian not all words can be subject to segmentation. A substantial number of Russian words are of foreign origin, having been borrowed from other similar European languages over the past few hundred years. The tendency when subjecting them to morphological analysis is not to break them down into their original morphemes based on their source language, unless some of that derivational Russian material is also visible in modern Russian.

Townsend (1975: 27) proposes that although foreign words seem analysable from a morphological perspective, only Russian participants such as suffix and ending would be separated. Townsend (1975) regarded the borrowed words, in particular *литература* /literatura/ ‘literature’ and *спорт* /sport/ ‘sport’ as indivisible. So, the breakdown occurs amongst other elements attaching to these words, as illustrated by {литератур+н+ый} /literaturnyi/ ‘literary’; {спорт+ив+н+ый} /sportivnyi/ ‘sports’; {спорт+ив+к(a)} /sportivka/ ‘sports clothes’; and {спорт+смен+к(a)} /sportsmenka/ ‘sportswoman’.

On the other hand, foreign suffixes that have become Russianized are subject to such analysis, due to their popularity and frequency in Russian morphology. For instance, the suffix {+изм} is considered foreign, and in turn it has been treated as a Russian element by splitting it, as shown by *царизм* /tsarizm/ ‘tsarism’ – the nominal stem: {цар+} plus the foreign suffix: {+изм} (Townsend 1975: 28).

This indicates that segmenting words reflects certain constraints upon foreign words, which can be regarded as exceptions. This makes the IA model inconsistent in its treatment of the decomposition process. Words containing foreign participants are subjected to decomposition; however, foreign words with Russian participants are not.

Decomposition is possible if two conditions are observed: 1) the phonemic material of the relevant morph is present in one of its allomorphs; and 2) the function or meaning represented by the relevant morph is present. Therefore, a specific word may consist of one syllable, such as *друг* /drug/ ‘friend’. Others contain more than one syllable, such as *недруг* /nedrug/ ‘enemy, foe’, such that it is possible to split them into {не+} and {друг} since they are composed of two syllables. Each one stands for its own function or meaning: {не+} shifts the meaning from positive to negative and {друг} represents the basic meaning of this word. Conversely, I may encounter the same material described above with other words, in particular *небо* /nebo/ ‘sky’ where the first condition is met but the second condition is not. Therefore, I do not regard /не/ as an instance of the prefix {не+}, but as an indivisible

part of the stem *небо*. I thus conclude that in this word {не+} is a part of the root, and their segmentation is inapplicable and unjustifiable.

This indicates that a morpheme is a unit of meaning or function; whereas a phoneme is a unit of sound; they represent qualitatively different levels of analysis such that one cannot say that phonological analysis operates on a ‘smaller’ or more ‘detailed’ level than morphological analysis. The question is how do I establish what the unit of meaning or function is, when it can be instantiated as 1) multiple phonemes; 2) one phoneme; 3) no distinct phonemic representation, but it is shown by modifications or alterations elsewhere in the phonemic word; and 4) possibly without representation if one accepts the possibility of the ‘zero ending’ or ‘zero suffix’? Therefore, I proceed by identifying commonalities between forms that have both a referential/functional and a phonemic basis. Thus, in the last example (*небо*) it is not possible to split off the first segment because although they have a phonological similarity, there is no referential/functional commonality, so the notion of a separate morpheme is rejected here.

2.4.2.1.4 Observation 4: Difficulties of morphological correspondence

Describing the morphological relationship between the parent and derivative stem is not straightforward since the language underwent significant changes which distorted this relationship. For example, the word *косточка* /kostochka/ ‘stone of fruit’ was produced from the word *костка* /kostka/ that no longer exists in the contemporary Russian language, so this results in considering the formation of the above word is triggered by the word *кость* /kost'/ ‘bone’ with the participation of the compound suffix {+очка}. Also, the word *готовность* /gotovnost'/ ‘readiness’ is apparently produced by the participation of the compound suffix {+ность} from the adjective *готовый* /gotovy/ ‘ready’. However, historically, this word was produced from the adjective *готовныи* /gotovnyi/ ‘ready’ that has disappeared in today Russian. Simultaneously, the corresponding stem of the word *нужный* /nuzhnyi/ ‘necessary’ which is *нужса* /nuzha/ has disappeared from Russian. A similar issue is implemented whether on *ретивый* /retivyi/ ‘zealous’ and its abandoned stem *реть* /ret'/ or *тучный* /tuchnyi/ ‘fat’ where its parent stem {тукъ} /tuk"/ is no longer attested in modern Russian (Buznetsova and Efremova 1986: 142).

Thus, applying the morphemic approach does not always yield the morphological source of surface words due to various historical reasons as shown above.

2.4.2.1.5 Observation 5: Difficulties of order level of affixes

The IA model presumes that the order level of affixes isomorphically corresponds to morphosyntactic properties. However, this causes problems pertaining to the correct order

of morphemes according to word composition. Therefore, I can ask whether to link the word *незнакомка* /neznakomka/ ‘stranger (f.)’ to *знакомка* /znakomka/ ‘familiar woman’ or *незнакомец* /neznakomets/ ‘stranger (m.)’. If the former, then it opposes the main concept of the morphemic approach which juxtaposes morphemes in a linear arrangement. On the contrary, if the latter, then proposing that {нe+} constitutes a level 1 affix and {+к(a)} constitutes a level 2 affix is inaccurate with respect to the commonly agreed level of affixes, which is reflected in the concept ‘bracketing paradoxes’ (Kiparsky 1982: 121-24). Since its appearance this concept has caused a widespread discussion related specifically to those words whose formal composition does not match their semantic one.

Pesetsky’s (1985: 195-96) remedy assumed building the form (the morphological structure) in a consistent way with the involvement of affixal phonology: [нe[знаком+ка]]. Chialant and Caramazza (1995: 128) claimed that the order of morphological rules appears as sets. Each set corresponds with a distinct set of phonological rules. The affixes’ order within a word is possibly determined by the set order since individual affixes affiliate with one of these sets.

This suggestion invokes criticism regarding the way of manipulating the structure of the word to be compatible with the affixes’ order. Although the level-ordering can be applied least controversially to the languages of productive morphology (Bauer 1992), it is argued that this level in the hypothesis seems to be redundant. Other generalizations are more powerful and more efficient than generalizations derived from the basis of level-ordering (e.g. Fabb 1988; Plag 1996, 1999).

Other scholars indicated that this mapping movement causes more problems than it resolves. Instead, Mercier (1988: 56) proposed considering the type of semantic function associated with certain rules of word formation, which are composed of a sequence that seems to be dictated by the phonological level, but nevertheless the semantic requirements of scope relations are achieved. Lieber (1981: 933) proposed that mismatches of semantics and form, especially in the structure of compound words, show that the final meaning of such words does not necessarily reflect an isomorphic correspondence to their morphological construction, as illustrated by a *blackboard*, which is not necessarily black or the *yellow-smile* being not necessarily yellow. So Lieber’s account separates the realization of the semantics from the form of the word. So, there is a significant difference in the semantic realization of those accounts.

Thus, arranging morphemes in a linear sequence seems problematic for certain complex words in terms of mapping the form with the meaning of their constituent morphemes.

2.4.2.1.6 Observation 6: Difficulties of phonological correspondence

Some formations have a form mismatch between the base and surface word. Accordingly, relying on the arrangement of morphemes as one-to-one to trace the morphological source of words does not offer an accurate description of why certain phonemes alternate (*деревня* /derevnya/ ‘village’ > *деревенъка* /dereven'ka/ ‘small village’); mutated (*бедняк* /bednyak/ ‘poor man’ > *беднячка* /bednyachka/ ‘poor woman’); or why a given stem is truncated (*беженец* /bezheneç/ ‘refugee (m.)’ > *беженка* /bezhenga/ ‘refugee (f.)’). So, this phonological heterogeneity cannot be accounted for in the IA model since each morpheme must represent a phonological and semantic realisation respectively.

2.4.2.1.7 Observation 7: Difficulties of choices between the base form and its affixes

It is debatable, whether the base selects the affix or the affix selects the base lexeme. In other words, is the suffix {+к(a)} selected by its base or is the base determined by the above suffix? Chialant and Caramazza (1995: 142) point out that there are restrictions imposed by the bases which allow a particular affix to be attached to them or prevent this from happening. Regarding this, Townsend (1975: 175) notes that the Russian suffix {+ант} is exclusively added to foreign bases: *курс* /kurs/ ‘course’ > *курсант* /kursant/ ‘student’. Similarly, specific suffixes are chosen to be attached to a particular base, as exemplified by *делать* /delat'/ ‘to make/do’; and *сделать* /sdelat'/ ‘to make/do’. The verbal suffix {+ать} has only been chosen to create the imperfect/perfect form of the above verb despite the existence of other verbal suffixes such as {+ить}, and {+овать}. Also, Brown and Hippisley (2012: 270) note that the syntactic category of the base word can determine which affix can be attached to it.

Plag (1996: 776) proposes a ‘base-driven’ concept; he argues that affixes are selected by their bases. Plag exemplified this by listing nouns ending in the affix {+cation} which are exclusively added to verbal bases ending in the affix {+ify}, such as *notify* > *notification*; and *identify* > *identification*.

However, when allomorphy takes place, affixes would select their base lexeme, which possibly contradicts Plag’s view. In Russian, there are instances in which one of the given allomorphs seems more appropriate than others for a given word. The decision of choosing a specific allomorph can be determined by the formative structure of adjacent morphs. For instance, the suffix {+ств(o)} has another allomorph, that is {+ектв(o)}. The latter usually appears only after morphs that end in hushing (шипящие) phonemes as illustrated by *владычество* /vladychestvo/ ‘domination’; and *изящество* /izyashhestvo/ ‘refinement, elegance’. Conversely, the former is present after morphs ending in other consonant

phonemes such as *знакомство* /znakomstvo/ ‘acquaintance’; and *богатство* /bogatstvo/ ‘wealth’. Also, the suffixal adjectival morph {+Н+} is unable to appear after the nominal stem suffix {+ист}. Instead, the morph {+ичн+} appears as illustrated by *нессимистичный* /pessimistichnyi/ ‘pessimistic’; and *идеалистичный* /idealisticchnyi/ ‘idealist’. In contrast, the above adjectival morph {+Н+} appears if the above morph {+ист} belongs to the root of the word. See examples of *ненавистный* /nenavistnyi/ ‘hateful’; *очистный* /ochistnyi/ ‘clean’; *глистный* /glistnyi/ ‘wormy’; and *безлистный* /bezlistnyi/ ‘leafless’.

Consequently, the morphemic approach causes a debate over whether the affix is chosen by its base or whether the need to select a particular affix affects the selection of a base allomorph at the same time. I have seen that this represents an unresolved question since it is stipulated whether allomorph selection is taking place in a certain coinage or not.

2.4.2.1.8 Observation 8: Difficulties of distinction between inflection and derivation

Does the use of the suffix {+κ(a)} constitute an application of inflection or derivation? “The distinction cannot be made directly in terms of the grammatical categories involved, for a category which is inflectional in one language... may be derivational in another” (Shopen 1985: 162). Katamba (1993: 217) points out that it is hard to generalize a specific morpheme as being derivational or inflectional in all languages by saying that someone “must remain sceptical” about the generalization of both processes across languages. He claims that the diminutive morphemes are considered derivational in English, whereas the same morphemes would be considered as inflectional in some African languages (Katamba 1993: 210).

Although linguists may intuitively posit a distinction between inflection and derivation, the objective criteria that their intuitions rely on seem to be difficult to find and observe (e.g. Bybee 1985: 81; Blevins 2001: 218).⁶ González Torres (2010: 105) states that the final morpheme {+e} in the old English word *bryce* ‘breach’ represents an overlapping case to consider it as a result of inflection or derivation; this morpheme has a simultaneous function whether derivational or inflectional.

This ambiguity leads some scholars (e.g. Lieber 1981; Di Sciullo and Edwin 1987) to conclude that the conventional distinction is unilluminating and misconceived. Some consequences for my research are as follows:

⁶- Bybee (1985: 81) describes this distinction as “one of the most persistent undefinables in morphology”. Blevins (2001: 218) also notes that “the status of the traditional distinction between derivation and inflection is arguably one of the most vexing questions addressed in current morphological theories”.

2.4.2.1.8.1 Difficulties of distinction among {+κ(a)} functions

Controversy arises when some of the uses of the suffix {+κ(a)} – to create diminutiveness, feminine forms, etc. – are exactly those that constitute part of inflection in some languages. Some functions of {+κ(a)} seem to display inflectional properties, and yet they represent derivational morphology. The question arises here as to how someone would decide that a specific use of this suffix is derivational, while others are inflectional. Thus, I need to underline the features and the criteria that linguists require to differentiate between them.

On the one hand, the inheritance of gender as a prominent feature taken on by inflectional morphemes has been emphasized through the following concepts: 1) ‘inherent character’ (Katamba 1993: 47); 2) ‘the base gender and animacy’ (Hippisley 1996: 201-02); and 3) ‘Monotonic feature’ (Blevins 2001: 213). Subsequently, inflectional morphemes take on the same gender and class as the base word. Also, it has been argued when inflection occurs the meaning of the base word stays the same as all various inflectional forms belong to the same paradigm or a lexeme (e.g. Carstairs 1987: 4; Feldman 1994: 442; Blevins 2001: 213).

However, some forms seem to display inflectional properties or syntactic distribution of inflection, and yet they represent derivational morphology. This can be seen in Russian morphology when ‘expressive derivation’ (affectionate, diminutive, pejorative and augmentative meaning) borrows a meaning and gender shade from the base is usually the case for inflection. Expressive morphology is truly defined as being “transparent with respect to some morphosyntactic feature” (Stump 1993: 29). This transparency is detected in the following instances: *стол* /stol/ ‘table’ > *столик* /stolik/ ‘small table’; *дом* /dom/ ‘house’ > *домик* /domik/ ‘small house’, etc. Thus, Hippisley (1996: 221) concludes that expressive derivation in Russian resembles inflection by retaining the class of the base word; morphosyntactic features are preserved and inherited. Beard (1995: 93) notes that the diminutive suffixes in Italian and Russian take on the same gender as their base form. This can be found in *квартира* /kvartira/ ‘flat’ > *квартирка* /kvartirka/ ‘small flat’; *градина* /gradina/ ‘hailstone’ > *градинка* /gradinka/ ‘small hailstone’, etc. Consequently, some derivational morphemes share the character of preserving the word class since expressive nouns are derived from nouns, and in turn they keep the animacy and gender of the base word.

On the other hand, other scholars have argued a change of the word class is a dominant feature of derivational morphemes (e.g. Beard 1995: 99; Katamba 1993: 51; Blevins 2001: 216). This can be illustrated by *варить* /varit'/ ‘cook’ > *варка* /varka/ ‘cooking’; *зелёный* /zelyonyi/ ‘green’ > *зелёнка* /zelyonka/ ‘brilliant green’, etc.

This is based on the assumption that there are two suffixes represented by the suffix {+κ(a)}:

1) one keeps the same gender that denotes the diminutive meaning, which is considered to be inflectional since it shares the ‘inherent character’ of the gender; and 2) the other one serves to change the word class, so it is considered derivational.

In addition, the feature of gender changing would be equally shared between both processes: the concept of ‘value switches’ (Beard 1988: 155) assumes that derivational morphemes change the gender of the base word. This is exemplified by *студент* /student/ ‘student (m.)’ > *студентка* /studentka/ ‘student (f.)’; *активист* /aktivist/ ‘activist (male)’ > *активистка* /aktivistka/ ‘activist (female)’, etc.

Views of ‘syntactic determination’ (Katamba 1993: 47); ‘obligatoriness’ (Greenberg 1954: 207); and ‘agreement’ (Beard 1995: 99) suppose that inflectional affixes correspond to the rules imposed by syntax. It means that the syntax prescribes inflectional choices. For instance, the verb must be in agreement with the quantity of the subject, whether it is singular or plural, so the inflectional ending of the verb is governed by the quantity of the subject of the sentence, as in Figure 2.6 where the two-way arrows indicate the syntactic governance:

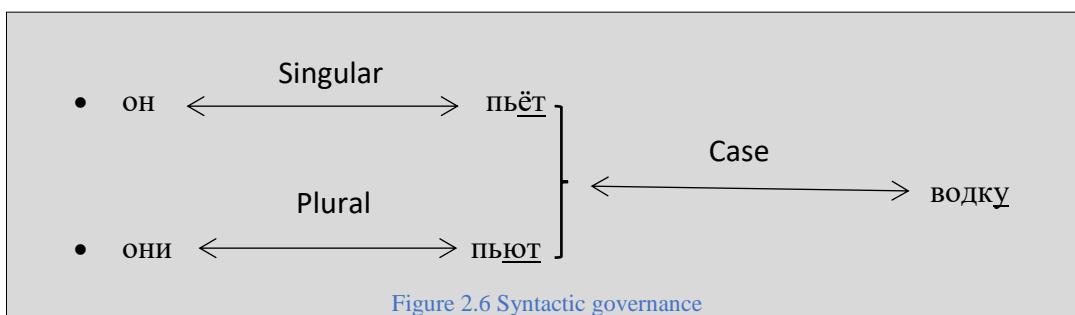


Figure 2.6 Syntactic governance

The inflectional verbal ending {+ët} is compatible with the singular subject of the sentence *он* /on/ ‘he’, whereas in the second example, the subject *они* /oni/ ‘they’ is plural, so the inflectional verbal ending {+yt} applies. However, derivation does not require the same formula for acquiring different morphemes depending on whether the subject is singular or plural. This can be found in the above word *водку* /vodku/ ‘vodka’. Thus, gender changing can be reflected by inflection when the adjectival ending of *длинный* /dlinniy/ ‘long’ is varied according to the type of the noun and whether it is masculine (*длинный*), feminine (*длинная* /dlinnaya/ ‘long’), or neuter (*длинное* /dlinnoe/ ‘long’). Therefore, the inflection would share the same character of derivation ‘gender change’.

The disparity of functions and affiliation of the suffix {+κ(a)} is shown in Figure 2.7 in which it seems that some uses share more properties of derivation, while others share fewer properties associated with derivation and thus might be closer to inflection:

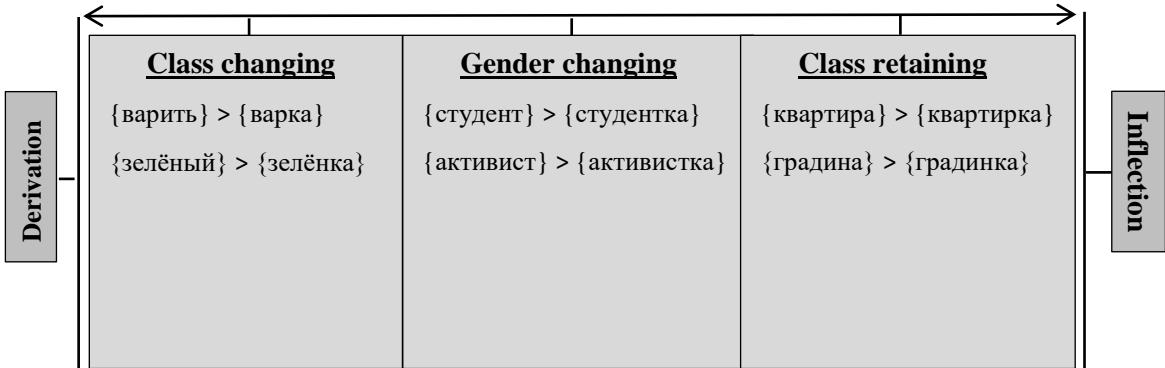


Figure 2.7 Disparity of affiliation of {+κ(a)}

A significant question arises here, namely whether {+κ(a)} actually represents multiple homonymous suffixes? This means that this suffix must be treated as various suffixes sharing the same phonological and orthographical realization. Multiple scholars (e.g. Shanskiĭ 1968: 28; Matthews 1974: 23; Carstairs 1987: 116; Gafarova 2010: 128) state that similar forms of the same word found for different applications can be expressed by the term ‘homonymy’. Homonymy results from a single form delivering different grammatical functions. It is often used to describe multiple lexical senses as well as grammatical ones. In data extracted from the *Obratnyi slovar'*, the frequencies of the appearance of the functions of {+κ(a)} are different based on their type frequency. Figure 2.8 demonstrates this contrast:

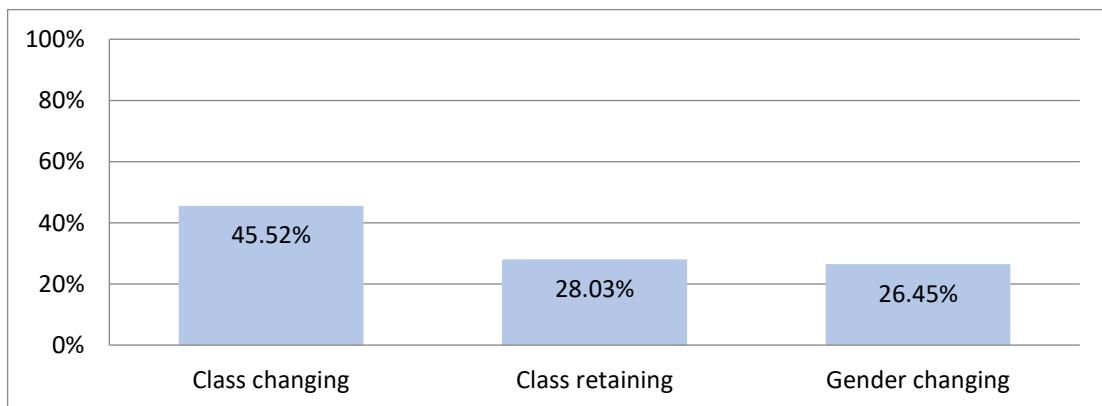


Figure 2.8 Functions of {+κ(a)}

The semantic relationship between items is an indicator which can be used to determine whether a process is inflectional or derivational: “the greater the difference between the meaning of the derived word and the meaning of the base, the greater the likelihood that the affix is derivational” (Bybee 1985: 5). So, Bybee proposes the concept of ‘relevance’ of meaning as part of the ‘Network Morphology’ account. This concept implies that the

meaning of the second word results from the meaning of the first one, so the former is triggered by the latter in its formation.

Similarly, Feldman (1994: 442) posits that inflection tends to take on a compositionality of meaning somewhere between the inflected form and its base word, whereas for derivation this is less often the case. Miceli and Caramazza (1988: 25) points out that word meaning may be subject to alteration by derivation but never by inflection. This can be seen in the following example: *brother* > *brotherhood*. Accordingly, the contrast of meaningful relevance will decide whether new formations are inflectional or derivational. A given process is inflectional if there is a strong relevance of meaning between the formative elements. Otherwise, the process will be interpreted as derivational.

In order to examine arguments pertaining to semantic relevance discussed above, I have classified the forms collected and evaluated them as representing ‘MATCH’, ‘DIVERGE’, and ‘MODIFY’ functions. These terms are defined as follows:

- 1) ‘MATCH’ refers to those words which fully share the meaning of their base words. In these formations, the referent indicates coreferential meaning as illustrated by *onepemma* /operetta/ ‘operetta’ > *оперетка* /operetka/ ‘operetta’. Also, the words may obtain a symmetrical meaning compared to its base as exemplified by *вписать* /vpisat'/ ‘to inscribe’ > *вписка* /vpiska/ ‘inscribing’.
- 2) ‘DIVERGE’ represents those words whose meaning does not match that of their bases meaning as exemplified in *вода* > *водка*. The referent indicates a different meaning compared to its base, therefore, *водка* ‘vodka’ refers to a different item than *вода* ‘water’.
- 3) ‘MODIFY’ indicates those words which slightly modify their base meaning either by adding a flavour of diminutiveness or feminisation as found in *книга* /kniga/ ‘book’ > *книжка* /knizhka/ ‘small book’; and *болгарин* > *болгарка*. The referent indicates an asymmetrical meaning when, for example, *болгарин* can be used to refer to both genders but *болгарка* can only be used to refer to the female gender. As expected, with a male referent, two possible ways are available to indicate a feminine profession. For instance, *она артист* /ona artist/ and *она артистка* /ona artistka/ - both sentences mean ‘she is an artist (f.)’. However, it is not possible to do so once the referent is female as exemplified in *он артист* /on artist/ and not *он артистка* /on artistka/. Thus, *артист* can be used to refer to both genders but *артистка* can only be used to refer to the female gender. Similarly, the word *книга* can also refer to both *книга* and *книжка*. However, *книжка* cannot be used to refer to *книга* which seems bigger in terms of size. The referent in this term imposes that the meaning of the surface word cannot be used to refer

to the exact meaning of its base since it has been slightly modified. The distribution of the above terms in the *Obratnyi slovar'* data based on their type frequency is shown in Figure 2.9:

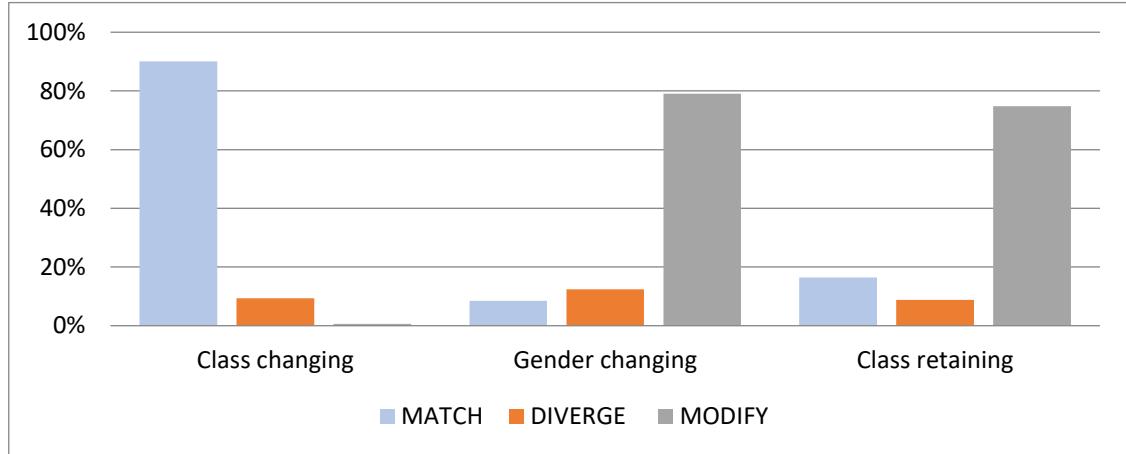


Figure 2.9 Semantic relevance of $\{+\kappa(a)\}$

The above distribution of these terms indicates that a change of meaning is reflected in all above functions of the suffix $\{+\kappa(a)\}$. This possibly refutes the assumption that there are multiple homonymous suffixes: one derivational and the other one inflectional. The reason is that inflectional morphemes must preserve the same meaning as their base lexeme. This means then that some functions of this suffix, in particular ‘class retaining’ and ‘gender changing’ cannot be regarded as being closer to inflection as presented in Figure 2.7 (see above).

2.4.2.1.8.2 Difficulties of polyfunctionality of $\{+\kappa(a)\}$

The alternative option is to consider this suffix as simply just one derivational suffix with different morphological functions and meanings. This gives a plausible explanation of multiplicity of $\{+\kappa(a)\}$ functions.

Accordingly, the multiple functions of this suffix lead researchers to treat it as a polyfunctional one. The phonological realization would be identical for both, but the diminutive meaning differs from the feminine meaning. Dementev (1960: 9-10) points out that the language consists of a complex system in which phenomena are related or conditioned to each other. Therefore, a suffix like $\{+\text{щица}\}$ or $\{+\text{чица}\}$ may denote a specific function (carried out by a female), while another suffix may take on multiple functions, such as the suffix $\{+\kappa(a)\}$ referring to the diminutive meaning, as illustrated by *gora* /gora/ ‘mountain’ > *горка* /gorka/ ‘hill’; and the feminine equivalent to the masculine form, such as *студент* > *студентка*. In this regard, Mohanan (1985: 9) posits that the suffix $\{+\kappa(a)\}$ has to be a representative of a feminine feature (agentive feminizer) and a

diminutive one respectively. Hence, the assumption that one derivational polyfunctional suffix exists provides a solid reason as to why the same suffix exposes different morphological functions/meanings.

This assumption is based on the distinct features of this suffix shows. One of these features is the formation of new derivative words (Carstairs-McCarthy 2002: 30). These words might modify their class or might shift their meaning compared to the base word, whether to express diminutiveness or alter gender, bearing in mind that the word category is not necessarily susceptible to change. Thus, words with the suffix {+κ(a)} would be considered derivational when denoting the following functions: a) grammatical (changing the word class), as illustrated by *варить* > *варка*; and *зелёный* > *зелёнка*; and b) semantic and expresses the feminine gender, as exemplified by *студент* > *студентка*; and *активист* > *активистка*. It also expresses a diminutive meaning, whereby it inherits the gender of the base as shown by *квартира* > *квартирка*; and *градина* > *градинка*.

This organization of morpheme functions has gained support from Stump (2016: 229) through emphasizing the concept: ‘polyfunctionality’ – “the systematic use of the same morphology for more than one purpose”. Its framework links the multiple manifestations of a certain category if they are identically marked in terms of phonetics, morphology and lexicon. Therefore, this concept organises the multiplicity of meanings/functions (e.g. the agentive feminizer and the diminutive constituent) of the suffix {+κ(a)} by treating them as polyfunctional forms for the same category. This organization exposes that there is a single category and multiple forms classified by the frame of polyfunctions to the main one. This organization is conditioned by having the similarity of phonetic, morphological and lexical properties between its members. One form links to the other one with distinction only in function between them. This polyfunctional organization of the suffix {+κ(a)} is presented in Figure 2.10:

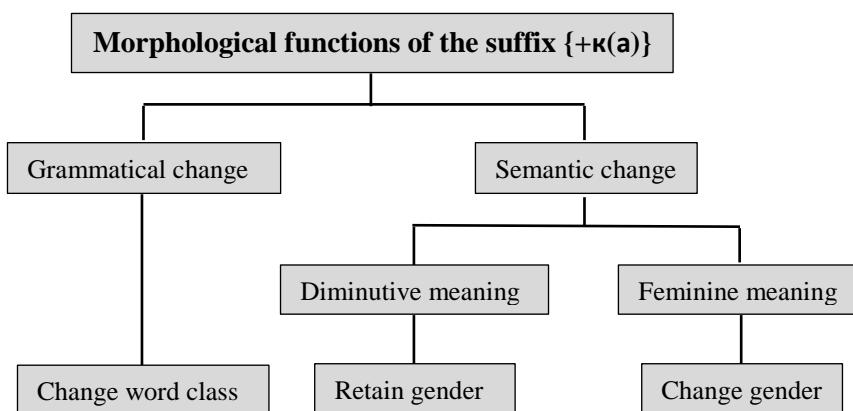


Figure 2.10 Morphological functions of {+κ(a)}

However, one could ask why I am obliged to treat this suffix as a derivational one with multiple sub-functions. Instead, one can argue $\{+\kappa(a)\}$ is not one but a matter of multiple homonymous suffixes delivering discrete meanings/functions.

In this sense, I have observed that surface words with $\{+\kappa(a)\}$ are influenced by their base in terms of the meanings/functions they can deliver. Accordingly, homonymity is reflected by having discrete suffixes in terms of function; each function is associated with a certain type of base word especially the class. Figure 2.11 represents the distribution of meanings/functions of $\{+\kappa(a)\}$ based on the word class (the base lexeme):

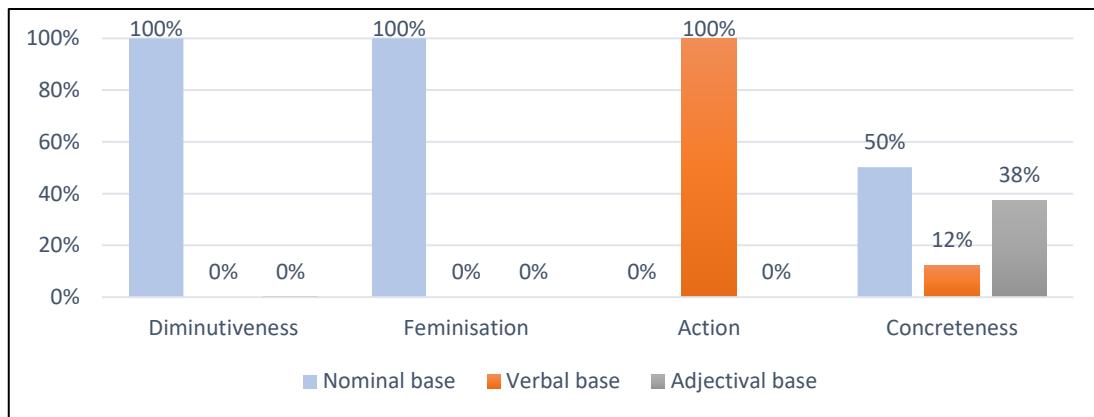


Figure 2.11 Influence of the word class

Figure 2.11 shows the percentage of meanings expressed by the suffix $\{+\kappa(a)\}$. Denominal words mainly serve to indicate a diminutive meaning (*блоха* > *блошка*) and alter the gender (agentive feminiser) as well (*студент* > *студентка*), whereas the remaining proportion which is marked by the label ‘Concreteness’ indicate either an amended meaning (*вода* > *водка*; and *друг* /drug/ ‘friend’ > *дружка* /druzhka/ ‘bridesman, groomsman’) or an identical meaning in comparison to that of the base (*оперетта* > *оперетка*; and *галерея* /galereya/ ‘gallery’ > *галёрка* /galyorka/ ‘gallery’).

Deverbal words primarily express an action meaning of their base (*вписать* > *вписка*), while the remaining proportion is divided into the following: 1) words that indicate a semantically divergent meaning with little overlap (*ботанизировать* /botanizirovat/ ‘to collect plants’ > *ботанизирка* /botanizirka/ ‘plant-collecting box’); and 2) words that express a certain feature which indicates the character of animate or inanimate beings (*знать* /znat/ ‘to know’ > *знакомка* /znaika/ ‘knowledgable person’).

Deadjectival words virtually denote characteristics of something in association with their base (*дешёвый* /deshyovyi/ ‘cheap’ > *дешёвка* /deshyovka/ ‘cheapness, cheap rubbish’; and *осторожный* > *осторожка*), but the remaining proportion expresses a heterogeneity of meaning between the base and surface word (*весёлый* /vesyolyi/ ‘cheerful’ > *весёлка*

/vesyolka/ ‘dough-paddle, fish-slice’; and *дыховой* /dukhovoi/ ‘wind, spiritual’ > *дыховка* /dukhovka/ ‘oven’).

It becomes clear that a certain base would be used to deliver a certain meaning/function, thereby utilising multiple homonymous suffixes of {+к(a)}. The nominal base is mainly used by the above suffix to express Diminutiveness and Feminisation. The verbal base is primarily used to indicate the Action meaning. Meanwhile, the adjectival base is almost always used to form words indicating the specific characteristics of certain things (Concreteness). This dichotomy of bases results from the diversity of meanings/functions delivered by the above suffix.

This taxonomic homonymous view is supported by multiple scholars; Vinogradov, Istrina, and Barkhudarov (1952: 233-34, my translation) point out that words with {+к(a)} denoting the feminine meaning only derive from a nominal basis, such as *дeлeгaт* /delegat/ ‘delegate (m.)’ > *дeлeгaтkа* /delegatka/ ‘delegate (f.)’; and *aристократ* /aristocrat/ ‘aristocrat (m.)’ > *aристократkа* /aristokratka/ ‘aristocrat (f.)’. In contrast, words expressing certain characteristics are possibly derived from the adjectival stems with {+ов/ев+}. Namely, *абрикосовый* /abrikosovy/ ‘apricot’ > *абрикосовка* /abrikosovka/ ‘apricot liqueur’; *вишнёвый* /vishnyovy/ ‘cherry’ > *вишнёвка* /vishnyovka/ ‘cherry liqueur/brandy’, etc.

Meanwhile, verbal stems ending in {+овать} and similar endings result in the formation of words expressing an action meaning. Similarly, other scholars (e.g. Townsend 1975: 22; Ulukhanov 1975: 42; Brown and Hippisley 2012: 264) point out that verbal stems give rise to the formation of nouns in which the suffix {+к(a)} indicates an action meaning;⁷ their verbal base usually motivate the above meaning (Bybee 1985: 17-18).⁸

To oppose the above view of homonymity, the concept of ‘cognitive semantics’ proposed first by Lakoff (1987: 17) and developed later by Janda (1993: 6) suggests that there is one main prototypical member and other more/less prototypical members that are affiliated to the main one by their interrelationship. Hence, this concept challenges the idea of the existence of multiple homonymous suffixes of {+к(a)}. This concept assumes a radial distribution of functions, rather than a hierarchical one. This concept will be thoroughly discussed later in Chapter 6, which is concerned with the semantic distribution of the suffix {+к(a)}.

⁷- Townsend (1975: 22) notes that “the nominal suffix -к- makes nouns of action|result from verbs (выставить – display, выстав|ка – display(ing), exhibit/ion)”.

⁸- “The causative meaning is highly relevant to verbs, since it affects quite directly the event or state being described by the verb stem” (Bybee 1985: 17-18).

2.4.2.1.8.3 Difficulties of {+κ(a)} composition

Another problem is apparent from Figure 2.6 (see above). This figure has shown that the inflectional ending {+a} has been governed by the accusative case of the transitive verb of the sentence, as illustrated by *sodky*. Hence, the question arises here, is the suffix {+κ(a)} composed of one derivational element? If yes, then why was its ending /a/ governed by the syntactic rules despite the fact that it has been argued that its formation is a result of a derivational process. The scope of derivation is detached from the effect of the syntactic rules as it is related to word structure and engages with word components. Thus, the above suffix consisting of one element seems irrelevant to the morphological properties of either derivation or inflection. If we I assume that its formation is only triggered by inflection, this poses a contradiction, especially with regards to the formation of new words, which is the main feature of the derivation process. At the same time, if it is claimed that its formation results only from derivation, no word with the above suffix would be affected by syntactic rules and this is not the issue observed earlier in Figure 2.6.

This leads me to argue that this is clearly two affixes, {κ} plus {a}. The second is inflectional, whereas the first is derivational. This segmentation provides a plausible interpretation for both derivational and inflectional processes that occur in association with forming this suffix. First, it links the concept of forming new words with the derivational constituent {+κ+} which gives rise to the production of new words, so it represents the essence of the derivational process. Second, it illustrates the commitment of the inflectional morphemes to the syntax by considering the inflectional constituent {+a} as an ending that is subject to syntactic rules, as I have seen earlier in Figure 2.6.

2.4.2.2 Observations found in the IP model

The Item and Process (IP) models of morphology assume that words constitute paired features of form and function/meaning (items), and that the different elements in complex words can undergo a variety of modifications and transformations (processes). Thus, Morphology is regarded as a set of processes on morphemes or words. Evidence to this effect can be witnessed in cases of subtractive morphology, in which the surface word is not merely the sum of its base+morpheme (Anderson 1992: 187). This can be seen by the English examples *demonstrate* > *demonstrable*; *navigate* > *navigable*; *formulate* > *formulable*, etc. by which the morpheme {+ate} is truncated as a result of generating new words. Anderson suggests the following rule shown in Figure 2.12 below which describes deleting specific morphemes and adding new ones:

(3) [Adj [v X + ATE] + ABLE] —————→ [Adj [v X + Ø] + ABLE]

Figure 2.12 Anderson's truncation rule: Adapted from (Anderson 1992: 187)

The IP model is based on the assumption of rules which describe the word formation process. However, this leads to the emergence of specific constraints and problems which are presented in the following sections:

2.4.2.2.1 Observation 1: Difficulties of operation of Word Formation Rules

It seems vague whether the rule shown in Figure 2.12 (see above) operates on the whole constituents of the word including endings or it just occurs on the word stem. In other words, does the formation of *болгарин* > *болгарка* expose a rule that leads to truncate the suffix {+ин}, coinciding with attaching the suffix {+к(а)}? To answer this question, it is customary that Word Formation Rules (WFRs) operate around the stem boundary, so the above formation (*болгарин* > *болгарка*) possibly occurs by subtractive morphology. This model thus assumes that WFRs usually operate around the stem boundary as exemplified by *бедняк* > *беднячка*; *деревня* > *деревенъка*, etc. The dashed lines in Figure 2.13 shows the operation of WFRs (e.g. Truncation, Allomorphy, and Mutation) around the stem boundary:

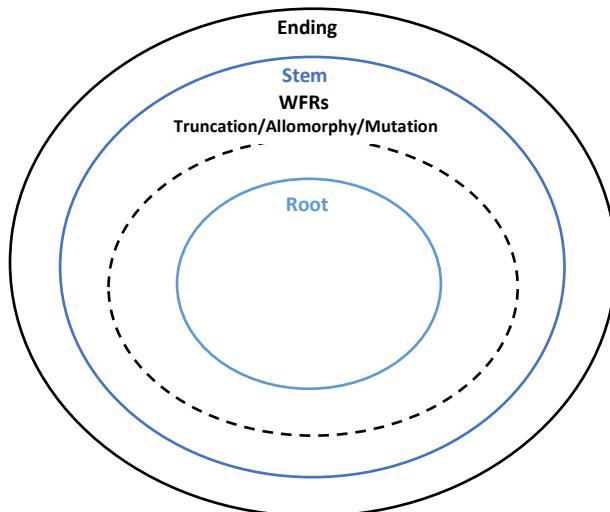


Figure 2.13 Operation of WFRs

However, controversy arises when other formations in which WFRs operate around the root boundary are found as in *заяц* /zayats/ 'hare' > *зайка* /zaika/ 'hare (dim.)'; *игла* /igla/ 'needle' > *иголка* /igolka/ 'needle'; *мыть* /myt'/ 'to wash' > *моика* /moika/ 'washing'; *аптека* /apteka/ 'pharmacy' > *аптечка* /aptechka/ 'first-aid set', etc. The above examples involve changes at the root boundary or the appearance of a fleeting vowel, which has to be dealt with through some sort of rule. Therefore, assuming that WFRs operate only around

the word stem seems to be problematic, especially when the root is influenced by these rules. To solve this, these formations are possibly explained as exceptions to the above assumption. Consequently, these exceptions may represent a problem which would need to be explained by the IP model.

2.4.2.2.2 Observation 2: Difficulties of additive morphology

Many words reflect an additive morphology in their production. The interpretation of this model upon these data can be applied for instance on the word *студент* > *студентка* when considering the accounts of Aronoff (1976) and Stump (2001), in which the rule of input and output is only circulated between words. As a result, the formation rule for that word can be shown as: /X/ → /Xka/; where the former /X/ indicates the input (*студент*) and the latter /Xka/ refers to the output (*студентка*). However, once the rule is assumed to be circulated between the stem of the words as suggested by accounts of, Matthews (1974) and Anderson (1992), this rule seems to be inaccurate to explain the above coinage of *студент* > *студентка*. This is because its formation does not include any phonological/orthographical change occurring during its formation process. Hence, the IP model seems insufficient to interpret many coinages of {+к(a)} where an additive morphology is taking place.

2.4.2.2.3 Observation 3: Difficulties of types of phonemes

On the one hand, I have noticed that when a word ends in a combination of a vowel and a consonant (VC) or a consonant and a vowel (CV), then it is more likely to avoid any type of truncation or alteration to produce new words as illustrated by *акробат* /akrobat/ ‘acrobat (m.)’ > *акробатка* /akrobatka/ ‘acrobat (f.)’; *богач* /bogach/ ‘rich man’ > *богачка* /bogachka/ ‘rich woman’; *задача* /zadacha/ ‘task’ > *задачка* /zadachka/ ‘small task’, etc. However, some formations ending in these combinations are subjected to mutation or truncation, such as *австрияк* /avstriyak/ ‘Austrian (m.)’ > *австриячка* /avstriyachka/ ‘Austrian (f.)’; *луковица* /lukovitsa/ ‘onion’ > *луковка* /lukovka/ ‘small onion’; *болгарин* > *болгарка*; *колонна* /kolonna/ ‘column’ > *колонка* /kolonka/ ‘small column’; *оперетта* > *оперетка*, etc.

On the other hand, words ending in a combination of (CC/VV) are possibly subject to alteration or truncation. Namely, *семья* /sem'ya/ ‘family’ > *семейка* /semeika/ ‘small family’; and *финн* /finn/ ‘Finnish man’ > *финка* /finka/ ‘Finnish woman’. Conversely, other formations ending in this combination are not affected by alteration or truncation. See examples of *богатей* /bogatei/ ‘rich man’ > *богатейка* /bogateika/ ‘rich woman’; and

интеллигент /intelligent/ ‘intellectual man’ > *интеллигентка* /intelligentka/ ‘intellectual woman’.

Consequently, the IP model is unable to generalise a static rule which organises truncating or alternating specific words on the basis of types of phonemes.

2.4.2.2.4 Observation 4: Difficulties of morphological sequence of deverbal coinages

The IP model assumes that most deverbal formations omit their verbal ending and the linking vowel. As illustrated by *вмазать* /vmazat'/ ‘to fix in’ > *вмазка* /vmazka/ ‘fixing’; and *возить* /vozit'/ ‘to drive, carry’ > *возка* /vozka/ ‘carriage’.⁹ However, other formations are formed by using the stem of the present tense. This can be shown by *кладь* /klast'/ ‘to lay down/on’ (*кладу* /kladu/) > *кладка* /kladka/ ‘laying’; *скрести* /skresti/ ‘to scratch’ (*скребу* /skrebu/) > *скрёбка* /skryobka/ ‘scratching’; *трясти* /tryasti/ ‘to shake’ (*трясу* /tryasu/) > *тряска* /tryaska/ ‘shaking’; *сечь* /sech'/ ‘to cut, chop’ (*секу* /seku/) > *сечка* /sechka/ ‘cutting, chopping’; and *стричь* /strich'/ ‘to trim, clip’ (*стригу* /strigu/) > *стрижка* /strizhka/ ‘trimming, clipping’. Thus, multiple rules are posited by the IP model to explain the variety of formations.

2.4.2.2.5 Observation 5: Difficulties of root allomorphy

Root allomorphy is evident while producing words with the suffix {+к(а)}. This phonetic alteration occurs between the following phonemes:

- 1) /Ø/ – /e/, /ë/: *туфля* /tuflja/ ‘shoe’ > *туфелька* /tufel'ka/ ‘slipper’; *копна* /kopna/ ‘shock’ > *копёнка* /kopyonka/ ‘small shock’; and *сосна* /sosna/ ‘pine-tree’ > *сосёнка* /sosyonka/ ‘small pine-tree’.
- 2) /Ø/ – /o/: *выбрать* /vybrat'/ ‘to pick, select’ > *выборка* /vyborka/ ‘selection’; and *убрать* /ubrat'/ ‘to remove, harvest, tidy’ > *уборка* /uborka/ ‘removal, harvesting, tidying’.
- 3) /Ø/ – /ы/: *послать* /poslat'/ ‘to send’ > *посылка* /posylka/ ‘sending, parcel, errand’; and *прислать* /prislat'/ ‘to send, dispatch’ > *присылка* /prisylka/ ‘sending, dispatching’.
- 4) /e/ – /ë/: *блестеть* /blestet'/ ‘to shine’ > *блёстка* /blyostka/ ‘paillette, spangle’; and *гребень* /greben'/ ‘comb’ > *гребёнка* /grebyonka/ ‘comb’.
- 5) /e/ – /o/: *торцевать* /tortsevat'/ ‘to pave with wood blocks’ > *торцовка* /tortsovka/ ‘wood pavement’.

⁹- The above examples: *вмазать*, *возить* omit the verbal desinence AND the linking vowel (morpheme). Interestingly, these verbs use the infinitive stem (because otherwise it would be {вмаж+} /vmazh/).

- 6) /й/ – /ë/: *окаймить* /okaimit'/ ‘to border, edge’ > *окаёмка* /okayomka/ ‘surrounding something’.
- 7) /а/ – /o/: *лодья* /lad'ya/ ‘boat’ > *лодка* /lodka/ ‘boat (dim.)’.
- 8) /ним/ – /ем/, /ём/, /им/: *вынимать* /vynimat'/ ‘to take out’ > *выемка* /vyemka/ ‘taking out’; *снимать* /snimat'/ ‘to photograph’ > *съёмка* /s"yomka/ ‘photographing’; and *перенимать* /perenimat'/ ‘to take over’ > *переимка* /pereimka/ ‘taking over’.

Thus, the IP model implies a sporadic distribution of multiple allomorphs of various formations.

2.4.2.2.6 Observation 6: Difficulties of irregular formations

The production of specific words containing the suffix {+к(а)} cannot be explained by undergoing WFRs as above. The reason is that these words are a reflection of univerbation and acronyms. This can be seen by *одиночка* /odinochka/ ‘lone person’ (*одинокий человек* /odinokii chelovek/); *малолитражка* /malolitrazhka/ ‘mini-car’ (*малолитражный автомобиль* /malolitrazhnyi avtomobil/); *столярка* /stolyarka/ ‘carpenter’s shop’ (*столярная мастерская* /stolyarnaya masterskaya/), etc. Hence, imposing certain rules using the IP model to explain the formation process of the above coinages seems irrelevant and inappropriate.

2.4.2.2.7 Observation 7: Difficulties of different interpretations of WFRs

The IP model presupposes that there is more than one potential rule to interpret a certain formation. For instance, presumably, the WFRs for *нежный* > *неженка* is possibly explained by having an allomorphy which affects the stem, coinciding with the addition of the suffix {+к(а)}. A second possibility is that the adjectival suffix {+ный} is removed first, and then the compound suffix {+енк(а)} is attached. This overlapping situation between the processes of (allomorphy + additive morphology) versus (truncation + compound suffixation) can also be found in other formations. Consequently, multiple interpretations that contradict each other can be posited to explain the same formation. This sort of taxonomic approach to morphological processes ends up being far too powerful; I have to posit too many potential processes that are then unconstrained, and I end up with no satisfactory explanation/rule at all as a result.¹⁰

¹⁰- What IP morphology can do is merely formalise the patterns in the data – that is, for every different pattern they just suppose a different type of rule and have it encoded in the system and linked to the relevant lexemes. This does correctly represent the data but it has no predictive power – it is pure formalism and tells us nothing interesting linguistically about how these words are mentally stored or formed.

2.4.2.3 *Observations found in the WP model*

The WP model consists of multiple accounts which share a similar notion by dealing with related words at the word level. The ‘Network Morphology’ account (Bybee 1985) relies essentially on two concepts: words and their connections. The surface word shares phonological and semantic connections with its base lexeme or at least one of them should exist. This seems intuitive when encountering surface words reflecting the following: 1) full semantic and phonological correspondence: *студент* > *студентка*; 2) semantic correspondence only: *мыть* > *мойка*; *снимать* > *съёмка*, etc.; and 3) phonological correspondence only: *вода* > *водка*.

However, the problem arises when I encounter surface words in which both phonological and semantic connections are distorted. This can be seen by *помыть* /pomyt'/ ‘to wash’ > *помойка* /pomoika/ ‘rubbish heap, dump’; *изнинать* /iznimat'/ ‘to overcome, defeat’ > *изъёмка* /iz"yomka/ ‘shoot, taking pictures’, etc. Here the lexical connection, whether semantically or phonologically, is violated in these coinages. The above account does not successfully interpret the simultaneous mismatch of form and meaning, as it depends on semantic and phonological connections to define the affiliation of surface words to their base lexemes. Thus, once both levels of connections are distorted, there is no reliable way to map surface words to their base lexemes. This makes the above account insufficient to cover the whole picture of word formation in Russian at least from a semantic perspective.

Other accounts, in particular ‘Extended Word and Paradigm’ (Anderson 1982) and ‘Paradigm Function Morphology’ (Stump 2001) have employed the paradigmatic scope in defining the correlation of their members. Their basic idea is to consider the base lexeme as a paradigm; other derivative forms correspond to this paradigm phonologically and semantically. This structure expresses paradigmatic relations in which the meaning and the form are associated with the word level. Therefore, this results in considering them as a framework of the paradigm-based approach. The minimal sign for this approach is a lexeme rather than a morpheme. The lexeme is treated as “... a locus of parallel information, where semantic, syntactic, phonological and morphological information are combined” (Brown and Hippisley 2012: 44).

On the one hand, this paradigmatic domain hinges on the concept of analogy/similarity to the most frequent word in the mind of the speaker to produce new coinages. On the other hand, it allows surface words to reflect the following: 1) phonological extension which is termed in other models as additive morphology; 2) heterogeneity of meaning; and 3) mismatch of forms which are explained in other models as subtractive morphology; mutation; and allomorphy.

The WP model copes with the problems found in other models: *студентка*, *водка*, *американка*, *мойка*, *съёмка*, *дружска*, *помойка*, and *изъёмка* can be considered as new derivative words that belong to their main paradigms *студент*, *вода*, *американец*, *мыть*, *снимать*, *друг*, *помыть*, and *изнимать*. Noting that although various phenomena are taking place in these data: (*студент* > *студентка* (additive morphology), *вода* > *водка* (semantic mismatch), *американец* > *американка* (subtractive morphology), *мыть* > *мойка* (allomorphy), *снимать* > *съёмка* (allomorphy), *друг* > *дружска* (mutation), *помыть* > *помойка* (allomorphy plus semantic mismatch respectively), and *изнимать* > *изъёмка* (allomorphy plus semantic mismatch respectively) the correlation between the paradigm and its new form of a word is still achieved by this paradigmatic formula/pattern: [X] > [X_a].

A pattern/rule is subsumed under the term ‘structural description’ (Langacker 2002: 17): the relationship between related words can be described by a stored pattern/rule. This pattern/rule organises the interrelationship between derivative elements as a main paradigm and its new derivative form whether there is a formative and semantic correspondence or not. This model treats its parts, whether the paradigm or the other formative words, as stand-alone units. All data can be represented by this model since it does not consider the internal circumstances of a given structure. Rather it deals with a word as a whole component. As a result, this model seems the most convincing one to explain all production of {+κ(a)} regardless of having various linguistic phenomena taking place while forming surface words.

2.4.3 Some views rejected by the formations with {+κ(a)}

The semantic correspondence of coinages of {+κ(a)} to their base lexemes would contradict some views proposed earlier by some scholars. It has been indicated earlier that the semantic relevance between items can determine whether a process is inflectional or derivational (e.g. Bybee 1985: 5; Miceli and Caramazza 1988: 25; Feldman 1994: 442). A strong semantic relevance between items is considered inflectional, whereas weak and divergent semantic relevance is considered derivational.

However, it has been found that words containing the derivational suffix {+κ(a)} reflect greater semantic relevance. In 2.4.2.1.8.1, I have introduced the terms ‘MATCH’, ‘DIVERGE’, and ‘MODIFY’ in order to examine the level of relevance found in these formations. Subsequently, the distribution of the above terms in formations of {+κ(a)} is shown in Figure 2.14:

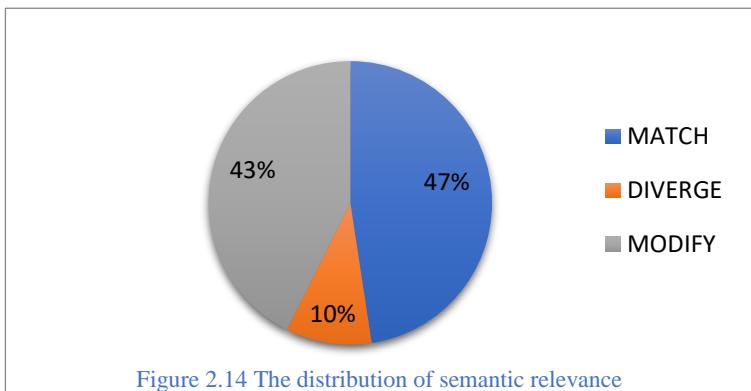


Figure 2.14 The distribution of semantic relevance

Heterogeneity of meaning represents the smallest number. This heterogeneity varies according to the type of base word. Figure 2.15 represents the differences between bases with respect to semantic correspondence:

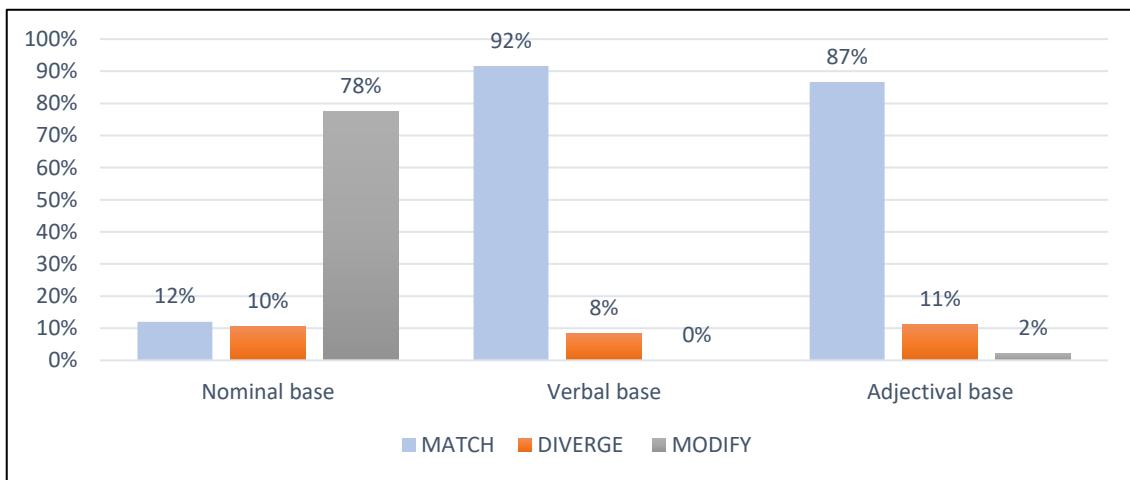


Figure 2.15 The disparity of semantic relevance

As a result, semantic relevance is primarily expressed by the majority of words with $\{+\kappa(a)\}$ as shown in Figure 2.14 and Figure 2.15 (see above). Even though the term ‘MODIFY’ refers to a modified meaning, it still reflects a correlation between meaning and base. Thus, I might argue that derivational morphology presented by formations of $\{+\kappa(a)\}$ also reflects high semantic relevance. This possibly contradicts the above views that only inflection can result in the feature of high semantic relevance.

Derivational morphology is characterized as being unpredictable, with ‘productivity’ and ‘generality’ distinguishing between inflection and derivation. The common assumption in theoretical morphology (e.g. Bauer 1988: 15; Feldman 1994: 442; Stump 1998: 16; Booij 2000: 363; Koefoed and van Marle 2000: 303; Haspelmath 2002: 71; Gaeta 2007: 182) is that inflectional productivity is generally higher than derivational.¹¹ Inflection seems to be more predictable than derivation. Other scholars (e.g. Bybee 1985: 5; Katamba 1993: 207; Blevins

¹¹- Stump (1998: 16) argues that “inflection is generally more productive than derivation”. Also, Feldman (1994: 442) shares similar view by stating that “inflectional formations are more productive ... than are derivational formations”.

2001: 213) point out that inflectional forms tend to be generated automatically and regularly depending on their environment. Conversely, the derivational process may behave sporadically owing to the lack of regular morphemes for the same application; therefore, their behaviour is unpredictable.

‘Unpredictability’ is a negative feature: it describes what cannot be done or what is difficult to do, and it does not reflect what speakers do. However, speakers have almost no difficulty in deciding which suffix to add or what it means. My data has shown that I can predict safely for any particular noun how it will implement Diminutiveness, Feminisation, etc., and I can always predict what function(s) the suffix {+κ(a)} will have as shown by Figure 2.8 (see above). So, I have a mismatch in that ‘theory’¹² suggests something is difficult and disparate, and yet I know that most of the time speakers consistently agree on the suffix needed for a particular function and interpret it consistently when they hear or see it.

Accordingly, the suffix {+κ(a)} has shown the ability to be predictable in its environment. This predictability is possibly triggered by a speaker’s use of the suffix in certain applications. This use is perhaps associated with the concept of ‘expressive derivation’ which has been addressed earlier. Therefore, derivation may retain the animacy of the base; morphosyntactic features can be preserved by expressive derivational affixes. This is possibly reflected by an inheritance of meaning and gender as well (*стол* > *столик*; and *дом* > *домик*). This may result from the fact that the meaning of the derivative word is affected by the meaning of its base ‘most of time’. This means that the semantic meaning of the surface word complementary to the meaning of its base.

2.4.4 A comparison arises via formations with {+κ(a)}

According to the word-based approach, the morpheme {+κ(a)} has contributed to the formation of different categories which are shown in Figure 2.1 (see above). This might be considered a problem for some morphological models since these categories cannot be recognised by them. The differences in the approach between these categories is displayed in Table 2.4 where the ‘Frequency’ term indicates the representation of each category:

¹²- It is worth defining the concept ‘theory’ and how it differs from other terms, particularly account, model, and approach. The word ‘theory’ refers to quite broad concept in scope and attempts to answer a very general hypothesis about the way a field works. Interestingly, most of the authors’ work mentioned in this thesis are not doing that: they can be said to give an ‘account’ (an explanation of how a theory might be implemented) or to propose a ‘model’ (a working-out of a theory). The term ‘approach’ can be defined as the loosest of all, since it might refer to a model, a perspective, a methodology, an account, and various other things.

Table 2.4 Comparative view towards different categories of {+κ(a)}

	The suffix {+κ(a)}	Compound suffixes	{+κ(a)} as a part of the root
WP	✓	✓	✓
IP	✓	?	?
IA	✓	?	?
Frequency	79%	20%	01%

Obviously, the WP model does not show any constraints in the distribution of the categories shown in Table 2.4 since they operate at the word level. Therefore, it has no need to distinguish between: 1) compound suffixes; 2) {+κ(a)} as a part of the word root; and 3) words contain the suffix {+κ(a)} unless the distinction is somehow relevant or emerges from my data. Thus, the above model can explain all of them without issue. However, the IA model deals with these words at the morpheme level; the correlation of the base and surface word is absent. Therefore, this model treats all words ending in {+κ(a)} as having been formed only by the suffix {+κ(a)} relying on a juxtaposition of one morpheme to another. Meanwhile, the IP expresses restriction in its treatment to the some of the above categories. If I consider accounts of Aronoff (1976) and Stump (2001), then this model does not have any constraints in dealing with all the categories above because it deals at the word level. However, when considering accounts of Matthews (1974) and Anderson (1992), then this model exposes problems to differentiate between the suffix {+κ(a)} and other categories where the morpheme {+κ(a)} is an essential part of their composition due to its treatment at the morpheme level. So, these accounts indicate a sense of contradiction. This is reflected by treating their objects (the inputs and outputs) at two different levels. The former treats them at the word level, while the latter treat them at the stem level.

Morphologically, I have seen that words with the suffix {+κ(a)} may be subject to various linguistic phenomena, such as allomorphy, truncation and mutation. In addition, some words may take on more than one potential base. Thus, morphological models vary in their treatment of these phenomena. This disparity can be illustrated in Table 2.5:

Table 2.5 Comparative view towards different phenomena

	Simple formation	Truncation	Allomorphy	Mutation	One base	Multiple bases
WP	✓	✓	✓	✓	✓	✓
IP	?	✓	✓	✓	✓	?
IA	✓	?	?	?	✓	?
Frequency	36%	38%	09%	17%	80%	20%

The WP model explains all the above phenomena, whereas other models do not. For instance, words allocated under the category of ‘Simple formation’ which are triggered by an additive morphology cannot be explained by accounts put forward by Matthews (1974) and Anderson (1992) in the IP model. The stem of these words does not contain any phonological (allomorphy and mutation) or morphological (truncation) processes to be described and explained later by the above model.

Also, it seems difficult to trace the base of surface words with multiple potential bases, as WFRs operate only between the stems themselves. Similarly, the IA model seems only able to explain words with the category of ‘Simple formation’, since it occurs in a linear arrangement. Other phenomena rely heavily on allomorphy or phonemic rules to deliver these other formations. They tend to be problematic for this model because the arbitrary correspondence of meaning and form caused by the occurrence of linguistic phenomena (e.g. allomorphy, truncation, and mutation) would violate the main concept of this model. Additionally, when I have a multiplicity of bases, the IA model has a deficiency in choosing a certain base for a certain surface word since it deals with words at the morpheme level.

2.5 Conclusion

Derivational morphology tends to reflect a correspondence of form and meaning between related words. However, the heterogeneity of form and meaning might infringe upon this connection. Thus, the morpheme-based approach and process-based approach seem invalid for the classification of words in relation to their bases. Instead, the theoretical framework of the word-based approach is based on the paradigmatic relationship reflected by a paradigm (the base lexeme) and a new derivative form (the surface word). The word-based approach represented by the WP model seems solid in classifying words to their morphological source regardless of whether there is a morpho-semantic correspondence, or these corresponding elements are violated. This approach describes the relationships between the parent and derivative words as interrelated connection. Thus, this paradigmatic depiction simply represents a network of mutual relationships between surface and base words. This illustrates the level of phonological and semantic similarity that exists between derivative elements.

Treating related words at the word level makes the WP model able to deal with all coinages of {+K(a)} without indicating problems. However, other models exhibit problems in doing so. On the one hand, I dwelled longer in discussing the problems found in the IA model. I detected 8 observations (please see Section 2.4.2.1, pages 31 – 51). On the other hand, the discussion regarding the observations/constraints found in the IP model is much less (please see Section 2.4.2.2, pages 51 – 55). The IP model is composed of two different accounts: Matthews (1974)

and Anderson (1992) assumed that WFRs operate between stems of related words; however, Aronoff (1976) and Stump (2001) assumed that WFRs operate only between the input and the output at the word level. So, the constraints are only observed with the first account since it is closer to the morpheme level. The second account does not express problems since it deals with related words at the word level. This explains why the problems observed in the IP model are much less compared to those of the IA model.

Implementing the word-based approach has highlighted the following issues:

- 1- Words containing the suffix $\{+\kappa(a)\}$ implicate various linguistic phenomena in their coinages. This complexity makes this suffix a good example to examine which model/approach best covers the whole picture of word formation.
- 2- Just because a word ends in a certain morpheme, instantiated here on $\{+\kappa(a)\}$, this does not always mean that it has been formed with that morpheme unless the correlation between the base and surface words is exposed. Thus, I have identified two other categories alongside the aforementioned suffix: 1) compound suffixes; and 2) $\{+\kappa(a)\}$ as a part of the word root. This underlines the fact that the correlation between the base and surface word is fundamental, undeniable, and unavoidable.
- 3- Examining word formation process with $\{+\kappa(a)\}$ has led me to refute some theoretical assumptions. Derivational morphology is considered to be unpredictable to its environment. This states that it cannot obtain a high semantic relevance existing between related words. My data has shown that the suffix $\{+\kappa(a)\}$ is predictable to the speaker by its use and it obtains a high semantic relevance compared to its base form.
- 4- Importantly, the morpheme-based approach represented by the IA model and the process-based approach represented by the IP model have reflected problems to classify surface words to their base. However, the word-based approach represented by the WP model proves its validity to cover all productions with the suffix $\{+\kappa(a)\}$. This leads me to propose a hypothesis that prefers the WP model to describe my data.

3 Chapter: The correlation of productivity with mental representation and frequency

3.1 Introduction

The word-based approach of morphology outlined in Chapter 2 challenges traditional accounts in structuralist linguistics that divorced the study of semantics from phonological form as one indivisible unit. The consequence of separating meaning from the cognitive perception of words led scholars previously to construct models of meaning as rule-based, whereby meaning was built up in a linear fashion by coupling together component parts of words. By contrast, as its name suggests, the word-based approach of morphology supposes that language users can perceive meaning by registering words as discrete units.

Lexical items are considered a major part of a speaker's knowledge in any language. How these items are accessible to be learned, perceived and produced by the speaker is regarded as one of the fundamental aims of psycholinguistics. Chialant and Caramazza (1995: 65) consider productivity as a factor that is associated with how the word is realized in a lexicon. A proper understanding of the mechanism of mental representation of words can help researchers to answer crucial questions pertaining to the word productivity and its relation to this representation.

Recognizing the factors that result in word productivity and how inflected/derivational forms are produced by the speaker is a crucial issue to investigate. For example, it is stated that the suffix {+κ(a)} is one of the productive suffixes in Russian (e.g. Vinogradov 1972: 62; Townsend 1975: 189). This raises a number of questions. Does the productivity of this suffix result from its mental representation? Do mental accounts have any part in shaping the basic notion of morphological models of word-formation, or do they just share similar concepts? How does the frequency influence the recognition of morphologically complex words and their morphemic components? And lastly, is there any disparity in accessing and processing words, depending on whether words are frequent or not?

To answer the above questions, this chapter thus argues that the mental representation of this suffix is best described by the single-route account. This account requires less time in recognising/processing words since it depends on the concept of frequency and analogy.

This chapter aims to elucidate the concepts associated with mental representation and its relationship to productivity and frequency effects. It begins by addressing the mental representation of morphologically complex words through the following points: 1) basic factors of mental representation; 2) various mental accounts: a) an explanation of the single-route

account; and b) an explanation of the dual-route account. Secondly, the concept of frequency is investigated from the following angles: 1) type and token frequency; 2) the effect of frequency types on mental accounts. Lastly, the concept of productivity is explored through the following points: 1) the definition of productivity; and 2) the conditions of productivity.

3.2 Mental representations of morphologically complex words

3.2.1 Basic factors of mental representation

Psycholinguistic studies have investigated how a word is stored, processed and later produced. Many studies have attempted to underline how the mental representation may be subject to particular effects. Lexical development in the child's brain to perceive and produce words is usually affected by various factors:

- 1- Common words occupy a high proportion of the mental storage of children: "when the average number of words in the vocabulary is 50, common nouns account for 40% of forms" (Stoel-Gammon 2011: 6). Interestingly, as the average vocabulary size rises to more than 600 words, the percentage of common words stays the same: 40%. The earliest-acquired common words by children contain words commonly employed in social contexts, for instance *daddy*, *mommy*, *hi*, *bye-bye*, etc. Similarly, Stemberger and MacWhinney (1986: 18) note that children often articulate a common inflected form accurately, while they fail to use less common forms. This implies that the storage of known forms is faster and more accessible in the mental lexicon of not only children, but adults as well.
- 2- The input frequency can be a second factor; certain parts of speech (e.g. articles, pronouns, quantifiers, prepositions) are more frequent inputs than others. Therefore, they can be perceived and produced early. This view has gained support from MacWhinney (1978: 9) through underscoring the link between 'lexical strength' and the input frequency. He indicates that this strength relies on the frequency of the input-accessibility and production frequency. This means that the frequency of usage of a word by adults determines how accurately the word will be perceived by the child.
- 3- The social environment has a great influence on a child's vocabulary acquisition. This can be explained by the fact that children who spend more time within the family quickly develop their phonological skills. This influences their vocabulary acquisition and production (Stoel-Gammon 2011: 6-7).

3.2.2 Various mental accounts

Seroussi (2012: 289) states that the mental lexicon is a debated topic; the fact that scholars posit the possibility of morphological decomposition leads us to question whether morphemes

(bound and free) exist as lexical autonomous units or not. Weyerts et al. (1996: 125) report that the latest psycholinguistic studies have scrutinized representation and access of morphologically complex words. The controversy lies in whether these words are stored as whole units or their storage relies on decomposing them into roots and affixes. Stemberger and MacWhinney (1986: 17) use the examples *dogs* and *walked* to exemplify these two methods:

- 1- Inflected forms are stored and represented as one unit in the lexicon as shown by /dogs/, and /walked/.
- 2- Inflected forms are stored and represented as two autonomous units in the lexicon as shown by /dog/ plus /s/; and /walk/ plus /ed/.

3.2.2.1 Single-route account (SR)

Scholars have not reached a consensus on the alternatives above. Some are in favour of the first variant in which derivational/inflected forms are stored and represented as single unit in the lexicon (e.g. Vennemann 1974; Leben and Robinson 1977). The same position is taken by Sosa and Macfarlane (2002: 228). They note that recent studies and evidence have shown that morphologically complex words are holistically represented in a lexicon. This position is supported by evidence from speech production (Losiewicz 1992) and tasks of lexical access (e.g. Bertram et al. 2000; Alegre and Gordon 1999). Jackendoff (1975: 639) argues that inflected forms are stored, but they are nevertheless analysable into multiple components or divisible units. Therefore, according to this approach, specific forms are stored in memory, although they can ultimately be analysed into their morphemic components, or they are implicitly composed of morpheme sequences.

In this account, inflected regular forms, such as *walked* are treated the same as irregular forms, behaving in a way which shows that they are holistically stored in the lexicon. The mental representation in the account of ‘single-mechanism’ is influenced by some factors, such as frequency of usage. This approach is exemplified in Bybee’s (1985) model of ‘Usage-based’ or ‘Network Morphology’ account, which proposes a model for processing words; all forms are created and associatively memorized in the mental lexicon where their position in the lexicon is influenced by factors of usage and analogy.

As a result, this model does not include any constraints pertaining to what should or should not be stored in the lexicon; the storage is solely determined by similarity to other frequent forms. For instance, when the speaker intends to form a feminine form of an infrequent word, for instance *албанец* /albanets/ ‘Albanian (m.)’, then s/he will remember a similar form that is more frequent, such as *американец* > *американка* to analogize the same formation. Subsequently, s/he will be able to produce the word *албанка* /albanka/ ‘Albanian (f.)’ based on

the above analogy with formation of the word *американка*. Therefore, usage analogy results in predicting forms that are similar to those already heard and known. Relying on the analogical basis is intended to be used as a general account to show how similarity can influence the generation of new forms (Nosofsky 1990).

Analogy has a number of advantages in language processing. It assumes that known forms are only stored, and it is possible to apply analogy to create new ones that have not been heard or known. The second advantage is that it does not require someone to extract generalizations based on the data, and then formulate them into rules or systems or constraints. This concept is consistent with other accounts that treat words as stored entities having a complex network and internal connection among each other (e.g. Bybee 1985, 1988; 1995; Fowler, Napps, and Feldman 1985; Lukatela, Carello, and Turvey 1987; Grainger, Cole, and Segui 1991; Drews and Zwitserlood 1995).

The use of analogy traditionally accounts for the existence of exceptional findings. That is, if a result does not fit with a general rule, then a certain form is phonologically or semantically analogous to the exceptional one; an analogous use “is sought that is then said to influence the exceptional form in such a way that it does not develop according to the general process” (Eddington 2000: 420).

Interestingly, other methods utilise the concept of analogy to generate unknown forms. One of them is called ‘minimal generalization’ which was proposed by Albright and Hayes (2003: 124). This method assumes that the generalization can be carried out by comparing the formation of forms with one another. It means that when two forms seem similar in terms of formation, as exemplified by *студент* > *студентка*; and *абонент* > *абонентка*. So, it is possible to generalize the following formula/pattern [X] > [Xka] in order to generate other oriented forms. In this approach, rules appear later alongside storage of forms to ease access to forms or generalize this rule to form other words.

Eddington (2000: 427) notes the similarities between analogy and the ‘exemplar model’. This account suggests that forms are fully stored, and they are not susceptible to being parsed.

In this regard, two concepts of SR account are possibly close to the exemplar-based model, namely ‘Analogical modelling of language’ - AML (Skousen 1989, 1992, 2003; Skousen, Lonsdale, and Parkinson 2002) and ‘Memory Based-Learner’ – TiMBL (Aha, Kibler, and Albert 1991; Daelemans 2005). In the former, the memory token can be used for predicting linguistic behaviour where prediction can be made according to specific exemplars. This model assumes that all forms whether regular or irregular are attributed to a similar mechanism. If the need appears to determine a specific linguistic behaviour (e.g. allomorph choice, affix, etc.), a search is carried out starting from the most similar entries to the particular context in question,

and then expanding this search to the less similar ones. The algorithm entails an explicit procedure for collecting an analogical set in which analogy/similarity might be chosen, and applied to the particular context. The analogical set contains the most similar of database entries to the particular context, while less similar ones have a smaller chance of being included. AML possibly hence calculates the effect of the analogical set on the particular context behaviour, where the most frequently behaviour occurred is underlined (Eddington 2000: 283).

Daelemans's approach (TiMBL) is regarded as an expansion of the model developed first by Aha, Kibler, and Albert (1991). Daelemans (2005: 3) posits that this model assumes using the stored form in order to generate similar coinage. Thus, two techniques are implemented in this approach: the storage and similarity-based concept. In this approach, rules are not used to generate new forms; instead, it seeks to simulate the impact of frequently stored patterns on other new coinages. The difference between the above models is that TiMBL operates more than one example in order to identify one 'nearest neighbour' as a model, whereas AML operates a comparison among all forms in order to find the most analogous exemplar to be a model for other formations.

To recapitulate the notion of the above account, morphologically complex words are holistically stored and processed in the lexicon regardless of whether they are regular or irregular. Additionally, Sosa and Macfarlane (2002: 229) posit that big units, in particular non-idiomatic constructions and phrases, are stored and processed as individual forms.

3.2.2.2 Dual-route account (DR)

It has been suggested that morphologically regular words are analysed and stored as morphemes. Stemberger and MacWhinney (1986: 18) posit the notion of 'morphemic' storage that is more relevant to the mental representation than other approaches. They indicate that when comparing a monomorphemic word, e.g. *Rex*, with a bimorphemic word of similar phonological structure, such as *wrecks*, the phoneme /s/ reflects a morphemic realization when: 1) it is longer in terms of pronunciation; and 2) the possibility of having errors is reduced. This implies that morphemes are separately stored, so this view is consistent with the second variant of various mental approaches which were raised earlier. The model of full decomposition (Stemberger and MacWhinney 1986) assumes analysing words into their morphological constituents.

The symbolic view of morphology describes the morphological structure as combinatorial. For instance, the form of the past tense of *reported* comprises two discrete elements (*report* and *ed*); both morphemes possess an independent entry in the mental lexicon. The combination of two morphemes results in creating the complex structure: {report+ed}, whose compositional

meaning relies on its constituent meaning. So this complex structure cannot be stored in a memory as one unit, whereas irregular forms of the past tense like *gave* can be (Hay and Baayen 2005: 342). Similarly, Bauer (2001: 46) identifies in many psycholinguistic studies a tendency to regard irregular inflection as stored, while regular inflection is generated by a rule.

Dressler (2008: 457) states that the plural *girl-s* is computed by a rule of plural formation that applies to a singular word *girl*. Such plural formation is computed during production; it is decomposed in terms of receptive processing. Accordingly, when encountering the plural form *girl-s*, then this formation is possibly decomposed into *girl* as a singular form and the morpheme {+s} as a pluraliser item. This decomposition indicates that only the singular form *girl* is stored, and the pluraliser is not. Conversely, when encountering the plural formation *oxen*, then this form of plural is simultaneously stored with the singular form *ox*; and hence, is subject to direct lexical access. As a result, there is no available rule to decompose the word *oxen* into two segments: the singular *ox* plus the pluraliser morpheme {+en}.

This account has been supported by (e.g. Butterworth 1983; Pinker and Prince 1988; Pinker 1991; 2000; Chialant and Caramazza 1995; Schreuder and Baayen 1995), where it considers the constitution of mental lexicon as comprising both whole words and morphemes. Weyerts et al. (1996: 126) highlight the underlying principle of this account: irregular and regular inflected forms are mentally represented in two qualitatively different ways. Irregular forms are completely stored, while stems of regular forms are stored and concatenated with suitable affixes via the symbolic processor of a rule-based model. This approach assumes two motivating points: 1) regular processes are categorical; and 2) rules are often implemented on them.

Pinker (2000: 19) supports the view that regular forms are created by rules and irregular ones are retrieved from memory, because it is nicely consistent with the big picture of language design.

3.2.3 Discussion

The main aim of the psycholinguistic studies I am considering here is to offer explanations of how: 1) words are mentally perceived; 2) processed by various accounts; and 3) produced by the speaker. I have focused on two accounts posited by psycholinguists to explain the mental access of morphologically complex words. The first one is called the SR, in which there is no difference between the treatment of regular and irregular formations: most forms are stored in the lexicon as a whole unit. In this account, an analogical mechanism is used to generalize or analogize frequent stored forms to create new forms. The second account is called the DR. This account supposes that regular forms are stored as separate morphemes, which are assembled

into words in production and decomposed back into morphemes in reception. Irregular forms are perceived and stored in the lexicon as one indivisible unit.

3.2.3.1 *The reflection of mental accounts on morphological models of word formation*

I can note similarities between models of mental representation and morphological models of word-formation. For instance, the IA (Item and Arrangement) model seems similar to the regular forms of the DR account. The similarities found between them when the word is built in production and decomposed in processing using their component morphemes. This compositional structure can be manifested, particularly within the word *студентка*; where the first segment *студент* represents a unit status whether mentally or lexically, and the second segment {+к(а)} possesses a similar representation to the first one. Therefore, both models (mental representation and word-formational) share an identical approach that makes the (regular) word composed of morphemes or units.

Interestingly, having a rule (the stem + an affix) is not confined to the regular forms of the DR account, but it also can be found in other accounts of the WP (Word and Paradigm) model. The concept of ‘structural description’, which is proposed by Langacker (2002: 17), presents the following formula: [X] > [X_{k(a)}]; where usage rules is to describe the relationship between words. The variable [X] refers to the stem, whereas the label [k(a)] refers to the suffix participation. This description seems so far similar to the representation of regular forms in the DR account; where the word realization is created by a rule that deals with a stem as one unit and the affix as a second one. However, in Langacker’s account, morphemes are not considered units and their existence is indirectly mentioned since they obtain an abstract role over a paradigm and words associated with it. So, the difference observed is that regular forms in the DR account distribute the unit status between the stem and the affix, whereas in the WP model, morphemes are not independent units. Therefore, the whole word is treated as one unit without any possibility of decomposing it into morphemes.

In this regard, the model of ‘minimal generalization’ proposed by Albright and Hayes (2003: 123) posits that “rules can be gradually built up from the lexicon through iterative generalization over pairs of forms”. Hence, if a certain process/formation is repeated, then the chances increase that a general rule will appear. So, taking a pair of words related through word formation, such as *студент* > *студентка* would be a starting point, then the rule is construed or comprehended later as a result of the linkage apprehended. Therefore, this approach of elucidating a specific formation occurred by a rule would be similar to the concept of regular forms in the DR account. However, the term ‘minimal generalization’ assumes rules come later by having two forms that

are paradigmatically related to each other (SR account), whereas the DR account supposes the existence of this rule in advance.

The IP (Item and Process) model is designed to handle the irregular forms of a DR account since both of them deal not with the level of morphemic realization but with the level of words as inputs and outputs. For instance, the Russian suffixes {+eca} and {+овья} are assigned to create the plural form of the following singular nouns: *небо* /nebo/ ‘sky (sing.)’ > *небеса* /nebesa/ ‘sky (pl.)’; *сын* /syn/ ‘son (sing.)’ > *сыновья* /synov'ya/ ‘son (pl.)’, etc. This kind of plural formation is regarded irregular in Russian since it diverges from the traditional method of creating the plural form of the masculine noun, in which the inflected ending {+ы} is added to words whose stem ends in a hard consonant, as shown by *завод* /zavod/ ‘factory (sing.)’ > *заводы* /zavody/ ‘factory (pl.)’, etc.

Phonologically, an arbitrary correspondence between morphophonemics and semantics caused by irregularity of inputs and outputs is exhibited by residual alteration (allomorphy), such as *небо* > *небеса*; *сын* > *сыновья*; *go* > *went*; etc. This arbitrariness is possibly covered by the IP model, which offers a plausible solution for filling the mismatch of form between inputs and outputs. Additionally, the treatment of irregular forms in the DR account would not decompose the above plural formation. Instead, they are completely stored as one unit represented by inputs (*небо*, *сын* and *go*) and outputs (*небеса*, *сыновья* and *went*). This realization completely adheres to the basic notion of the IP model in its morphological treatment with the word formation process. Hence, the mental realization of irregular forms in the DR account is elegantly and comprehensively compatible with the general concept of the IP model.

The WP model tends to be consistent with the general concept of the SR account since the representation of words is holistically stored as one indivisible unit. Therefore, both share a similar notion that is a paradigmatic relationship in which there are two members: the base word (the paradigm) and its surface word (the new derivative form). Hence, both of them assume that the word representation is based on the whole words and not morphemes, so each word has an indivisible unit.

3.2.3.2 Complexity not explained in the DR account

I can assess which of the two models of mental representation - the SR model or the DR model - gives the best account of the data for words contain the suffix {+к(а)}. Assuming that the mechanism of forming words with this suffix would follow the traditional structure of word formation by adding the affix to the word stem, then this method of formation seems to be regular since it can be identically applied to create other words possessing the same suffix, but it may not necessarily express similar meaning. As a result, the process of generating regular

forms in the DR account might explain the formation of this suffix. This implies that the pattern of creating, for example, the diminutive formation is formed as a rule in the mind of the speaker; the word stem is already stored and the diminutive suffix {+к(a)} is added to it in which the diminutiveness is created. This pattern can be manifested as the following regular pattern: [X] > [X+к(a)], where the former variable would represent the stem (the base) and the latter variable indicates adding the diminutive suffix {+к(a)}. So, s/he will use this rule to form the new diminutive form when it is needed, as exemplified by *борона* /borona/ ‘harrow’ > *боронка* /boronka/ ‘small harrow’; *бандероль* /banderol'/ ‘wrapper, label’ > *бандеролька* /banderol'ka/ ‘small wrapper, label’, etc.

Thus, the DR account depends on the existence of ‘default’ and ‘exceptional’ forms. The suffix {+к(a)} would be mentally explained by the regular form of the DR account (the default form), where using a rule, rather than storage, is dominant. However, a problem arises when encountering words for which the creation of the diminutive meaning occurs through the use of suffixes other than {+к(a)}. Subsequently, there is no clearly identifiable ‘default’ or ‘exceptional’ formant of diminutives. These suffixes are listed below with the indication to their type frequency found in the *Obratnyi slovar'*:

- 1- The suffix {+ок} (768), as exemplified by *час* /chas/ ‘hour’ > *часок* /chasok/ ‘hour (dim.)’; *голос* /golos/ ‘voice’ > *голосок* /golosok/ ‘voice (dim.)’, etc.
- 2- The suffix {+ёк} (130), as shown by *зверь* /zver'/ ‘beast’ > *зверёк* /zveryok/ ‘beast (dim.)’; *пень* /pen'/ ‘stump, stub’ > *пенёк* /penyok/ ‘stump, stub (dim.)’; *зять* /zyat'/ ‘son/brother-in-law’ > *зятёк* /zyatyok/ ‘son/brother-in-law (dim.)’, etc.
- 3- The suffix {+ик} (78), as found in the following examples: *нос* /nos/ ‘nose’ > *носик* /nosik/ ‘nose (dim.)’; *халат* /khalat/ ‘robe’ > *халатик* /khalatik/ ‘robe (dim.)’; *стол* > *столик*; *дом* > *домик*, etc.
- 4- The suffix {+чик} (589), as shown by *стакан* /stakan/ ‘glass’ > *стаканчик* /stakanchik/ ‘glass (dim.)’; *чемодан* /chemodan/ ‘suitcase’ > *чемоданчик* /chemodanchik/ ‘suitcase (dim.)’; *диван* /divan/ ‘divan’ > *диванчик* /divanchik/ ‘divan (dim.)’, etc.
- 5- The suffix {+цо} (34), as illustrated by *вино* /vino/ ‘wine’ > *вицто* /vintso/ ‘wine (dim.)’; *письмо* /pis'mo/ ‘letter’ > *письмецо* /pis'metso/ ‘letter (dim.)’; *слово* /slovo/ ‘word’ > *словцо* /slovtsvo/ ‘word (dim.)’, etc.
- 6- The suffix {+це} (117), as shown by *платье* /plat'e/ ‘dress’ > *платьице* /plat'itse/ ‘dress (dim.)’; *дело* /delo/ ‘business’ > *дельце* /del'tse/ ‘business (dim.)’; *мнение* /mnenie/ ‘opinion’ > *мненьице* /mnen'itse/ ‘opinion (dim.)’, etc.

- 7- The suffix {+ца} (11), as found in *дверь* /dver'/ 'door' > *дверца* /dverts'a/ 'door (dim.)'; *лень* /len'/ 'laziness' > *ленца* /lents'a/ 'laziness (dim.)', etc.
- 8- The suffix {+ец} (459), as exemplified by *брать* /brat/ 'brother' > *братец* /bratets/ 'brother (dim.)'; *материал* /material/ 'material' > *материалец* /materialets/ 'material (dim.)'; *заказ* /zakaz/ 'order' > *заказец* /zakazets/ 'order (dim.)', etc.
- 9- The suffix {+ица} (122), as illustrated by *вещь* /veshh/ 'thing' > *вещница* /veshhits'a/ 'thing (dim.)'; *вода* /voda/ 'water' > *водица* /vodits'a/ 'water (dim.)'; *сестра* /sestra/ 'sister' > *сестрица* /sestrits'a/ 'sister (dim.)', etc.

Similarly, the gender alteration from masculine to feminine is a common feature associated with words produced specifically by the suffix {+к(a)}. This can be shown by *студент* > *студентка*; *американец* > *американка*, etc. However, the problem emerges again when the speaker encounters words where the gender alteration occurs by using different suffixes than the suffix {+к(a)}:

- 1- The suffix {+а} (158), as exemplified by *кум* /kum/ 'godfather' > *кума* /kuma/ 'godmother'; *супруг* /suprug/ 'spouse (m.)' > *супруга* /supruga/ 'spouse (f.)'; *раб* /rab/ 'slave (m.)' > *раба* /raba/ 'slave (f.)', etc.
- 2- The suffix {+ица} (216), as exemplified by *царь* /tsar'/ 'tsar' > *царица* /tsarits'a/ 'tsarina'; *император* /imperator/ 'emperor' > *императрица* /imperatrits'a/ 'empress'; *умный* /umnyi/ 'smart (m.)' > *умница* /umnits'a/ 'smart (f.)', etc.
- 3- The suffix {+ница} (1152), as illustrated by *житель* /zhitel'/ 'inhabitant (m.)' > *жительница* /zhitel'nits'a/ 'inhabitant (f.)'; *учитель* /uchitel'/ 'teacher (m.)' > *учительница* /uchitel'nits'a/ 'teacher (f.)'; *писатель* /pisatel'/ 'writer (m.)' > *писательница* /pisatel'nits'a/ 'writer (f.)', etc.
- 4- The suffix {+ща} (288), as illustrated by *великан* /velikan/ 'giant (m.)' > *великанша* /velikansha/ 'giant (f.)'; *опекун* /opekun/ 'guardian (m.)' > *опекунша* /opekunsha/ 'guardian (f.)'; *генерал* /general/ 'general' > *генеральшиа* /general'sha/ 'general's wife', etc.
- 5- The suffix {+ья} (153), as exemplified by *говорун* /govorun/ 'chatterer (m.)' > *говорунья* /govorun'ya/ 'chatterer (f.)'; *бегун* /begin/ 'runner (m.)' > *бегунья* /begun'ya/ 'runner (f.)'; *гость* /gost'/ 'guest (m.)' > *гостью* /gost'ya/ 'guest (f.)'; *сват* /svat/ 'father of son-in-law' > *сватья* /svat'ya/ 'mother of son-in-law', etc.
- 6- The suffix {+щица} (540), as shown by *тюремщик* /tyuremshhik/ 'jailer (m.)' > *тюремница* /tyuremshhits'a/ 'jailer (f.)'; *танцовщик* /tantsovshhik/ 'dancer (m.)' > *танцовница* /tantsovshhits'a/ 'dancer (f.)'; *банищик* /banshhik/ 'bath-house attendant (m.)' > *баниница* /banshhits'a/ 'bath-house attendant (f.)', etc.

- 7- The suffix {+на} (117), as shown by *королевич* /korolevich/ ‘king’s son’ > *королевна* /korolevna/ ‘king’s daughter’; *попович* /popovich/ ‘priest’s son’ > *поповна* /popovna/ ‘priest’s daughter’; *княжич* /knyazhich/ ‘prince’ > *княжна* /knyazhna/ ‘princess’, etc.
- 8- The suffix {+ина} (648), as illustrated by *кузен* /kuzen/ ‘cousin (m.)’ > *кузина* /kuzina/ ‘cousin (f.)’; *курфюрст* /kurfyurst/ ‘elector (m.)’ > *курфюрстина* /kurfyurstina/ ‘elector (f.)’; *гофмейстер* /gofmeister/ ‘steward of the household’ > *гофмейстерина* /gofmeisterina/ ‘stewardess of the household’, etc.
- 9- The suffix {+ыня} (19), as shown by *государь* /gosudar'/ ‘sovereign (m.)’ > *государыня* /gosudarynya/ ‘sovereign (f.)’; *гусь* /gus'/ ‘goose (m.)’ > *гусыня* /gusynya/ ‘goose (f.)’; *барин* /barin/ ‘barin’ > *барыня* /barynya/ ‘barin’s wife’, etc.
- 10- The suffix {+иня} (39), as shown by *бог* /bog/ ‘god’ > *богиня* /boginya/ ‘goddess’; *герой* /geroi/ ‘hero’ > *героиня* /geroinya/ ‘heroine’; *монах* /monakh/ ‘monk’ > *монахиня* /monakhinya/ ‘nun’, etc.
- 11- The suffix {+еcca} (16), as shown by *поэт* /poet/ ‘poet (m.)’ > *поэтесса* /poetessa/ ‘poet (f.)’; *патрон* /patron/ ‘patron (m.)’ > *патронесса* /patronessa/ ‘patron (f.)’; *адвокат* /advokat/ ‘barrister (m.)’ > *адвокатесса* /advokatessa/ ‘barrister (f.)’, etc.
- 12- The suffix {+иса} (12), as found by *актёр* /aktyor/ ‘actor’ > *актриса* /aktrisa/ ‘actress’; *лектор* /lektor/ ‘lecturer (m.)’ > *лектриса* /lektrisa/ ‘lecturer (f.)’; *инспектор* /inspektor/ ‘inspector (m.)’ > *инспекtrиса* /inspektrisa/ ‘inspector (f.)’, etc.
- 13- The suffix {+иха} (85), as illustrated by *трус* /trus/ ‘coward (m.)’ > *трусиха* /trusikha/ ‘coward (f.)’; *повар* /povar/ ‘cook (m.)’ > *повариха* /povarikha/ ‘cook (f.)’; *портной* /portnoi/ ‘tailor (m.)’ > *портниха* /portnikha/ ‘tailor (f.)’, etc.
- 14- The suffix {+чица} (180), as exemplified by *газетчик* /gazetchik/ ‘newspaperman’ > *газетчица* /gazetchitsa/ ‘newspaperwoman’; *буфетчик* /bufetchik/ ‘barman’ > *буфетчица* /bufetchitsa/ ‘barwoman’; *докладчик* /dokladchik/ ‘speaker, lecturer (m.)’ > *докладчица* /dokladchitsa/ ‘speaker, lecturer (f.)’, etc.
- 15- The suffix {+овина} (52), as found by *дикий* /dikii/ ‘shy, fantastic person (m.)’ > *диковина* /dikovina/ ‘marvel, wonder (f.)’, etc.
- 16- The suffix {+яга} (40), as exemplified by *бедный* /bednyi/ ‘poor person (m.)’ > *бедняга* /bednyaga/ ‘poor person (f.)’; *хитрец* /khitrets/ ‘sly, cunning person (m.)’ > *хитряга* /khitryaga/ ‘sly, cunning person (f.)’, etc.
- 17- The suffix {+ыха} (91), as illustrated by *старик* /starik/ ‘old man’ > *старуха* /starukha/ ‘old lady’, etc.

A similar problem observed when finding other suffixes that denote Substantivisation as the suffix {+к(a)} does with certain coinages particularly *красить* > *краска*; *вносить* > *вноска*, etc. These rival suffixes are listed as follows:

- 1- The suffix {+щик} (1044), as shown by *копировать* /kopirovat'/ ‘to copy’ > *копировщик* /kopirovshhik/ ‘copying’; *зимовать* /zimovat'/ ‘to winter’ > *зимовщик* /zimovshhik/ ‘wintering’; *сорттировать* /sortirovat'/ ‘to sort’ > *сортировщик* /sortirovshhik/ ‘sorter’, etc.
- 2- The suffix {+ок} (384), as exemplified by *бросать* /brosat'/ ‘to throw’ > *бросок* /brosok/ ‘throw’; *зевать* /zevat'/ ‘to yawn’ > *зевок* /zevok/ ‘yawn’; *кивать* /kivat'/ ‘to nod’ > *кивок* /kivok/ ‘nod’, etc.
- 3- The suffix {+ина} (233), as shown by *впасть* /vpast'/ ‘to fall into, lapse’ > *впадина* /vpadina/ ‘cavity, hollow’; *испарить* /isparit'/ ‘to evaporate’ > *испарина* /isparina/ ‘evaporation’; *морщить* /morshhit'/ ‘to crease, wrinkle’ > *морщина* /morshhina/ ‘crease, wrinkle’, etc.
- 4- The suffix {+ота} (111), as illustrated by *зевать* /zevat'/ ‘to yawn’ > *зевота* /zevota/ ‘yawning’; *дрематься* /dremat'sya/ ‘to feel drowsy’ > *дремота* /dremota/ ‘drowsiness’; *нахать* /pakhat'/ ‘to plough’ > *naxoma* /pakhota/ ‘ploughing’, etc.
- 5- The suffix {+ба} (98), as instantiated by *бороться* /borot'sya/ ‘to wrestle, struggle’ > *борьба* /bor'ba/ ‘wrestling, struggle’; *обороняться* /boronit'sya/ ‘to harrow’ > *обороньба* /boron'ba/ ‘harrowing’; *дружиться* /druzhit'/ ‘to be friends with’ > *дружба* /druzhba/ ‘friendship’, etc.
- 6- The suffix {+аж} (101), as shown by *монтировать* /montirovat'/ ‘to assemble’ > *монтаж* /montazh/ ‘assembling’; *инструктировать* /instruktirovat'/ ‘to instruct’ > *инструктаж* /instruktazh/ ‘instructing’; *массировать* /massirovat'/ ‘to massage’ > *массаж* /massazh/ ‘massage’, etc.
- 7- The suffix {+ня} (193), as exemplified by *возиться* /vozit'sya/ ‘to take trouble (over)’ > *возня* /voznya/ ‘trouble’; *мазать* /mazat'/ ‘to oil, daub’ > *мазня* /maznya/ ‘poor painting, daub’; *стрипать* /stryapat'/ ‘to cook’ > *стрипня* /stryapnya/ ‘cooking’, etc.
- 8- The suffix {+отня} (33), as illustrated by *бегать* /begat'/ ‘to run (about)’ > *беготня* /begotnya/ ‘running about, bustle’; *копаться* /kopat'sya/ ‘to rummage, dawdle’ > *копотня* /kopotnya/ ‘dawdling’; *толкаться* /tolkat'sya/ ‘to push, shove’ > *толкотня* /tolkotnya/ ‘crush, squash’, etc.

- 9- The suffix {+ция} (610), as shown by *реагировать* /reagirovat'/ ‘to react’ > *реакция* /reaktsiya/ ‘reaction’; *аттестовать* /attestovat'/ ‘to attest’ > *аттестация* /attestatsiya/ ‘attestation’, etc.

Consequently, using other suffixes to denote similar applications (Diminutiveness, Feminisation, and Substantivisation) implies that to implement the DR account on usage of the suffix {+к(а)} requires a modification. It means that words formed by the above suffix to denote the above applications contain a regular pattern and alternatives respectively. These alternatives are represented by the participation of other suffixes to denote the same applications compared to the suffix {+к(а)}. Therefore, the modification in this account is presented by inserting these alternatives alongside regular forms.

In other words, the modified concept of this account is represented as follows: ‘regular and alternative forms’ are generated by rules and stored as divisible units. Meanwhile, irregular forms are holistically stored as one unit. This account can be presented in Figure 3.1:

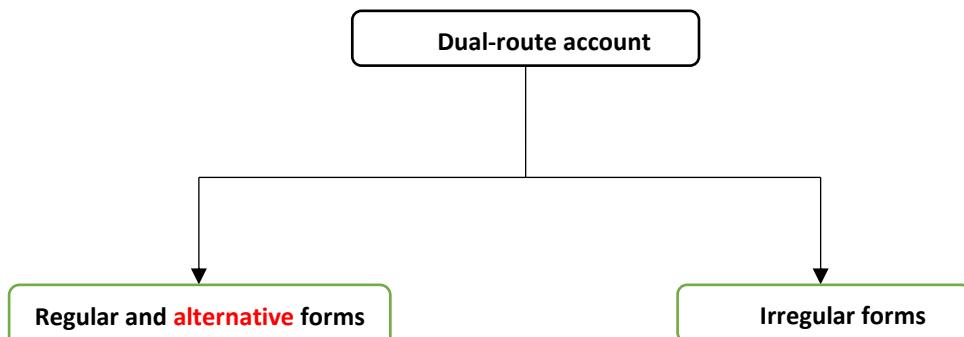


Figure 3.1 The modified version of the DR account

This modified form of the DR account incorporates the fact that one regular oriented function may be expressed by the participation of various affixes. This feature can be widely found in highly inflected and derivational languages including Russian. Hence, the new modification seems practical for the description of mental representation of the suffix {+к(а)}.

However, the objection to this approach emerges when asking what the factor is that causes someone to choose a specific suffix to be attached to a certain stem, given that another stem cannot obtain the same suffix to convey a similar meaning or function. This can be illustrated in the *Obratnyi slovar'* in which the suffix {+к(а)} has produced approximately 1300 words expressing the diminutive meaning, such as *школа* /shkola/ ‘school’ > *школка* /shkolka/ ‘small school’; *шинель* /shinel'/ ‘coat’ > *шинелка* /shinelka/ ‘small coat’, etc. In this regard, this suffix has created exactly 1148 words indicating the feminine meaning, such as *студент* > *студентка*; *активист* > *активистка*, etc. Also, this suffix has generated exactly 1919 words indicating Substantivisation. This can be illustrated by *окрасить* > *окраска*; *нонсить* > *нонска*, etc.

However, other compound suffixes have participated to produce the following portions and indicate the same above meanings/functions (Diminutiveness, Feminisation, and Substantivisation) respectively:

- 1- The suffix {+ашк(а)/ишк(а)/ешк(а)/ёшк(а)/ошк(а)/ушк(а)/ышк(а)/яшк(а)} has formed around 200 words, such as *старик* > *старикашика* /starikashka/ ‘old man (dim.)’; *просьба* /pros'ba/ ‘request’ > *просьбушка* /pros'bishka/ ‘small request’; *ставень* /staven'/ ‘shutter’ > *ставешушка* /staveshka/ ‘small shutter’; *рыба* /ryba/ ‘fish’ > *рыбёшка* /rybyoshka/ ‘small fish’; *ладонь* > *ладошка*; *воробей* /vorobei/ ‘sparrow’ > *воробушка* /vorobushka/ ‘small sparrow’; *оладья* /olad'ya/ ‘fritter’ > *оладышушка* /oladyshka/ ‘fritter (dim.)’; *тестъ* /test'/ ‘father-in-law’ > *тестюшка* /testyushka/ ‘father-in-law (dim.)’; *лед* /led/ ‘ice’ > *ледяшка* /ledyashka/ ‘piece of ice’, etc.
- 2- The suffix {+ёнк(а)/инк(а)/онк(а)} has formed approximately 50 words, as illustrated by *голова* /golova/ ‘head/mind’ > *головёнка* /golovskyonka/ ‘small head/mind’; *кровь* /krov'/ ‘blood’ > *кровинка* /krovinka/ ‘drop of blood’; *юбка* /yubka/ ‘skirt’ > *юбчинка* /yubchonka/ ‘mini-skirt’, etc.
- 3- The suffix {+енък(а)/онък(а)} has formed around 40 words, as exemplified by *нога* /noga/ ‘leg/foot’ > *ноженъка* /nozhen'ka/ ‘small leg/foot’; *шапка* /shapka/ ‘cap’ > *шапонъка* /shapon'ka/ ‘small cap’, etc.
- 4- The suffix {+ечк(а)/ичк(а)/очки(а)} has formed approximately 80 words, as illustrated by *кастрюля* /kastryulya/ ‘pan/pot’ > *кастрюлечка* /kastryulechka/ ‘small pan/pot’; *ведомость* /vedomost'/ ‘list/register/record’ > *ведомостничка* /vedomostichka/ ‘small list/record’; *бомба* > *бомбочка*, etc.
- 5- The suffix {+етка} has created 44 words, as instantiated by *манк* > *манкетка*; *роза* > *розетка*, etc.
- 6- The suffix {+урка} has produced 22 words, as exemplified by *дочь* > *дочурка*; *девочка* /devochka/ ‘girl (dim.)’ > *девчурка* /devchurka/ ‘little girl (dim.)’, etc.
- 7- The suffix {+анка} has created exactly 162 words. This can be found by *беглец* > *беглянка*; *грек* /grek/ ‘Greek (m.)’ > *гречанка* /grechanka/ ‘Greek (f.)’, etc.
- 8- On the one hand, the suffix {+овка} has generated exactly 63 words altering the gender from masculine to feminine. This can be instantiated by *евор* > *воровка*; *жид* /zhid/ ‘jew’ > *жидовка* /zhidovka/ ‘jewess’, etc. On the other hand, this suffix has created exactly 28 words indicating Substantivisation. This can be found by *распилить* /rasplit'/ ‘to saw up’ > *распиловка* /raspilovka/ ‘sawing’; *сверлить* /sverlit'/ ‘to bore, drill’ > *сверловка* /sverlovka/ ‘drilling’, etc.

- 9- The suffix {+ёжка} has produced exactly 11 words. This can be seen by *бомбить* /bombit'/ 'to bomb' > *бомбёжка* /bombyozhka/ 'bombing'; *делить* /delit'/ 'to divide' > *делёжка* /delyozhka/ 'division', etc.

Similarly, what is the reason for attaching the suffix {+к(a)} to denote the feminine type of the word *студент*, as illustrated by *студентка*? Meanwhile, the same suffix cannot convey a similar function with the word *учитель*, and nonetheless the suffix {+ница} does so, as exemplified by *учительница*. Actually, the appropriate answer to this variance can be explained by the concept of storage; a stored pattern in the mind of language users possibly determines that a specific stem/word will obtain the suffix {+к(a)} (*студентка*), whereas another stem/word will possess another suffix {+ница} (*учительница*) despite the fact that both words express the same function/meaning (gender alteration). Thus, the SR account states that there should be a default form and then some (a few) irregularities. Here I have a situation where perhaps {+к(a)} is the 'default', but I am left with many non-default forms that have their own patterns. This refutes the assumption that the formation of the suffix {+к(a)} is explained by the DR account. It means that proposing a modification to this account by having alternative forms alongside regular forms, as shown by Figure 3.1 (see above) is not adequate. Instead, it is found that the suffix {+к(a)} is best mentally represented by the SR account. This account offers a plausible solution as to why I have several suffixes for the same meaning/function. In addition, this approach would be compatible with the argument of assuming that the WP model is the best one to represent my data, while other models fail to do so.

3.3 The frequency concept

The speaker may depend on the stored pattern whether it is operated by SR (analogy/generalization) or DR account (rule) to generate new word formations. However, what makes it possible to use this stored pattern as a tool for coining words? The initial assumption is that it is the effect of frequency which makes a specific word more accessible in the mind of the speaker: frequent words are processed and accessed in the mental lexicon faster than infrequent words. This leads language users to use them more readily as a model to form new words. Hence, the effect of frequency is discernible on specific processes (prefixation and suffixation) since they are productive elements in forming words.

Bybee (2006: 8) states that repetition is considered to be an indispensable component of grammar formation. The sensitivity of the mind to repetition can play a crucial role in word processing and storage. This sensitivity can be applied not only to the domain of language, but also for other cognitive functions. Therefore, Stoel-Gammon (2011: 20) indicates that

frequency is one factor that leads language users to acquire words earlier. Memory is strengthened by the repetition, which makes linguistic forms better represented and more accessible in the mind of the speaker. This view is supported by multiple psycholinguistic studies. The frequency invokes a change in the perception of cognitive responses: the more frequent a word is, the faster its accessibility and the easier its identification (Connine, Titone, and Wang 1993). Corroboratively, words with high frequency are accessed faster in lexical decisions (e.g. Burani and Caramazza 1987; Holmes and O'Regan 1992; Schreuder, Burani, and Baayen 2002). Hence, frequency has an undeniable effect on processing and accessing words in the mental lexicon. This results in specific words becoming a good sample to be used as a stored pattern for the formation of new words, either by analogy or generalization.

3.3.1 Type and token frequency

Type frequency, sometimes known as ‘lexical frequency’, deals with the number of distinct items in a language which contain the process or item under consideration. Bauer (2001: 47) advances the example of the word *bishopric*; where the type frequency of the morpheme {+ric} is 1: in other words, this is the only word in English that contains this morpheme. Similarly, the morpheme {+ter} has a type frequency of 2 as it is only found in *slaughter* and *laughter*. Also, it is found that the type frequency of the suffix {+анк(a)} as mentioned in the *Obratnyi slovar'* is 5 since words formed by this suffix only counted 5, as exemplified by *восчанка* /voschanka/ ‘a wax paper’; *гречанка*; *половчанка* /polovchanka/ ‘Polovtsian woman’; *турчанка* /turchanka/ ‘Turkish woman’; and *тиурчанка* /tyurchanka/ ‘Turkish woman’. Whereas the type frequency of the suffix {+иньк(a)} in the above dictionary is only counted 2 as found in *зайнъка* /zain'ka/ ‘small hare’; and *наинъка* /pain'ka/ ‘good/lovely child’. Therefore, “type-frequency refers to the number of different words in a class, each counted once” (Keuleers et al. 2007: 212).

Token frequency, sometimes defined as ‘text frequency’, deals with the number of times that a certain item exists in a particular text or body of texts: “token frequency refers to the number of occurrences of a word” (Keuleers et al. 2007: 212). That is, in the token frequency, each repetition of the same item counts as a separate occurrence. Therefore, the token frequency of the morpheme {+ric} in a text may be 20, if *bishopric* occurs 20 times within the text. As an empirical example here, the token frequency of plural {+s} in this paragraph is four despite this token being represented in different words.

3.3.2 Discussion

The brain is sensitive to repetition which affects the mental representation of words. The more highly and frequently used in the language a word is, the more accessible to the brain it is. This makes it a good model for memory and analogy.

Some scholars consider high frequency as a condition for word productivity (e.g. Uhlenbeck 1978; Bauer 2001). Moreover, Lieber (1981: 114-15) defines productivity in terms of the frequency of inputs - the base word. How can this frequency intervene to determine the productivity of a specific word? The answer is simple: if the word is frequently used by people, then it can be used as a model to generate other formations. This makes this frequent form a productive form which becomes more represented and accessible to the mental lexicon. Thus, a crucial question arises here; can the mental representation of words affect this productivity? In other words, does this representation objectively differentiate between how items are mentally produced? For example, if one form is retrieved from memory and another is compounded as needed, then I might expect the second one to take longer to produce.

To support this approach, it is argued that words with high-frequency are quickly accessed, fluently produced and less susceptible to error (e.g. Dell 1990; Hay et al. 1999). Regarding this, Losiewicz (1992) finds that the regular morpheme of the past tense in forms with high frequency is shorter in terms of duration than forms with low frequency. For instance, she identified the affix {+ed} as acoustically short in a high frequency form *needed* compared to the homophonic form *kneaded* with low frequency. Also, Sereno and Jongman (2000) observe that the reaction of the participants was faster when dealing with high frequency forms (both base and inflected). Similar findings have been found by Alegre and Gordon (1999); high frequency forms manifested short response latencies compared to low frequency forms. Accordingly, the lexical representation of the former is more accessible than the latter (Sosa and Macfarlane 2002: 229).

Highly frequent forms are possibly stored, so they seem to be more accessible to the speaker. This allows researchers to consider them frequently used and more productive than other forms which are generated by a rule. This can be explained by the cognitive response of the mind which possibly takes a longer time to process and perceive forms represented by a rule (the DR account). Hence, Vennemann (1974: 78) argues that SR account is more able to produce more types than forms created by a rule; their productivity results from the fact that they are stored and not from their transparency for analysis.

This would be compatible with my argument which says: more rules = fewer items versus more items = fewer rules. This implies that the productivity varies between the mental accounts

in which the SR account tends to be more adequate than the DR account to produce more types. This gives me a plausible explanation why the suffix {+κ(a)} is regarded a productive one in Russian since its mental representation is triggered by the presence of high-frequency stored lexemes. Hence, Bauer (2001: 101) considers the storage process as an important element of word production and a crucial sign to processing the word into lexical entries.

3.4 The concept of productivity

3.4.1 The definition of productivity

In the literature, the definition of the term ‘productivity’ is contentious. Scholars differ in their views towards regarding what is productive: some of them consider certain affixes to be productive (e.g. Schultink 1992: 189; Fleischer 1995: 71). For other scholars, it is words which are productive (Saussure 1969: 228); or the probability of new forms occurring (e.g. Harris 1951: 374-75 ; Aronoff 1983: 163). Therefore, Bauer (2001: 20) proposes that the ability to coin new words is a prerequisite condition for productivity. Another definition assigns the productive status to a certain morphological process (e.g. Uhlenbeck 1978: 4; Anderson 1982: 585). For yet others, it is certain rules that are considered as productive (e.g. Aronoff 1976: 36; Bakken 1998: 28).

In order to minimize the disagreement among scholars to defining productivity, Bauer (2001: 25) lists Rainer’s (1987) definition as follows:

- 1- The frequent usage of input and output words in specific applications (token frequency).
- 2- The quantity of words and their proportion (type frequency).
- 3- The possibility of generating new words.

Apparently, the above definitions of productivity reflect incompatibility among each other. Some of them seem qualitative, while others quantitative. In other words, some of them rely on the number of words that already exist in the language; however, others centre around words that can be formed via a certain rule.

The status of productivity is varied among scholars. Defining certain affixes to be productive seems problematic, especially when encountering words consisting of non-affixal elements; and nonetheless, their formation is still considered productive. An example of this is the ablaut-motivated English compound where a reduplication of the segmental framework has occurred, particularly *ping-pong*; *zigzag*; etc. “This pattern appears to be ‘productive’ in the sense that new formations can be found using it” (Bauer 2001: 13).

Additionally, assigning productivity to the morphological process/rule does not mean this is generally applicable for all word formations. So, I am cautious about saying that a particular process/rule is productive. This can be explained by finding new words formed by using non-

productive processes, such as clippings: *deli* from *delicatessen*; blends: *mimsy* from *miserable*; acronyms: AIDS – acquired immune deficiency syndrome; etc. These formations are not derived on the basis of a regular derivation, so they are not considered productive despite having new words formed by using the same method. Bauer (1988: 33) claims that it is not even obvious that their formation is morphological. However, there is a common thread among the above definitions that is generating words: “The productivity of any pattern – derivational, inflectional or syntactical – is the relative freedom with which speakers coin new grammatical forms by it” (Hockett 1958: 307). This variant seems acceptable since it is the least controversial choice among other definitions of productivity.

3.4.2 The conditions of productivity

Bauer (2001: 20) identifies three prerequisites for productivity: 1) semantic coherence; 2) frequency; and 3) ability to coin new forms. This productivity cannot be established unless a certain degree of frequency is present. It means that the productivity is not defined by word frequency; rather, frequency is a requirement for productivity. Uhlenbeck (1978: 51) emphasizes that there is a connection between productivity and high frequency. The same correlation is found with semantic coherence. In this sense, Aronoff (1976: 45) argues that “productivity goes hand in hand with semantic coherence”. Coining a new word assumes that there is an entity that the new word refers to. Otherwise, there is no need to form this word.

Many studies have addressed the effect of phonological transparency in the process of productivity. Hohenstein and Akhtar (2007: 862) found in their study, which was conducted on children aged two years old, that children are faster at producing words with {+ing} rather than {+ed}. The reason behind this disparity of productivity is phonological regularity since the suffix {+ing} sounds identical whatever the word is. However, the suffix {+ed} differs in terms of sound between words, depending on the final phoneme that links to it. Also, words with the suffix {+ing} have a greater frequency than the suffix {+ed}. Hohenstein and Akhtar (2007: 872-73) also found that it is easier for children to add the inflectional suffix {+ing} than to drop it, while it is also easier for them to drop the inflectional suffix {+ed} than to add it to the bare novel stem. This might be explained by phonological reasons.

Clark and Cohen (1984: 612) point out that productivity relies on the following devices:

- 1- A relevant absence of structural restrictions while using one device compared to another.

Children tend to be insensitive to these structural constraints since it is an early stage for them and they do not acquire adequate information about these restrictions. For instance, the suffix {+ness} has no constraints to be added to any English adjective to denote an abstract noun. Yet the suffix {+ity} is only added to Romance roots, as illustrated by

opaqueness > *opacity*, versus *haziness* and not *hazity* though. Similarly, in English, there are three main suffixes to denote the agent nominalizer: {+er}, {+ist} and {+ian}. The most productive one among them is the suffix {+er}; this productivity accounts for it having fewer structural restrictions than others. This suffix can be easily linked to any verb and it does not lead to any change in the form of the verb, such as *read* > *reader*, *work* > *worker*, etc. By contrast, other suffixes possess constraints to be added to verbs: a) the suffix {+ist} is only added to Latin and Greek roots: *chemist*, *cyclist*, etc.; and b) the agentive marker {+ian} is only included with specific Latinate words: *librarian*, *musician*, etc. Similarly, in Russian, the suffix {+тель} is restricted to a certain class of words; it is added only to deverbal origin, such as *нужать* > *нужатель*; *водить* /vodit'/ ‘lead, drive’ > *водитель* /voditel'/ ‘driver’, etc.

- 2- Frequent usage of words: words are regarded productive if they are frequently used by the speaker community.

Dressler (2008: 457) suggests that productivity is conditioned by having regular patterns. Productive patterns are those that are freely applied to form new words (e.g. each English noun obtains the plural {+s} at the end of the word), whereas unproductive patterns are those that are restrictively applied to certain words, namely irregular formations. These regular morphological patterns therefore behave as productive rules. Thus, the formation of the English plural *girls* is based on the morphological pattern in which the singular *girl* obtains the affix {+s}. Conversely, the plural formation *oxen* is regarded as unproductive since it has an irregular pattern, adding the suffix {+en} to the word *ox*. Obviously, the notions of obtaining a regular pattern (Dressler 2008) and the absence of structural constraints (Clark and Cohen 1984) tend to be similar and lead to the same findings.

So far, the above views of regularity seem similar to the observation of Hohenstein and Akhtar (2007: 861). They note that productivity is conditioned by “the ability to generalize linguistic knowledge”. Morphological productivity can be seen when adding, for instance the suffix {+s} of the plural form to the singular noun, or adding the suffix {+ed} of the past tense to the uninflected verb. So, adding the above suffixes has become a general pattern associated with the above applications.

To summarize, productivity is conditioned by numerous factors: semantic coherence; frequency of usage; and ability to coin new forms (Bauer 2001). Also, phonological transparency can be a condition for productivity (Hohenstein and Akhtar 2007). Meanwhile, the absence of structural constraints (Clark and Cohen 1984) and obtaining a regular pattern (Dressler 2008) tend to be close in terms of acquiring a constant morphological realization. Similarly, the view of the possibility of applying the linguistic information to be a general

pattern (Hohenstein and Akhtar 2007) seems similar to the view of regularity that is mentioned earlier.

3.4.3 Discussion

In the literature, there are frequent indications as to whether a suffix is productive or unproductive. However, the criteria that are used to apply these labels are not always clear. Thus, I have pointed out the following basic conditions of productivity which are described by multiple scholars: 1) semantic coherence; 2) frequency of usage; 3) ability to coin new forms; 4) phonological transparency; and 5) minimal structural restrictions. Notably, these conditions are perhaps reflected in words contain the suffix {+к(a)} as follows:

The first point is possibly seen in the production of this suffix. The semantic coherence is overtly manifested in many words contain the suffix {+к(a)} when comparing the meaning of the base and its derivative word. It is estimated that only 10% of words with the above suffix diverge in meaning in comparison to their base words as shown by Figure 2.14 (see above). This coherence is possibly observed in the three basic meanings/functions of the above suffix, such as Feminisation, Diminutiveness, and Substantivisation. This is illustrated by the following examples: *дeлегат* > *дeлегатка*; *мeдаль* /medal'/ ‘medal’ > *мeдалька* /medal'ka/ ‘small medal’; and *улыбаться* /ulybat'sya/ ‘to smile’ > *улыбка* /ulybka/ ‘smile’. The first example expresses similar meaning except the difference of gender between male and female. The second one the referent is exactly the same except the word that obtains the suffix {+к(a)} expressing a diminutive meaning or occurring in colloquial discourse compared to the base word (the referent). The third example *улыбка* reflects symmetrical meaning in line with its base word *улыбаться*. Thus, it is possible to argue that the suffix {+к(a)} reflects a high degree of semantic transparency as shown earlier in Section 2.4.3.

Secondly, the frequency of usage words with this suffix is possibly found by the dominance of using it in the following applications:

- 1- Diminutive meaning that is commonly used by this suffix, as illustrated by *рoгуля* /rogulya/ ‘fork’ > *рoгулька* /rogul'ka/ ‘fork (dim.)’; *конфетa* /konfeta/ ‘candy/sweets’ > *конфетка* /konfetka/ ‘candy/sweets (dim.)’, etc.
- 2- Endearment meaning, as illustrated by *дядя* /dyadya/ ‘uncle’ > *дядька* /dyad'ka/ ‘lovely uncle’; *ночь* /noch'/ ‘night’ > *ночка* /nochka/ ‘night (dim.)’, etc.
- 3- Altering the gender from masculine to feminine, as shown by *армянин* /armyanin/ ‘Armenian (m.)’ > *армянка* /armyanka/ ‘Armenian (f.)’; *аспирант* /aspirant/ ‘post-graduate student (m.) > *аспирантка* /aspirantka/ ‘post-graduate student (f.), etc.

Accordingly, there is no doubt that this suffix is widely used in Russian. This usage frequency to denote the above functions perhaps might be found with a significant number of words in Russian.

Thirdly, the above suffix has a relatively solid ability to coin words since this feature more or less links to other prerequisites of productivity, such as the frequent usage of this suffix or obtaining a regular morphological pattern of forming words by having a default stored pattern in the mind: [X] > [X_k(a)]. This makes it possible to create more types with this suffix; its type frequency listed in the *Obratnyi slovar'* is more than 7000 words. This number was observed while annotating data extracted from the above dictionary, as shown earlier in Section 2.3. Meanwhile, the number of type frequency of {+_k(a)} is significantly higher in the ARC (Araneum Rossicum Corpus) which exceeded 88,000 words. This number has been calculated while analysing the effect of relative frequency on coinages of {+_k(a)}, as described later in Section 4.4. Notably, type frequency number of {+_k(a)} is much higher in the RNC, where is 101,901. This number is arrived at by doing a form search on strings ending in the sequence {+_k(a)} while conducting the semantic analysis in Section 6.4. This suggests that this suffix is productive in Russian. So, this gives an ostensible clue about the capability of this suffix within the word formation process.

Fourthly, words containing this suffix obtain a certain degree of phonological transparency. This can be seen with a large number of words contain this suffix – 36% of words reflect this feature. This significant portion does not reflect any phonological mismatch compared to their base words as a result of truncation, allomorphy, and mutation. Therefore, a phonological transparency can be seen in the production process of many words, particularly *адпесам* /adresat/ ‘addressee (m.)’ > *адпесамка* /adresatka/ ‘addressee (female)’; *аpecтaнt* /arestant/ ‘prisoner (m.)’ > *аpecтaнtкa* /arestantka/ ‘prisoner (f.)’; *дым* /dym/ ‘smoke/fume’ > *дымкa* /dymka/ ‘smoke/fume (dim.)’, etc.

Lastly, few structural constraints are observed within the production process of the suffix {+_k(a)}.¹³ Therefore, this suffix does not require any restriction to be attached, for instance to both genders (feminine and masculine) to denote a specific meaning, as illustrated by *конфетa* > *конфеткa*; *активист* > *активисткa*, etc. Moreover, various classes of base forms (noun, verb, adjective, adverb, pronoun, number, conjunction, interjection, and preposition) can participate to produce words with this suffix as shown by Figure 2.4 (see above). So, this suffix tends to have regular morphological patterns due to having minimal structural constraints in coining surface words.

¹³- There are few constraints, although they are arbitrary. The suffix {+_k(a)} cannot be attached, for instance to *учитель* /uchetel'/ ‘teacher’ or other nouns ending in {+тель} to produce the feminine form.

3.5 Conclusion

Productivity has an undeniable correlation with the mental lexicon. Understanding the mechanism of word representation in the brain may elucidate how words are perceived; mentally formed; and later produced by the speaker. I have addressed various points starting from the mental representation to show the comprehensive image of items in the mental lexicon. This realization is affected by the frequency level, which influences processing and accessing words according to one of the mental accounts. In examining the notion of frequency I have addressed various issues related to the frequency effect on how words are processed. Productivity has formed the last point of discussion.

Moreover, addressing the above points has clarified why some linguists (e.g. Vinogradov 1972; and Townsend 1975) have argued that the suffix {+к(a)} is one of the most productive suffixes in Russian. I have seen how speakers use the suffix {+к(a)} to create *студентка* from *студент* and shown that this coinage cannot result from a rule. If {+к(a)} meant feminisation, it is not clear why this suffix does not indicate the feminine pattern of *учитель*, which combines with the suffix {+ница}, as seen in *учительница*. Faced with these two options, the DR account supposes one regular form that is productive versus another irregular (unproductive) form that is stored in the lexicon. Since {+к(a)} is in competition with other forms in a DR account, I have to decide that one of them is ‘regular/productive’ and others ‘irregular/unproductive’. By contrast, the word-based approach highlights the validity of the SR-account because it treats lexical items as single units rather than being composed according to rules. If I have a SR account, then I can have more than one ‘regular/productive’ suffix. The chances of it occurring are related to its type and token frequency. This explains why the suffix {+к(a)} is regarded as a productive suffix in Russian since the latter account stands for its mental representation in stored frequent patterns, in this case *Feminisation*. This makes the suffix {+к(a)} best described by the SR account and, by extension, by the word-based approach.

4 Chapter: Relative frequency effect on coinages of {+κ(a)}

4.1 Introduction

My preceding analysis of the SR (Single-route account) revealed that the frequency of lexical items is a crucial factor in their productivity. This chapter will develop this line of argument by exploring the importance of the relative frequency level in the Russian morphology of the suffix {+κ(a)}.

Relative frequency is defined as “the difference between the frequency of the word itself and that of its unaffixed base” (Antić 2010: 2). Notably, the derivational process of relative words is affected by two levels of frequency: 1) base, and 2) surface frequency. Vannest et al. (2011: 145) indicate that the above levels of frequency are useful measures for morphologically complex words: the former (that is, the stem whose frequency is an essential part of any new derivative word) and the latter (the whole word including its stems and affixes). Both levels of frequency play a crucial role in word processing. McCormick, Rastle, and Davis (2008: 308) have similarly found that the lexical access of complex words is characterized by two competing approaches: 1) the morphemic approach represented by the base frequency level; and 2) the whole-word approach represented by the surface frequency level.

A significant question thus arises, how does the relative frequency influence the recognition of derivative words and their morphemic components? In other words, how does this frequency interact with the mental accounts and morphological models of word formation? Is there any disparity in accessing and processing words, depending on whether words obtain a specific level of frequency?

To answer these questions, it is argued that when the base frequency is higher than the surface frequency, a surface word is inclined to be constructed and stored in divisible units (e.g. Taft 1979; Kempley and Morton 1982; Taft 2004; Niemi, Laine, and Tuominen 1994). These formations then are triggered by a rule-based model. Conversely, if the surface frequency is higher than the base frequency, then a surface word is completely stored in one unit (e.g. Hay 2001; Vannest et al. 2011). The storage-based model, therefore, gives rise to the above formations. Both levels of frequency have a specific term. That is, the base frequency level is called ‘decomposable’ (DF) and the surface frequency level is called ‘whole-word’ (WF) (Vannest et al. 2011: 145).

I argue that the formations of {+κ(a)} are mostly influenced by the WF level. The RNC (Russian National Corpus) query processor does not provide detailed statistics for searches; therefore, data are extracted from ‘Araneum Rossicum Corpus’ (ARC) using the KonText interface of the Czech National Corpus (CNC) in order to investigate which type of relative

frequency is reflected by the above formations. The results of this analysis will corroborate my main hypothesis for the preference of the storage-based model rather than the rule-based one.

This chapter consists of the following points. Firstly, clarification is provided regarding the effect of frequency levels on morphological models and mental accounts. Secondly, certain factors are presented pertaining to having either a DF or WF level. Thirdly, a description of my data is made to show how corpus data is analysed. Fourthly, an expansion of using this suffix is found by identifying new surface words that contain the suffix {+κ(a)}. Lastly, the conclusion is made to highlight the most prominent issues found in this chapter.

4.2 The effect of frequency levels on morphological models and mental accounts

Burani and Thornton (2003: 158) point out that accessing the morphological structure of complex words fundamentally relies on the evidence derived from two kinds of access units: units corresponding to the entire word (SR account); and units corresponding to word morphemes (DR – Dual-route account). They argue that relative probability of the lexical access units crucially determines the effect of the frequency levels.

Both levels of frequency influence the mental storage of words. Studies conducted on various languages, particularly French, Dutch, English, and Italian, have found that the level of frequency plays a crucial role in mental word processing. For instance, Kempley and Morton (1982: 450) have found in their experiment that if a certain word has a DF, this word is easily stored in the lexicon as a morphemic combination.

Vannest et al. (2011: 145) notice that both levels of frequency are a reflection of two suggested approaches. The first one proposes that the morphological process of complex words occurs in association with their components or morphemes. This leads to a compositional process whose reflection can be found in longer reaction times (Niemi, Laine, and Tuominen 1994). However, the second approach suggests that the recognition of complex words is based on whole component morphemes (Taft 1979, 2004). On the one hand, Vannest's account does not completely fit with the basic notion of the DR account, because it does not strictly distinguish between regular and irregular forms for processing. On the other hand, it is not a simple SR account in that they insist on some element of morphological decomposition as part of comprehension/processing.

Hay (2001: 1041) argues that morphological decomposition is affected by the relative frequency level. Since high-frequency forms are stored as a single component, they seem difficult to decompose and thus they do not contribute to the productivity of the affix they

contain. According to Hay's view, a derived form is less decomposable when it is more frequent than its base, while it is more decomposable if it is less frequent than its base.

To summarise, the relative frequency can influence the way words are realised in the mental lexicon and the recognition of morphological models of word formation. Polymorphemic words with DF are easily recognized with respect to decomposing them into different components. Therefore, the relative frequency affects processing a word in terms of its morphological constituents (Burani and Thornton 2003). This depiction is similar to the mental representation of regular forms in the DR account. Conversely, if the word obtains the WF level; it is completely stored as one unit, and in turn this description adheres with the realization of the SR account (e.g. Hay 2001; Vannest et al. 2011).

Thus, the WF level supports a SR account, whereas the DF level supports a DR account. In other words, using a decomposition approach paves the way to reflect the DF level, while using the storage approach leads to reflect the WF level.

4.3 Criteria of variance between the above levels of relative frequency

Word frequency level can predict whether words obtain certain features in their coinage. In this regard, numerous linguistic factors give rise to deciding whether a certain word reflects a DF or WF level. These factors are listed as follows:

- 1- The phonological property can play a substantial role in deciding the level of the above frequency. Surface words with WF seem to reflect a feature of non-compositionality, whereas surface words with DF can easily be decomposed into various building elements/components. Vannest et al. (2011: 145-46) point out that the explicit realization of complete morphemes shows a base frequency effect. They assume that 'Neutral affixes' preserve the phonological shape of their base words (accept > acceptable). These affixes reflect the DF level in their formations. Vannest and Boland (1999: 325) hypothesise that 'Non-neutral affixes' cause a change when they attach to the base word (participate > participant); they do not show the possibility of decomposing the surface word into various morphemes. Instead, they are recognised as one unit. This suggests that these formations are invoked by the WF level.

Vannest et al. (2011: 144) have termed the surface words with DF as more complex ones since they are susceptible to the process of decompositional. By contrast, surface words with WF are termed as less complex because they do not show any sensitivity to decomposition. Thus, more complex words refer to those words which can be decomposed into small and meaningful morphemes.

- 2- The semantic property is another factor for identifying a specific level of frequency. Surface words which seem more frequent than their bases (WF) should display characteristics of incongruity of meaning. By contrast, surface words which seem less frequent than their bases (DF) should display characteristics of congruity of meaning with respect to their bases.

Numerous scholars (e.g. Marslen-Wilson and et al. 1994; Wurm 1997; Bertram et al. 2000; Feldman et al. 2004) argue that when the DF level is found, then the meaning of derived words can be comprehended by its parts since they have a transparent semantic correlation to their base, such as *adorable* < *adore*. Aronoff (1976) argues that the association of the form with the meaning can be observed only at the morphemic level: “both the form and the meanings of words are potentially internally divisible” (Aronoff 1976: 69).

A sporadic semantic correlation between related words leads to the question as to whether derivative words are affected by the WF level. Additionally, there is a consensus that highly frequent forms have low levels of semantic/orthographic correspondence to their base words (e.g. Vennemann 1974; Jackendoff 1975; Leben and Robinson 1977; Sosa and Macfarlane 2002; Rueckl et al. 1997; Joanisse and Seidenberg 1999; Plaut and Gonnerman 2000; Seidenberg and Gonnerman 2000; Gonnerman, Seidenberg, and Andersen 2007).

Thus, Hay (2001: 1058) hypothesizes that words having WF level do not explicitly invoke the base meaning in their coinage. This is based on the outcomes in his experiment that surface words with WF display signs of semantic drift, whereas surface words with DF display semantic transparency compared to their bases. Similarly, Stemberger and MacWhinney (1986: 25) note that morphologically complex words are accessed in parallel with other forms that substantially overlap in terms of phonology and semantics. Baayen and Lieber (1997: 283) have argued that “opaque formations show a tendency to appear in the highest ranges of the frequency spectrum”. Frequency correlates with drift (‘opaqueness’) and probably causes it.

Forms with high-frequency are thus stored as one unit since they do not match in meaning with their base words. Meanwhile, low-frequency forms are possibly derived by rules that have a semantic relevance to their bases. Bybee (1985; 1995) maintains that derived forms with high-frequency are frequently diverted from their bases with respect to phonology and semantics.

- 3- The frequent usage of a certain stem can influence whether a certain word has a DF or WF level. Taft (2004: 746) argues that polymorphemic words are more prone to decomposition and recognize owing to the frequent usage of their stem in multiple formations. This means

that derivative words, which contain a more frequently used stem, are affected by the DF. In this perspective, McCormick, Rastle, and Davis (2008: 308) report that the speed of recognizing complex words is partially determined by their stem frequency (e.g. Niswander, Pollatsek, and Rayner 2000; Boudelaa and Marslen-Wilson 2004). For instance, *darkness* is simply decomposed into {dark+ness} since its stem is frequently used in other formations such as *darken*, *darkling*, and *darkly*.

4.4 Description of data with {+κ(a)}

I have used the ARC in order to extract data to investigate the impact of relative frequency level on coinages of {+κ(a)}. A search was conducted for all forms ending in {+κ(a)}; the search yielded 88,788 lemmas. In annotating the data, I have started with the most common words in terms of their frequency. As expected, the frequency of some words “is inversely proportional to the rank in the frequency table. The most frequent word will occur approximately twice as often as the second most frequent word; three times as often as the third most frequent word, and so on and so forth”, a clear reflection of Zipf’s Law (Lehrer 2003: 369). Consequently, I have found that there are very few high-frequency words and many, many words that appear only once (*hapax legomena*); most of the worst errors in tagging and lemmatizing will be in this latter group. To reduce the task to a manageable one and avoid too many subjective judgement calls regarding occasionalisms,¹⁴ I have left aside all ‘*hapax legomena*’, which reduces the number of lemmas by half (they start at no. 39,478) and all lemmas with only 2 or fewer attestations, so my task is now at 27,962 (Zipf’s Law in action). I have found that these data contain: 1) words ending in the suffix {+κ(a)}; 2) words ending in compound suffixes which share a similar ending of {+κ(a)}; and 3) words where {+κ(a)} is a part of the root.

I have observed that many of the data occur in compounds and these are treated as separate lemmas. This can be found with *автодоставка* /avtodostavka/ ‘auto-delivery’; *авиадоставка* /aviadostavka/ ‘air-delivery’, etc. I have treated these separately from the main lemma *доставка* /dostavka/ ‘delivery’.

After these decisions and the removal of groups (2) and (3) from the data, I am left with 7332 lemmas ending only in the suffix {+κ(a)}. These words are coded according to the ratio of frequency found in the above corpus. I have calculated the raw frequency of base and surface words, and then I have divided the surface frequency number by the number of base frequency

¹⁴- This was the second rationale, I was worried that many of those ‘*hapax legomena*’ appearing once or twice in the ARC would be things invented on the spot by one person on one occasion, and it was not possible to verify whether native speakers would regard them as well-formed; indeed, the possibility of getting e.g. 3 native speakers to confirm the well-formedness of 49,000 words seems unfeasible. By the time a word appears 3 times, I have more confidence that at least one person meant to say it.

words. The difference is automated and then log-transformed in Excel for the sake of plotting them (see Figure 4.1 below). Without log-transformation, the chart plots my data as a single vertical line, making the results difficult to read and interpret.

According to this formula, when the number appears as 0 and below, it means that the DF is reflected in these formations. However, when the number appears as 1 and above, this means that the WF is reflected in these formations. This formula between the relative words of $\{+\kappa(a)\}$ is shown by Figure 4.1:

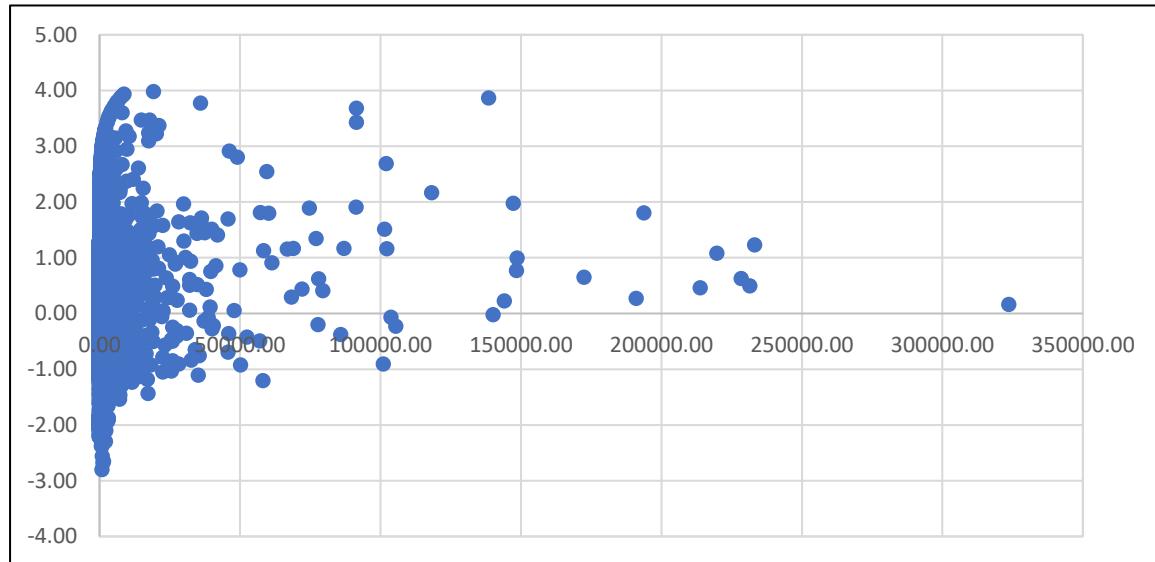


Figure 4.1 Surface frequency x Log-transformed base/surface ratio

For comparison, the representation of words with both levels of relative frequency shown in the above figure can be displayed in Figure 4.2:

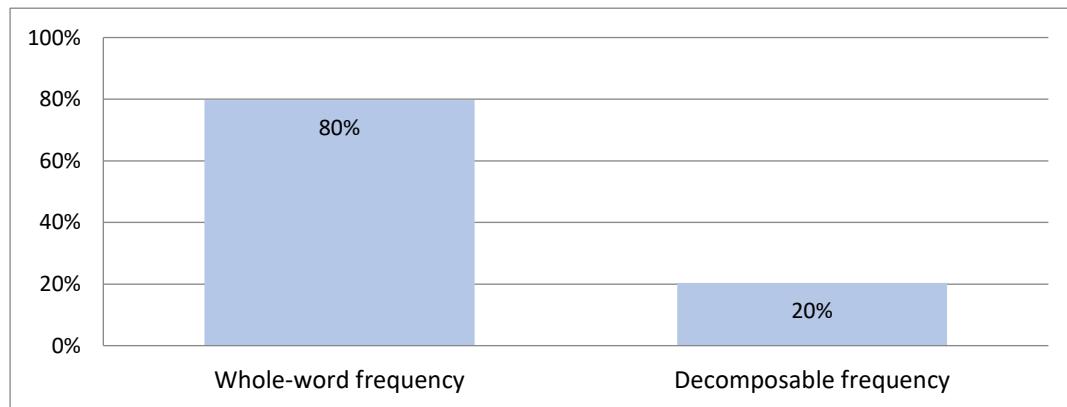


Figure 4.2 Decomposable and whole-word frequency representation

At the beginning of this chapter, I addressed several factors which might contribute to having a DF or WF level. All data have been annotated with respect to phonological and semantic changes induced by the participation of the suffix $\{+\kappa(a)\}$. I have set up various variables, in particular, Phonological Correspondence and Semantic Correspondence. Each of these variables has a value of ‘YES’ and ‘NO’ to measure the effect of the above factors on the

frequency level. So, if the answer is ‘YES’, it means that the above correspondence between the base and surface word has been found. However, if the answer is ‘NO’, it means that this correspondence has been violated whether phonologically or semantically while forming the surface word.

To validate or refute the observations proposed earlier by some scholars in line with the above correspondences, I have utilised the above values on words expressing a DF level. Their outcomes are shown in Figure 4.3:

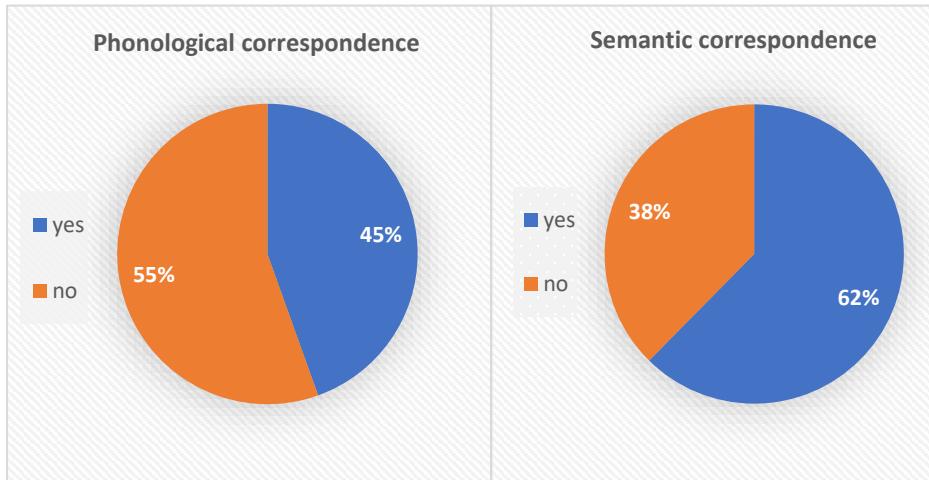


Figure 4.3 Phonological and semantic correspondence of DF words

Similarly, the above values are also utilised on words which obtain a WF level. Their outcomes are shown in Figure 4.4:

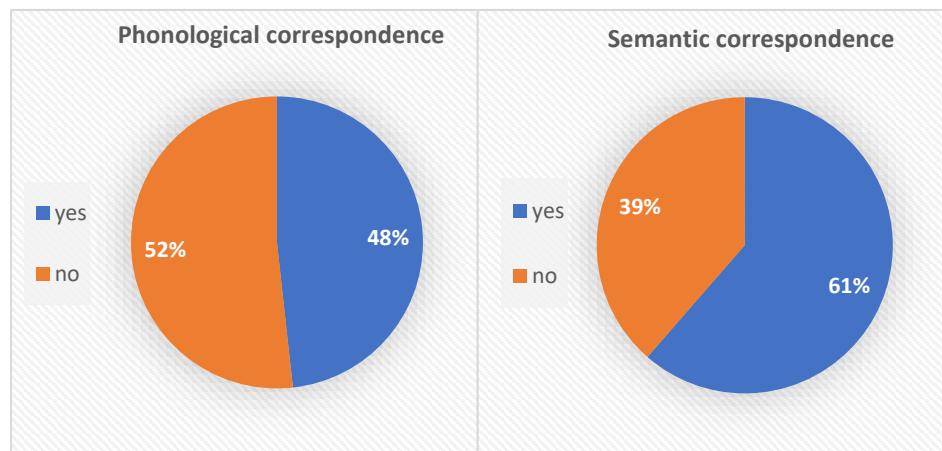


Figure 4.4 Phonological and semantic correspondence of WF words

Also, it has been argued that the high frequency of using a certain stem in multiple formations results in having a DF level, whereas the low frequency of stem usage leads to having a WF level. I have found that the frequency of using a certain stem is highly represented in words containing a DF. Thus, *резка* /rezka/ ‘cutting’ reflects a DF since its stem {реz+} has been used to form other formations. This can be illustrated by *резец* /rezets/ ‘cutter’; *резина*

/rezina/ ‘rubber’; *резинка* /rezinka/ ‘rubber, eraser’; *резание* /rezanie/ ‘cutting’; *резкий* /rezkii/ ‘sharp’; *резкость* /rezkost'/ ‘sharpness’; *резчик* /rezchik/ ‘engraver, carver’, etc. However, a surface word like *льдинка* /l'dinka/ ‘piece of ice’ has reflected a WF level. Its stem ({льдин+}) has been only used once in another formation: *льдина* /l'dina/ ‘block of ice’. Thus, the frequency of usage of a certain stem determines a certain level of relative frequency.

The frequency of using a specific stem is shown in my data through having two groups of words: the first one includes 100 surface words with DF. The second group also includes 100 surface words with WF. The choice of these words in both above groups is based on the highest ratio of relative frequency these words reflect. For instance, in the first group, these words reflect the highest number of DF level, whereas they indicate the highest ratio of WF level in the second one. The results of both groups are shown in Table 4.6:

Table 4.6 The frequency of stem usage by 100 words with two different levels of relative frequency

Descriptive Statistics					
	N	Minimum	Maximum	Mean	Std. Deviation
DF words	100	2	11	6.70	2.855
WF words	100	1	8	2.63	2.290

This table shows that stem usage in words with DF frequency is higher than words with WF. The former Mean = 6.70, whereas the latter Mean = 2.63.

4.5 Expansion of usage of {+κ(a)}

Neologisms emerge as a result of linguistic evolution/transformation. The media plays a substantial role in spreading neologisms in the daily communication (Issina, Sikiotova, and Serebryakova 2012: 137).

I identified new surface words in my data containing the above suffix. These words do not exist in the *Obratnyi slovar'*, which includes words that appeared in other previous dictionaries (e.g. *Tolkovyj slovar'* 1935 – 1940; *Akademicheskij slovar'* 1958; 1959; 1961). A dictionary is a list of forms that its authors approve for usage. So, it is possible that ‘new’ forms were around before, but the dictionary authors did not include them because they judged them to be ‘occasionalisms’ or insufficiently integrated into the native Russian lexicon. Their appearance in the ARC nonetheless invites me to treat these new words as neologisms or previously non-approved forms that could be inserted in dictionaries. They represent ongoing expansions in the use of the suffix {+κ(a)}. Most of them have escaped the notice of Russian linguists or have been mentioned only briefly, e.g. Ryazanova-Clarke (1999: 215). Therefore, there is still much to be done to refine their observations.

In annotating my data, I have found that 3309 words can be treated as neologisms.¹⁵ The whole list of these words can be found in the Appendix 2: List of Neologisms (see below page number: 187).

Three definitions of neologisms are worth noting. Issina, Sikiotova, and Serebryakova (2012: 138) point out that neologisms can be defined as words which possess a ‘novelty’ index. Volden and Lord (1991: 110) define neologisms as unusual/peculiar words since they are not included in the standard lexicon of any language used by the native speakers. Other scholars recognize ‘established’ (actual words that already exist in the language) (Aronoff 1983: 47); ‘occurring’ (potential words that may be formed in future) (Allen 1978: 25); and ‘existing’ (formed words that recently entered into the language) (Bauer 1988: 62-64) words.

Words are usually formed on the basis of established/actual words, for example the formation of the word *methodistical* relies on the existence of *methodist* that is based on *method*. Although many words have been coined, not all have been firmly established yet and it is ambiguous as to when this word becomes established.¹⁶ Thus, it is still unclear whether the existence of words refers to their first coining in the language or to their establishment. Accordingly, if the former, I may find words existing in a language, but without capturing or indicating them in reference books. This might be explained by saying that these existing words have been coined since the reference books were published, and therefore they are not reflected in these reference books. However, if this is so, I may be able to find a better guide to these words in literature.

To avoid this confusion, Bauer (2001: 36) proposes the terms of ‘item-familiar’ and ‘established’ to distinguish between these types of words. This assumes that if the word is regarded an existing one once it is first formed, then it might be an ‘item-familiar’ to the individual speaker without being a part of the language norm. By contrast, the word may be ‘established’ from the moment it is recognized as a part of the norm. That is, when the word has the feature of item-familiar to a significant number of people in speech community, then it becomes worth inserting into reference books. It means that the content of these books includes only established words. So, clarifying the difference between the above types of words is crucial to understanding what is meant by neologism.

¹⁵- ‘Neologism’ has been used as a term to refer to those words which have recently been introduced into the spoken and written language as new forms. Humesky (1964: xi) reports that the earliest observation of neologisms in Russian goes back to 14th - 15th centuries. In this period, the literary people of the eastern Slavic countries, in trying to imitate their southern brethren, generated neologisms in favour of stylistic ornamentation.

¹⁶- Actually, *methodistical* reflects a good example. It seems to be an unfamiliar/odd/obscure word for many native speakers since not all of them have realised the existence of this word in the language.

I found a significant number of these neologisms in this analysis; on which basis/concept are these neologisms coined and then entered in use? To answer this question, Hornstein (1952: 71) reports that the tendency of coining neologisms relies on using affixes attached to the stem. In contrast, Humesky (1964: 28) notes that neologisms detected in Maiakovskii's work generally rely on structural and semantic similarity with the most frequent words. A large number of them are composed of Russian affixes and new respective stems. Ryazanova-Clarke (1999: 217) observes that the productivity of the suffix {+к(а)} to coin neologisms in comparison with the suffix {+н(ие)} accounts for the use of analogical method of similar frequent forms in the memory. Another support for this assumption, Volden and Lord (1991: 112) states that "one type of social contribution to a neologism might be a speaker who cannot remember the appropriate word and so supplies a semantically or phonologically similar word".

I have noticed that many of these neologisms are produced on the basis of similarity/analogy to other highly represented forms in memory. Hence, new words particularly *аккордеонист* /akkordeonist/ 'accordionist (m.)' > *аккордеонистка* /akkordeonistka/ 'accordionist (f.)'; *аккуратист* /akkuratist/ 'stickler for detail (m.)' > *аккуратистка* /akkuratistka/ 'stickler for detail (f.)'; *вокалист* /vokalist/ 'singing teacher (m.)' > *вокалистка* /vokalistka/ 'singing teacher (f.)', etc. seem to be produced in similarity to other highly memorised forms, such as *активист* > *активистка*.

Similarly, new forms particularly *афроамериканец* /afroamerikanets/ 'Afro-American (m.)' > *афроамериканка* /afroamerikanka/ 'Afro-American (f.)' tend to be produced according to frequently used forms (analogical basis), such as *итальянец* /ital'yanets/ 'Italian (m.)' > *итальянка* /ital'yanka/ 'Italian (f.)'. Hence, the speaker depends on the analogical method to generate new formations which have not existed in the stock of the language.

4.6 Conclusion

In my research, I have looked through dictionaries and came up with 8,000 lemmas. However, the corpus has provided me with 11 times as many. Even if half of them were mistakes, the result is still strikingly different. This suggests that the richness of the Russian lexicon seems significantly higher in the corpus than data captured from dictionaries. Corpus data tend to be more efficient, more reliable, more representative and more reproducible than data gathered by exception. This gives me an interesting view into the scope of data on suffixation provided by the corpus. Working on corpus data has led me to the following results:

- 1- The majority of coinages of {+к(а)} are mostly influenced by the WF level. This can be seen in Figure 4.1 and Figure 4.2 (see above). These results lead to support the storage-

based model. This serves my main hypothesis which prefers the whole-word approach rather than the morphemic one.

- 2- On the one hand, I have found that specific factors, particularly phonological and semantic correspondence, do not help to distinguish between DF and WF levels of words. For instance, the phonological factor is assumed to be represented more in words with DF level, whereas it has to be much less in words with WF level. However, my results show that the representation of this factor is 45% in the former, whereas its representation is 48% in the latter, as shown by Figure 4.3 and Figure 4.4 (see above). Similarly, the above figures show that the semantic factor does not seem to be effective in deciding a certain level of relative frequency. Words with DF have a representation of 62%, while words with WF indicate 61% of representation. Therefore, these similar outcomes contradict the observation of certain scholars regarding the criteria of variance found in the two above levels of relative frequency.

On the other hand, my data has supported the observation of some scholars (e.g. Niswander, Pollatsek, and Rayner 2000; Forsberg and Ranta 2004; Taft 2004; McCormick, Rastle, and Davis 2008). They argue that using a certain stem in multiple formations is highly represented in words that express a DF level. This is shown in Table 4.6 (see above).

- 3- I have found that a significant number of words with the suffix {+κ(a)} can be grouped according to whether they are new or non-approved/existing forms. These neologisms reflect the expansion in the way that this suffix has been used for word formation in recent decades, which have seen a substantial change in the lexical stock of Russian.
- 4- I have seen that the frequency factor can play a pivotal role in elucidating the use of this suffix and its relationships to other means of word formation (suffixes). Moreover, this factor can influence the mental representation of this suffix. In this representation, I might need to take account of relative frequency in showing how storage and composition work. This suggests that a classic DR model will not work for derivation in Russian. I may thus need to propose a hybrid account which contains some sort of DR model involving DF and WF level, but not the ‘classic’ DR model involving regularity and irregularity.

5 Chapter: Reactions to words with whole-word frequency level are faster than to words with decomposable frequency level

5.1 Introduction

Given what I know about frequency already, the processing of words could be affected by the frequent usage of that word. Berdan and Legum (1976: 306) reported that many studies of word recognition have used lexical decision tasks to investigate the effect of word frequency on language processing. They found that low-frequency words have longer reaction times than high-frequency words in terms of processing (Whaley 1978). In addition, “higher frequency words were more readily available than low frequency words” (Tremblay et al. 2011: 570). This leads scholars to argue that high-frequency words are quickly accessed, fluently produced and less susceptible to error. This is congruent with a SR (Single-route account) view of language acquisition (e.g. Dell 1990; Losiewicz 1992; Sereno and Jongman 1997; Hay et al. 1999; Alegre and Gordon 1999).

However, recent research has suggested that simple frequency is not enough to explain reaction times. For example, a classic DR (Dual-route account) would suggest that lexemes with decomposable (suffixed) stems would take longer to process than lexemes with simple (unsuffixed) stems, but this also does not appear to be the case. Instead, it has been proposed that reaction time depends on a comparison of the frequency of the base versus derived lexeme.

A more important question for my purposes is if the relative frequency level imposes a different reaction time depending on whether the words are triggered by a decomposed-access route (DR) or a direct-access route (SR). If some words are realised as one unit and others are involved in a compositional process, then I may expect the latter to require longer reaction times. In other words, does the reaction time of the speaker differ between words having a DF (Decomposable frequency) and words having a WF (Whole-word frequency) with respect to their base lexemes?

Multiple researchers (e.g. Vennemann 1974; Taft and Forster 1975; Taft 1979; Bradley 1980; Anshen and Aronoff 1988; Burani and Caramazza 1987; Holmes and O'Regan 1992; Vannest and Boland 1999; Bertram et al. 2000; Taft 2004) have realised that the response time of related words is affected by the above levels of relative frequency. They found that the perception of the cognitive response of the speaker is influenced by one of the above levels of frequency. Thus, they argue that surface words with WF are accessed faster in the mind of the speaker. This results from the fact that the mental composition of these words is based on a SR-

style account. This account helps to reduce the time of processing/producing words in the mental lexicon because the speaker relies on storage to process/produce these words.

To support this view, it is argued that “the higher the surface frequency, the less the time spent processing the word further” (Taft 2004: 647). Also, Taft and Forster (1975: 638) have found in their experiment that words susceptible to a morphological decomposition take a longer time to classify and access.

My goal is to ascertain whether the above results are valid based on data from Russian, a morphologically complex language with a large variety of noun-forming suffixes. Thus, I seek to investigate the difference between reaction times to base words and different categories of derived words containing the suffix {+κ(a)} (those where base frequency is higher than surface frequency versus those where surface frequency is higher than base frequency).

Subsequently, my main hypothesis and null hypothesis for the experiment are as follows:
H₁: *The difference between reaction times to decomposable lexemes and their base lexemes will be greater than the difference between reaction times to whole-word lexemes and their base lexemes.*

H₀: *There is no significant difference between reaction times to decomposable lexemes and their base lexemes in comparison to the difference between reaction times to whole-word lexemes and their base lexemes.*

Self-paced reading tasks are a useful measure in this field. In such experiments, the mean gaze duration or a measure derived from it represents the dependent variable (e.g. Berdan and Legum 1976; Anderson 1982; Garnsey et al. 1997).

Dependent variables in my experiment represent the time difference found in the reaction time of decomposable lexemes and whole-word lexemes in line with their base lexemes.

Independent variables are divided into two types: first, variables relating to the data. These variables are presented as follows:

- 1- Number of word syllables.
- 2- Various functions of the suffix {+κ(a)}: Diminutiveness, Feminisation, and Substantivisation.
- 3- Type frequency of base and surface words.
- 4- Sentence length.

Second, variables pertaining to participants involved in the experiment. They are called ‘quasi-variables’. These variables are listed as follows:

- 1- Age.
- 2- Gender
- 3- Education.

- 4- Handedness.
- 5- Nationality.

The structure of this chapter is divided into the following: 1) an introduction is made which highlights the research question and defines the experiment; 2) the concept of the reaction time is introduced; 3) methods of measuring the reaction times are explored: A) eye-tracking movement; and B) self-paced reading; 4) procedures of operating the experiment are defined in detail; 5) general discussion highlights the most important issues found in this experiment; and 6) a conclusion gives a summary of the important outcomes of this experiment.

5.2 Reaction time studies

Reaction time (RT) is a tool used to measure the way words are processed in the mind of native speakers. It has become a common concept in experimental studies. Baayen (2010: 13) points out that the RT is also named as a ‘response time/latency’. It is considered the simplest and most widely applied means to measure the behavioural response with respect to time units (normally measured in milliseconds), starting from the presentation of a certain task and ending with its completion.

Multiple researchers (e.g. Catlin and Neville 1976; Neubauer and Freudenthaler 1994; Ziegler, Montant, and Jacobs 1997; Setola and Reilly 2005; Li et al. 2010) have utilised this concept to investigate how quickly speakers read sentences, how quickly they produce words, etc.

Podesva et al. (2013: 138) point out that measuring the RT can be achieved by various methods including the following: 1) ‘*cross-modal lexical decision*’; and 2) ‘*unimodal lexical decision*’. The former is usually used in a wide range of experiments. Here, a computer screen shows written target words coinciding with hearing words/sentences by participants. Hence, both auditory and written modalities are utilised in this kind of experiment. Alternatively, the latter approach is used in experiments where only one modality (as mentioned above) is involved (e.g. all stimuli tend to be written). This approach consists of two different methods: ‘*eye-tracking movement*’ and ‘*self-paced reading*’ methods.

5.3 Methods of RT measurement

5.3.1 Eye-tracking movement (ETM)

Multiple researchers (e.g. Berdan and Legum 1976; Garnsey et al. 1997; Kaiser and Trueswell 2004; Abney 2011; Arunachalam 2016) have used this method to measure the RTs of participants in multiple tasks. Normally, participants read texts displayed on a computer screen while the movement of their eyes is recorded. Texts are shown as a whole unit (they are

not supposed to be displayed word by word) which reflects the process of natural reading more closely.

5.3.2 Self-paced reading (SPR)

Podesva et al. (2013: 139) state that the SPR method is widely considered as the most common one for measuring the RTs of participants (e.g. Breznitz et al. 1994; Kaan 2001; Badecker and Straub 2002; Stewart, Holler, and Kidd 2007; Swets et al. 2008; Traxler and Tooley 2008; Michael 2009; Baayen 2010; Mishra, Pandey, and Srinivasan 2011; Tremblay et al. 2011; McNeil et al. 2012; Perfors 2012; Luke and Christianson 2013; Pliatsikas and Marinis 2013; Roberts and Liszka 2013; Tucker, Idrissi, and Almeida 2015).

In this method, the computer is used for recording the time spent once words are first shown until the button box is pressed by participants. This provides an accurate timing in terms of the nearest millisecond. In essence, it measures the elapsing time while participants read words displayed on the computer screen, allowing researchers to record and measure how much time is spent on each word before moving on to the next one. This highlights which exact point in a sentence is involved with increased processing load/difficulty. A comparison can be made by relating the reading times of words in the experiment to each other. In other words, a certain word is labelled as having a low reading time once it is compared to another word whether within the same sentence or in different ones.

The above method is useful for the study of multiple aspects in language processing. The widespread usage of this method is accounted for by its relatively low technical and financial demands: the equipment is not expensive, and it is relatively straightforward to utilise, implement, and analyse compared to other methods, particularly ETM (see Baayen 2010).

The SPR method is distinguished by its portability; its requirement is a computer and a button box: a device composed of a ‘box’ with several keys/buttons on it. It allows more accurate measurement of timing than using a computer keyboard. It can detect even subtle differences in processing time (see Mitchell 2004).

However, a criticism has been raised with respect to the SPR method. Podesva et al. (2013: 141) reported that a lack of “ecological validity” is the main concern found in this method. In naturalistic reading, the reader does not necessarily need to read words one by one, so he might jump backward or forward if needed. This is not permitted in the SPR method. Hence, forcing participants to read in a relatively slow and unfamiliar pattern may create artefacts which do not usually exist in naturalistic reading. This concern might be exacerbated when experiments are intended to segment a specific sentence into various elements/parts (the subject and the verb are set up together; the object is separated from them).

Additionally, participants are consciously obliged to click a button box to proceed to the following word. This makes the process distinct from naturalistic reading; I usually advance to the next word by relying on highly and automatically practiced eye movement (see Staub and Rayner 2007 for further discussion). Thus, Podesva et al. (2013: 142) consider the SPR as “the lower-tech cousin of *eye-tracking* of written text”.

I utilised the SPR method in this experiment despite it being ‘lower tech’ and ‘less natural’. Possibilities include that it is much easier to measure and focus on the specific point where additional processing load is generated; this improved focus might be felt to compensate for the less-naturalistic character of the experiment.

5.4 Procedures of operating the experiment

5.4.1 Materials and methods

5.4.1.1 Participants

Twenty-two undergraduate and postgraduate students and staff at Sheffield University participated in this experiment. Participants ranged in age: Mean = 27; Minimum = 18; Maximum = 66; Standard Deviation (SD) = 11.24. Participants were chosen on the basis of their knowledge of the Russian language as native speakers. However, not all of them are Russian citizens; many of them are from former Soviet countries where Russian is spoken. They were typically not students of languages or psychology and were not drawn from those departments’ volunteer pools. An ethical approval for the experiment was obtained according to the University’s standard approval procedures. Table 5.1 shows the number and percentage of participants according to their nationality:

Table 5.1 Participants’ nationality

Nationality				
	Frequency	Percent	Valid Percent	Cumulative Percent
Russian	13	48.1	48.1	88.9
Kazakh	4	14.8	14.8	33.3
Ukrainian	3	11.1	11.1	100.0
Latvian	1	3.7	3.7	37.0
Lithuanian	1	3.7	3.7	40.7
Total	22	100.0	100.0	

5.4.1.2 Materials and design

Thirty sentences were extracted from the RNC. Two thirds of them were used as distractors through employing words containing various suffixes particularly {+ик}, {+ок}, {+чик}, {+ник}, and {+иц(а)} to deliver similar functions of the target words containing the suffix {+к(а)}. All of these items whether experimental or filler consist of two sentences: one includes a lexeme which is regarded as a *base form*; the other sentence includes a related word containing one of the above suffixes. This related word is regarded as a *derived form* related to its base lexeme phonologically and semantically. Therefore, surface words with multiple above suffixes used to deliver particularly three following meanings/functions: 1) Diminutiveness; 2) Feminisation; and 3) Substantivisation. These sentences are displayed in Table 5.2:

Table 5.2 Sentences of the experiment

No.	Sentences	Type
1	Официант поставил на стол завтрак.	Filler
2	Они присели за столик в уличном кафе.	Filler
3	Сейчас строится жилой дом на улице Кутузова.	Filler
4	Она живёт в милом домике на окраине города.	Filler
5	Ему не нравится эта книга .	Experimental
6	У неё есть маленькая книжка об Англии.	Experimental
7	Она принесла ему стакан минералки.	Filler
8	Проводник принес еще один стаканчик .	Filler
9	Каждая соломина получает достаточно света.	Experimental
10	Каждая соломинка бросала отдельную тень.	Experimental
11	Он жилец коммунальной квартиры.	Filler
12	У них скоро новая жилица будет.	Filler
13	Фашист тут же выстрелил и убил шофера.	Experimental
14	Айн Рэнд иногда называют фашисткой .	Experimental
15	Царь объявил войну и назначил рекрутский набор.	Filler
16	Весной 1669 года умерла царица Мария.	Filler
17	Домохозяин проводит часы в беседах с жильцами.	Experimental
18	Его мама домохозяйка .	Experimental
19	Нечего ему тут головой кивать .	Filler
20	Она отвечает на его кивок лёгким наклоном головы.	Filler
21	Не всегда банки готовы перекредитовать своих заёмщиков.	Experimental
22	Перекредитовка происходила на весьма льготных условиях.	Experimental
23	Она целый год боялась прыгать с качелей.	Filler
24	Около неё послышался прыжок .	Filler
25	Врачи тоже люди и могут ошибаться .	Experimental
26	В интернет-версии журнала ошибка исправлена.	Experimental
27	С этим человеком шутить не следует.	Filler
28	Он вместе с тем шутник и балагур.	Filler
29	Ей не скоро ещё на пост заступать .	Filler
30	У девушки есть друг и заступник .	Filler
Total	30	

5.4.1.3 Apparatus

The experiment was operated on a university computer at the Russian and Slavonic Studies Department. This experiment was run by using the Psychopy software in Python – version

1.84.2 (for further information, please see <http://www.psychopy.org>). In addition, a button box is connected to this computer. This device helps the participants to display words one by one by pressing one click each time. A moving-window paradigm is used to present sentences of the experiment word by word. The computer is used to record the elapsed time beginning when a word first appears until the following click of the button box to display the next word.

5.4.1.4 Task and Procedure

A SPR method is utilised in this experiment to tap into the cognitive knowledge of native speakers of Russian. Participants were sat in front of the computer screen, approximately 60 cm from it. Each session started with a cross sign at the middle of the screen. Sentences were displayed word by word. The final word was marked by a full stop. Participants were instructed to read at a comfortable and normal pace in a manner which allowed them to give answers to comprehension questions after reading each sentence. This allows the recording of the time spent between clicking the button to the closest millisecond. Thus, the appearance or disappearance of the words is controlled by participants via pressing the button box once they have completed reading these words. Each session took between 5 – 10 minutes in total.

In this experiment, participants were assigned to read these sentences in the order of Diminutiveness, Feminisation, and Substantivisation. The reason of this order is that I have used other suffixes delivering similar above functions of {+κ(a)} to distract the participants and preventing them from recognizing/guessing that the focus of this experiment is only on words containing the suffix {+κ(a)}.

In this experiment, I have used words with the suffix {+κ(a)} and other counterpart suffixes that obtain different levels of relative frequency: some of them reflect a DF and others reflect a WF. The analysis of the RTs is run first on those experimental items/words containing the suffix {+κ(a)} to evaluate the possibility of rejecting the null hypothesis. These words are highlighted in bold letters as shown in Table 5.2 (see above). Later, the RTs analysis was expanded to the other counterpart suffixes which have been used as fillers to compare their RTs with words containing the suffix {+κ(a)} since they share the same function. This gives me a wide angle of comparison to investigate which category of sentences, namely the filler or experimental, takes less time in processing.

5.4.2 Result and discussion of experimental items

5.4.2.1 Mean comparison of participants' RTs

Experimental items composed of 12 prime-target related words (the base lexeme and its surface word) are analysed in this experiment. These words are constructed from sentences: 5,

6, 9, 10, 13, 14, 17, 18, 21, and 22 as shown by Table 5.2 (see above). This analysis was conducted using SPSS software and included experimental and filler data with the existence of various independent variables mentioned earlier in this chapter.

In this analysis, I look primarily at the differences in reaction times (DRT) between pairs of words. I have categorised the participants' RTs according to the two opposite levels of relative frequency: 1) words having a DF; and 2) words having a WF. In Table 5.3, experimental words with their sentences are displayed according to the two levels of relative frequency mentioned earlier. The level of relative frequency of experimental words is determined according to the findings observed earlier in chapter 4 pertaining to the effect of relative frequency on coinages of {+к(a)}.

Table 5.3 Experimental words

Code	Sentences	Frequency level
A1	Ему не нравится эта книга .	Decomposable
A2	У неё есть маленькая книжка об Англии.	Decomposable
B1	Фашист тут же выстрелил и убил шофёра.	Decomposable
B2	Айн Рэнд иногда называют фашисткой .	Decomposable
C1	Не всегда банки готовы перекредитовать своих заёмщиков.	Decomposable
C2	Перекредитовка происходила на весьма льготных условиях.	Decomposable
D1	Каждая соломина получает достаточно света.	Whole-word
D2	Каждая соломинка бросала отдельную тень.	Whole-word
E1	Домохозяин проводит часы в беседах с жильцами.	Whole-word
E2	Его мама домохозяйка .	Whole-word
F1	Врачи тоже люди и могут ошибаться .	Whole-word
F2	В интернет-версии журнала ошибка исправлена.	Whole-word
Total	12	

A paired t-test is used since it can compare same data studied/analysed at two different categories or under two different conditions. It compares the means of two different groups of subjects, for example like I have two different categories in this experiment (experimental words with DF level versus the ones with WF level). This is the basis for choosing this particular test since it is designed to handle the results of such data. The outcomes of the DRT of participants for the above two levels of the relative frequency can be shown by Table 5.4.

Table 5.4 Experimental words and RTs

Paired Samples Test											
	Paired Differences					t	df	Sig. (2-tailed)			
	Mean	Std. Deviation	Std. Error Mean	95% Confidence Interval of the Difference							
				Lower	Upper						
Pair 1 Lemma1 - Surface1	-.260765	.696649	.085752	-.432023	-.089507	-3.041	65	.003			
Pair 2 Lemma2 - Surface2	.210949	.645186	.079417	.052342	.369555	2.656	65	.010			

In this analysis, I have compared the DRT means for two related groups of the base lexeme and its surface word by conducting a Paired Sample Test. The first group (Pair 1) refers to those experimental words which have a DF level, while the second group (Pair 2) refers to those experimental items which have a WF level.

The statistical numbers appeared in the above table especially in the column of Sig. (2-tailed) are used to decide whether there is enough evidence to reject the null hypothesis or not. In this regard, the *p-value* is defined as the probability that the statistic is the result of chance and is thus unreliable. Therefore, the smaller the p-value is, the more confident I am in taking the decision to reject the null hypothesis.

Conventionally, this p-value can be only regarded as statistically significant if it is less than the significance level of 5% ($p < 0.05$). Hence, the smaller the p-value, the more unlikely the null hypothesis would be true. Accordingly, Table 5.4 (see above) shows that there was a statistically significant difference between the first pair, $t(65) = -3.04$, SEM = .085, $p = .00$, as well as the second pair $t(65) = 2.66$, SEM = .079, $p = .01$. This implies that there is overwhelming evidence to reject the null hypothesis of the first group because $p < 0.00$. Also, there is sufficient evidence to reject the null hypothesis because $p < 0.01$. Consequently, both values suggest rejecting the null hypothesis since the p-value is statistically significant. This suggests that there is highly significant evidence that the difference between reaction times to decomposable lexemes plus base lexemes is greater than the difference between reaction times to whole-word lexemes and their base lexemes.

Interestingly, I have noticed in Table 5.4 (see above) that the mean of each group is different: Pair 1 = -.260765, whereas Pair 2 = .210949. This variance results from participants' DRT. In the first group, participants spent less time in processing base lexemes than its surface words, so the latter is more difficult to process. However, in the second group, participants

spent less time in processing surface words than its base lexemes. This suggests that the difficulty in processing was found in the former. This variance can be displayed by Figure 5.1:

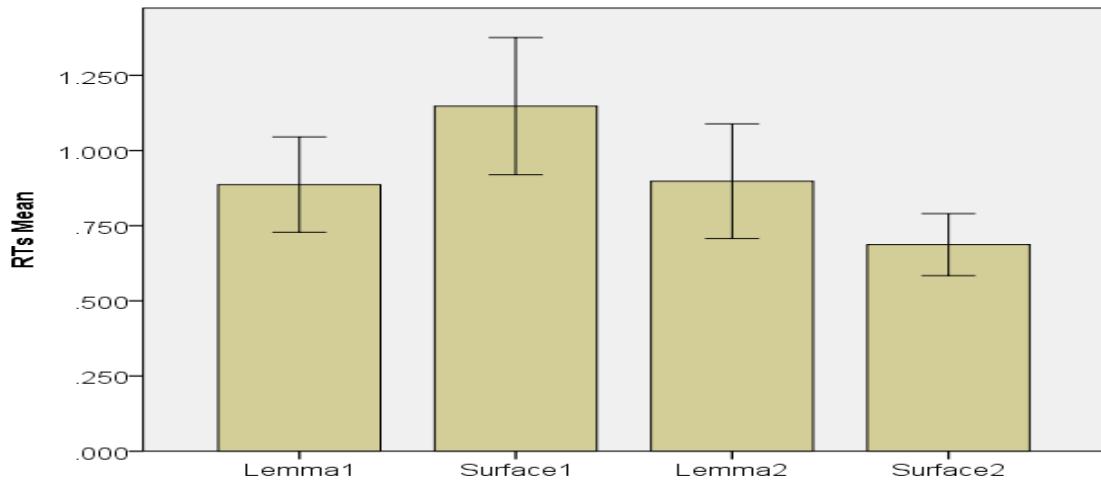


Figure 5.1 Experimental words and RTs

This figure shows that the mean of the base word in the first pair (DF) of related words is less than its surface word. However, the mean of the base word in the second pair (WF) of related words is higher than its surface word. Interestingly, the mean of the categories (Lemma1 and Lemma2) looks similar. However, the mean of other categories like Surface1 and Surface2 is significantly different. This can be shown by Table 5.5:

Table 5.5 The comparison of RT Mean in experimental data

	Statistics			
	Lemma1	Lemma2	Surface1	Surface2
Mean	.88659	.89772	1.14736	.68677
Median	.69543	.63851	.74349	.49551
Std. Deviation	.644624	.775758	.927810	.419563
Minimum	.255	.192	.128	.096
Maximum	2.956	4.893	3.851	1.806

This table indicates that there is a contrast in the mean of surface words based on the level of the relative frequency that a word obtains. Accordingly, surface words with WF show significantly faster RTs in processing than surface words with DF.

5.4.2.2 Comprehension questions

In the design of this experiment, I have allocated various comprehension questions for each sentence. The aim behind that was to assess whether participants paid attention and comprehended the sentences while reading them. Thus, their answers may reflect this issue. Table 5.6 can give an indication of participants' reflection on the sentences of the experiment:

Table 5.6 Comprehension questions

			Educational level		Total
			Postgraduate	Undergraduate	
Answer	False	Count	29	23	52
		% within Answer	55.8%	44.2%	100.0%
		% of Total	4.4%	3.5%	7.9%
	True	Count	361	247	608
		% within Educational level	92.6%	91.5%	92.1%
		% of Total	54.7%	37.4%	92.1%
	Total	Count	390	270	660
		% within Educational level	100.0%	100.0%	100.0%
		% of Total	59.1%	40.9%	100.0%

This table shows that the percentage of questions answered wrongly is almost 8%; however, the percentage of questions answered correctly is 92%. This indicates that most questions were answered correctly by participants. This indicates that they paid relatively high attention while reading the sentences word by word. This adds reliability to the results which are related to their RTs spent on each word of the sentence.

5.4.2.3 *Independent variables associated with participants*

5.4.2.3.1 Age

Certain independent variables might affect the RTs of participants (for example, participants' age); my next analysis seeks to investigate this effect. Thus, Table 5.7 can show the effect of the first variable that is the Age on participants' RTs by conducting a Pearson correlation coefficient; this type of calculation is specifically used to measure the strength/existence of relationship between two continuous variables:

Table 5.7 Age and RTs

Correlations						
		Age	Lemma1	Surface1	Lemma2	Surface2
Age	Pearson Correlation	1	.018	-.071	-.093	-.133
	Sig. (2-tailed)		.884	.569	.456	.289
Lemma1	Pearson Correlation	.018	1	.661**	.456**	.311*
	Sig. (2-tailed)	.884		.000	.000	.011
Surface1	Pearson Correlation	-.071	.661**	1	.529**	.365**
	Sig. (2-tailed)	.569	.000		.000	.003
Lemma2	Pearson Correlation	-.093	.456**	.529**	1	.555**
	Sig. (2-tailed)	.456	.000	.000		.000
Surface2	Pearson Correlation	-.133	.311*	.365**	.555**	1
	Sig. (2-tailed)	.289	.011	.003	.000	

**. Correlation is significant at the 0.01 level (2-tailed).

*. Correlation is significant at the 0.05 level (2-tailed).

In the above table, Lemma1 and Surface1 refer to base and surface words of the DF group, whereas Lemma2 and Surface2 refer to base and surface words of the WF group. The later interpretation of the above size of *correlation coefficient 'r'* is based on the Cohen's (1992: 155 - 59) description and interpretation. Table 5.7 (see above) shows that Participant's age did not correlate significantly with any of the above categories, all $r < .10$, all $p > .28$.

5.4.2.3.2 Gender

To determine whether the above variable has an effect on the RTs of participants, a one-way ANOVA was conducted. This type of analysis is used to look at variation/differences of 2 or more independent groups. Since I have to compare two groups of gender relative to the RTs of participants, this analysis was useful to employ in this enquiry for the above variable (Gender) and for the remaining independent variables associated with participants in this experiment. The following two tables show the result of the above test on two groups of related words (DF and WF words):

Table 5.8 Gender and RTs to word pairs with decomposable frequency relationships

Tests of Between-Subjects Effects

Source	Type III Sum of Squares	df	Mean Square	F	Sig.
Intercept	124.230	1	124.230	124.970	.000
Gender	3.570	1	3.570	3.592	.063
Error	63.621	64	.994		

Table 5.9 Gender and RTs to word pairs with whole-word frequency relationships

Tests of Between-Subjects Effects

Source	Type III Sum of Squares	df	Mean Square	F	Sig.
Intercept	78.643	1	78.643	136.678	.000
Gender	.205	1	.205	.357	.552
Error	36.825	64	.575		

Table 5.8 (see above) shows that the RTs of related words with DF (Lemma1 and Surface1) does not differ significantly in terms of participants' gender ($F(1,64) = 3.59$, $MS = .99$, $p = .06$). Similarly, Table 5.9 (see above) shows that there is no significant DRT of participants between two related words of WF (Lemma2 and Surface2). Hence, the variable Gender cannot be considered as a significant predictor of the DRT of participants in this experiment. Table 5.10 can illustrate the difference of mean found for the above two groups of related words:

Table 5.10 Gender and Mean Frequency

Report

Gender	Lemma1	Surface1	Lemma2	Surface2
Female	Mean	.99785	1.30979	.92406
	Std. Deviation	.731479	1.062745	.72608
Male	Mean	.72590	.91273	.85969
	Std. Deviation	.459845	.636109	.62999
Total	Mean	.88659	1.14736	.89772
	Std. Deviation	.644624	.927810	.68677

5.4.2.3.3 Nationality

As known, the Russian language can be spoken as the first language outside the Russian Federation (RF), particularly in former Soviet countries. Therefore, Nationality can be regarded as a variable which might have an effect, depending on whether participants are Russians, Kazakhs, Lithuanians, Ukrainians, or Latvians. This investigation can be done by using a one-way ANOVA which is used to compare the means of multiple groups of Russian speakers. Since I have two level of relative frequency, I have conducted the above statistical test first on

words with DF (group 1: Lemma1 plus Surface1). Second, words with WF (group 2: Lemma2 plus Surface2) have been analysed by the above test. The results are seen in the following two tables:

Table 5.11 Nationality and RTs to word pairs with decomposable frequency relationships

Tests of Between-Subjects Effects

Source	Type III Sum of Squares	df	Mean Square	F	Sig.
Intercept	77.427	1	77.427	78.130	.000
Nationality	6.739	4	1.685	1.700	.162
Error	60.452	61	.991		

Table 5.12 Nationality and RTs to word pairs with whole-word frequency relationships

Tests of Between-Subjects Effects

Source	Type III Sum of Squares	df	Mean Square	F	Sig.
Intercept	56.447	1	56.447	115.645	.000
Nationality	7.256	4	1.814	3.717	.009
Error	29.774	61	.488		

Statisticians have agreed that if the F value (ANOVA – analysis of variance) > 1 , a variation is more likely to be found between groups. Table 5.11 (see above) shows that $F(4,61) = 1.70$, $MS = .99$, $p = .16$. So, the variation between groups according to their nationality is not significant since $p > 0.05$. However, Table 5.12 (see above) shows that $F(4,61) = 3.71$, $MS = .48$, $p = .00$. So, more variation between groups is significantly found since here, p definitively surpasses the threshold for statistical significance. This variation between groups can be seen in Table 5.13:

Table 5.13 Nationality and RTs

Report					
Nationality		Lemma1	Surface1	Lemma2	Surface2
Kazakh	Mean	.77383	1.28403	.73779	.73922
	Std. Deviation	.468340	1.252549	.363406	.414252
Latvian	Mean	1.89727	2.18514	2.06783	1.48689
	Std. Deviation	.907633	1.417755	.170972	.193949
Lithuanian	Mean	.82608	.94334	.89532	.76736
	Std. Deviation	.290160	.471089	.312164	.120661
Russian	Mean	.85480	1.06899	.77321	.60684
	Std. Deviation	.633862	.829485	.633252	.418627
Ukrainian	Mean	.85800	1.02679	1.26130	.66965
	Std. Deviation	.727926	.719063	1.412616	.265956
Total	Mean	.88659	1.14736	.89772	.68677
	Std. Deviation	.644624	.927810	.775758	.419563

The variation between groups of the Russian language speakers in words with DF (Lemma1 plus Surface1) is less than words with WF (Lemma2 plus Surface2). The RTs mean of the Russian speakers in DF words seem to be similar to each other. However, most groups of the Russian speakers in WF words differ from each other. This suggests a difference between groups which is shown in Figure 5.2:

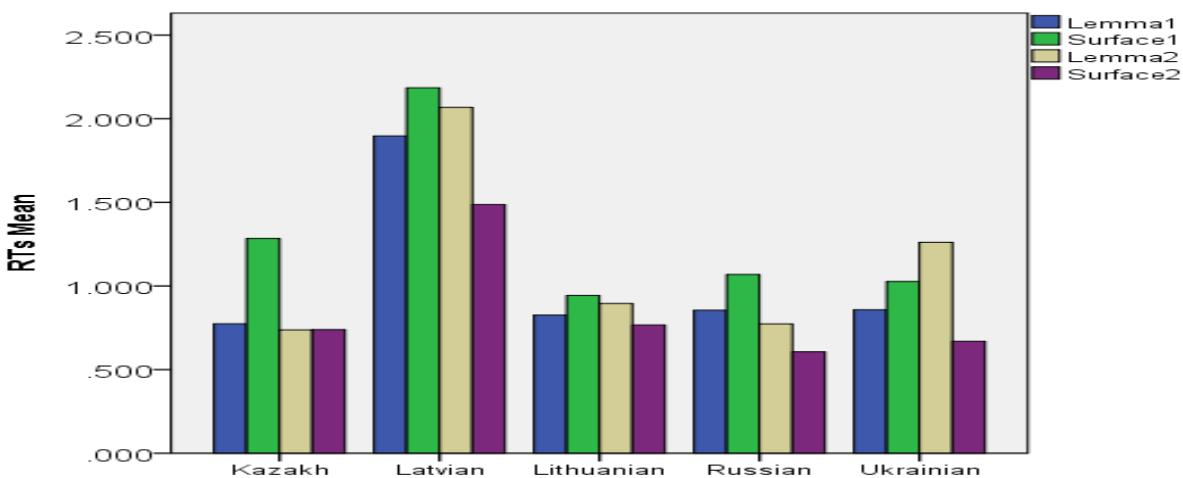


Figure 5.2 Nationality and RTs

Figure 5.2 shows that apart from Latvians, the RTs mean of other groups of the Russian speakers in DF words seem to be similar to each other. However, most groups of the Russian speakers in WF words differ from each other. Because some of these groups (like the Latvians) had only a couple of people in them, some of these statistics, while striking, probably are not reliable as they may be the result of individual variation.

5.4.2.3.4 Education

Another variable can be counted in this experiment is Education. Among participants, I have identified two levels of participants: 1) undergraduate; and 2) postgraduate. The aim is to investigate whether the RTs of participants are affected by this variable. In other words, is there any DRT between undergraduate and postgraduate participants? To answer this question, a one-way ANOVA was conducted to compare the effects of two above levels. The following two tables can illustrate this issue; the first compares the mean of DF words (Lemma1 and Surface1) and the second compares WF words (Lemma2 and Surface2).

Table 5.14 Educational Level and RTs to word pairs with decomposable frequency relationships

Tests of Between-Subjects Effects

Source	Type III Sum of Squares	df	Mean Square	F	Sig.
Intercept	137.403	1	137.403	134.142	.000
Educational level	1.635	1	1.635	1.596	.211
Error	65.556	64	1.024		

Table 5.15 Educational Level and RTs to word pairs with whole-word frequency relationships

Tests of Between-Subjects Effects

Source	Type III Sum of Squares	df	Mean Square	F	Sig.
Intercept	85.697	1	85.697	160.446	.000
Educational level	2.847	1	2.847	5.330	.024
Error	34.184	64	.534		

Table 5.14 (see above) shows that there is not a significant difference ($F(1,64) = 1.60$, $MS = .53$, $p = .21$) between undergraduate (Lemma1 $M = .89$, $SD = .54$; Surface1 $M = 1.40$, $SD = .54$) and postgraduate participants (Lemma1 $M = .87$, $SD = .71$; Surface1 $M = .97$, $SD = .80$). However, Table 5.15 (see above) shows that there is a significant difference ($F(1,64) = 5.33$, $MS = .53$, $p = .02$) between undergraduate (Lemma2 $M = 1.07$, $SD = .92$; Surface2 $M = .86$, $SD = .42$) and postgraduate participants (Lemma2 $M = .77$, $SD = .64$; Surface2 $M = .56$, $SD = .37$).

5.4.2.4 Independent variables associated with data

5.4.2.4.1 Syllable

Regarding the variables associated with the experimental data, I have identified the existence of the following: 1) Syllable, 2) Function, 3) Sentence Length, and 4) Type Frequency. The first variable is analysed by calculating a Pearson correlation coefficient. This

investigates whether the number of syllables affects the DRT of participants or there is no difference in the RTs despite having experimental items composed of multiple syllables.

Table 5.16 Syllable and RTs

Correlations			
		RTs Mean	Syllable
RTs Mean	Pearson Correlation	1	.303
	Sig. (2-tailed)		.338
	N	12	12
Syllable	Pearson Correlation	.303	1
	Sig. (2-tailed)	.338	
	N	12	12

This table shows that there is not a significant difference/correlation between the number of syllables and the RTs ($r = 0.3$ (weak correlation), $p = .39$). Therefore, the Syllable variable cannot be regarded as a significant predictor for the DRT of participants. Figure 5.3 can give us a clear view regarding this correlation:

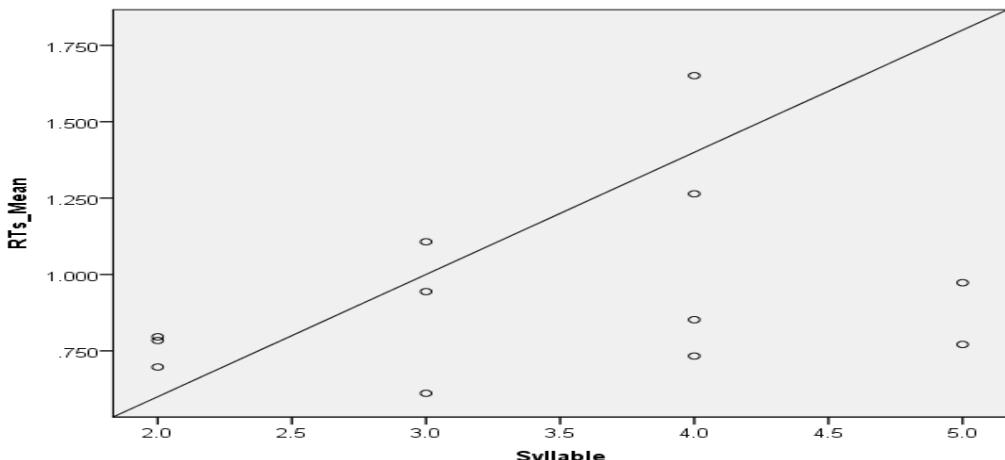


Figure 5.3 Syllable and RTs

Consequently, there is a weak nonlinear relationship between the number of syllables and the DRT of participants. Notably, there is a gradual increase in the RTs in line with the number of syllables. However, the RTs has significantly decreased with words composed of 5 syllables. The reason is that these words reflect a WF level, so it is normal that their RTs decreased regardless how many syllables these words contain.

5.4.2.4.2 Function

My experimental words with the suffix {+k(a)} deliver three main functions: 1) Diminutiveness, 2) Feminisation, and 3) Substantivisation. Thus, the question arises, is there any difference in the RTs of participants according to which one of the above functions is delivered by the above suffix? Alternatively, these functions might not have any effect on the

DRT of participants. A repeated measures ANOVA was conducted. This type of analysis is used when several measurements of the same dependent variable are taken at different time points or under different conditions. It is designed to compare variation between groups relative to variation within groups. Since I have to measure the RTs of participants according to the above three functions (measurements), this analysis seems appropriate for this purpose. This represents the basis of choosing this particular analysis for this independent variable (Function) and for the remaining variables associated with data in this experiment. The outcome of this test is shown in Table 5.17.

Table 5.17 Function and RTs

ANOVA					
	Sum of Squares	df	Mean Square	F	Sig.
Between Groups	.245	2	.123	1.613	.252
Within Groups	.685	9	.076		
Total	.930	11			

This table shows that the above variable does not have a significant effect on the DRT of participants ($F(2,11) = 1.61$, $MS = .08$, $p = .25$): 1) Diminutiveness: ($M = 0.76$, $SD = 0.06$); 2) Feminisation: ($M = 0.90$, $SD = 0.16$); and 3) Substantivisation: ($M = 1.17$, $SD = 0.44$).

5.4.2.4.3 Sentence Length

In this experiment, sentences tend to be different in terms of length: some of them are short, however, others are long (Mean = 5.66; Minimum = 3.00; Maximum = 7.00; SD = 1.23). Thus, a repeated measures ANOVA is conducted to see whether the RTs of participants would be different if I have long experimental sentences in comparison to the short ones. Alternatively, there might be no DRT of participants based on the sentence's length.

Table 5.18 Sentence Length and RTs

ANOVA					
	Sum of Squares	df	Mean Square	F	Sig.
Between Groups	.382	3	.127	1.860	.215
Within Groups	.548	8	.069		
Total	.930	11			

This table shows that the length of sentences appears not to play a significant role in DRT of participants ($F(3,11) = 1.86$, $MS = .07$, $p = .21$). Therefore, this variable does not seem effective in this experiment with regard to the DRT of participants.

5.4.2.4.4 Type Frequency

Type Frequency can be considered as a potential variable which may affect the RTs of participants. Experimental words are different in terms of their type frequency found in the ARC - Araneum Rossicum Corpus (Mean = 53106.152; Minimum = 2.000; Maximum = 446873.000; SD = 130184.522). So, one hypothesis proposes that the RTs of participants can be susceptible to the type frequency of experimental words. Alternatively, the null hypothesis suggests that the type frequency of experimental words does not have any effect on the DRT of participants. To investigate this, a Pearson correlation coefficient is calculated here. Table 5.19 shows the result of this investigation:

Table 5.19 Type Frequency and RTs

Correlations			
RTs Mean	Pearson Correlation	1	.376
	Sig. (2-tailed)		.228
	N	12	12
Type frequency	Pearson Correlation	-.376	1
	Sig. (2-tailed)	.228	
	N	12	12

From this, it seems the type frequency of experimental words cannot be considered as a significant predictor of the DRT of participants. The statistical information suggests a weak negative correlation ($r = -.38$) that does not meet the significance threshold ($p = .22$). Thus, this variable does not seem to play a significant role in this experiment.

5.4.3 Result and discussion of filler items

5.4.3.1 *Mean comparison of participants' RTs*

The analysis of results is extended here to include the filler words, to have a basis for comparison with experimental words. This is because these filler words are similarly structured, but using different suffixes. Consequently, it will be interesting to see whether the same results apply with these other suffixes. These filler suffixes are displayed with their sentences in Table 5.20:

Table 5.20 Filler sentences

Code	Sentences	Frequency level	Function
G1	Официант поставил на стол завтрак.	Decomposable	Diminutiveness
G2	Они присели за столик в уличном кафе.	Decomposable	Diminutiveness
H1	Сейчас строится жилой дом на улице Кутузова.	Decomposable	Diminutiveness
H2	Она живёт в милом домике на окраине города.	Decomposable	Diminutiveness
I1	Она принесла ему стакан минералки.	Decomposable	Diminutiveness
I2	Проводник принёс ещё один стаканчик .	Decomposable	Diminutiveness
J1	Он жилец коммунальной квартиры.	Decomposable	Feminisation
J2	У них скоро новая жилица будет.	Decomposable	Feminisation
K1	Царь объявил войну и назначил рекрутский набор.	Decomposable	Feminisation
K2	Весной 1669 года умерла царица Мария.	Decomposable	Feminisation
L1	Нечего ему тут головой кивать .	Decomposable	Substantivisation
L2	Она отвечает на его кивок лёгким наклоном головы.	Decomposable	Substantivisation
M1	С этим человеком шутить не следует.	Decomposable	Substantivisation
M2	Он вместе с тем шутник и балагур.	Decomposable	Substantivisation
N1	Она целый год боялась прыгать с качелей.	Whole-word	Substantivisation
N2	Около неё постоянно прыжок .	Whole-word	Substantivisation
O1	Ей не скоро еще на пост заступать .	Whole-word	Substantivisation
O2	У девушки есть друг и заступник .	Whole-word	Substantivisation
Total	18		

The above statistical tests will be conducted again on filler words to see whether the outcomes are the same or different. A Paired Sample Test is conducted on filler words to investigate whether there is a significant DRT of participants towards two related groups of words: 1) Pair1: DF words (Lemma1 and Surface1); and 2) Pair2: WF words (Lemma2 and Surface2). The results can be seen in Table 5.21:

Table 5.21 Filler words and RTs

Paired Samples Test											
	Paired Differences					t	df	Sig. (2-tailed)			
	Mean	Std. Deviation	Std. Error Mean	95% Confidence Interval of the Difference							
				Lower	Upper						
Pair 1 Lemma1 - Surface1	-.081940	.564830	.045515	-.171860	.007979	-1.800	153	.074			
Pair 2 Lemma2 - Surface2	-.009532	.547723	.082572	-.176055	.156991	-.115	43	.909			

This table shows that there was not a statistically significant difference between the first pair, $t(153) = -1.80$, SEM = .045, $p = .07$, or the second pair $t(43) = -.12$, SEM = .083, $p = .90$.

The mean of the categories (Lemma1, Lemma2, Surface1, and Surface2) can be presented in Table 5.22:

Table 5.22 The comparison of RT Mean in experimental data

	Statistics			
	Lemma1	Surface1	Lemma2	Surface2
Mean	.75599	.83793	.82336	.83289
Std. Deviation	.492385	.559267	.539119	.572700
Minimum	.271	.128	.208	.239
Maximum	4.209	3.326	2.876	2.742

Also, the variance found in the two above groups is displayed in Figure 5.4:

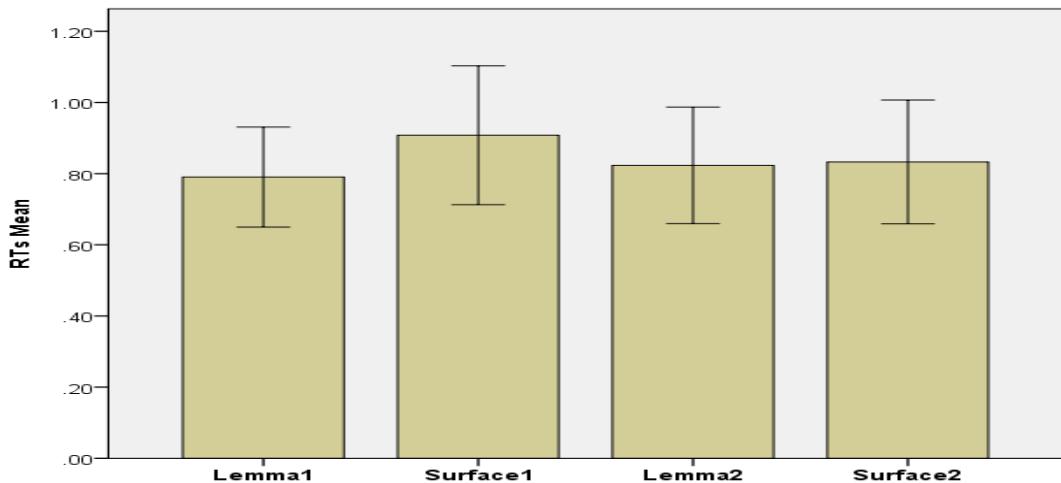


Figure 5.4 Filler Words and RTs

This figure shows that although base words with DF take less time than their related surface words, the difference between them does not appear to be significant. Surface words with WF seem similar in terms of the RTs mean to their related base words. However, neither the first group (Pair 1) nor the second one (Pair 2) show any significant DRT of the base words in line with their surface words. The discrepancy between this result and result of experimental items with {+k(a)} will be dealt with below in Section 5.5.

5.4.3.2 *Independent variables associated with participants*

5.4.3.2.1 Age

As above, independent variables will be analysed with filler words. A Pearson correlation coefficient is calculated to see whether the variable Age is correlated with the RTs of participants or not. Table 5.23 will show the outcome of this test:

Table 5.23 Age and RTs

Correlations						
		Age	Lemma1	Surface1	Lemma2	Surface2
Age	Pearson Correlation	1	-.061	.027	-.003	-.138
	Sig. (2-tailed)		.449	.744	.982	.370
	N	154	154	154	44	44
Lemma1	Pearson Correlation	-.061	1	.429**	.198	.331*
	Sig. (2-tailed)	.449		.000	.197	.028
	N	154	154	154	44	44
Surface1	Pearson Correlation	.027	.429**	1	.211	.372*
	Sig. (2-tailed)	.744	.000		.169	.013
	N	154	154	154	44	44
Lemma2	Pearson Correlation	-.003	.198	.211	1	.516**
	Sig. (2-tailed)	.982	.197	.169		.000
	N	44	44	44	44	44
Surface2	Pearson Correlation	-.138	.331*	.372*	.516**	1
	Sig. (2-tailed)	.370	.028	.013	.000	
	N	44	44	44	44	44

This table shows that Participant's age did not correlate significantly with any of the categories (Lemma1, Surface1, Lemma2, and Surface2); all $r < .10$, all $p > .37$. So, the 'Age' is not regarded as a significant predictor of the DRT of participants here.

5.4.3.2.2 Gender

The above variable is analysed by carrying out a one-way ANOVA. This investigates whether the RTs are influenced by the gender of participants. The following two tables can display the result of the above test according to two groups of related words (DF and WF words):

Table 5.24 Gender and RTs to word pairs with decomposable frequency relationships

Tests of Between-Subjects Effects					
Source	Type III Sum of Squares	df	Mean Square	F	Sig.
Intercept	185.698	1	185.698	469.966	.000
Gender	.483	1	.483	1.223	.270
Error	60.060	152	.395		

Table 5.25 Gender and RTs to word pairs with whole-word frequency relationships

Tests of Between-Subjects Effects					
Source	Type III Sum of Squares	df	Mean Square	F	Sig.
Intercept	57.615	1	57.615	120.510	.000
Gender	.071	1	.071	.149	.701
Error	20.080	42	.478		

Table 5.24 (see above) shows that the ‘Gender’ variable does not seem to be a significant predictor of the DRT of participants for related words with DF ($F(1,152) = 1.22$, $MS = .39$, $p = .27$). This results from the fact that the difference of mean is not considered as significant between male and female groups, which is shown as follows: 1) male group – Lemma1 Mean = .72, SD = .39; Surface1 Mean = .77, SD = .43; and 2) female group – Lemma1 Mean = .77, SD = .54; Surface1 Mean = .88, SD = .62.

Similarly, Table 5.25 (see above) shows the DRT based on the gender of participants is not significant ($F(1,42) = .14$, $MS = .48$, $p = .70$). This owes much to the difference of mean found between male and female groups with WF words. This difference is listed as follows: 1) male group – Lemma2 Mean = .69, SD = .33; Surface2 Mean = .89, SD = .66; and 2) female group – Lemma2 Mean = .91, SD = .63; Surface2 Mean = .79, SD = .51.

5.4.3.2.3 Nationality

The above variable is also analysed with filler words by conducting a one-way ANOVA on two groups of filler words: 1) words with DF; and 2) words with WF. The following two tables show the outcome of this test:

Table 5.26 Nationality and RTs to word pairs with decomposable frequency relationships

Tests of Between-Subjects Effects					
Source	Type III Sum of Squares	df	Mean Square	F	Sig.
Intercept	101.810	1	101.810	266.979	.000
Nationality	3.723	4	.931	2.441	.049
Error	56.820	149	.381		

Table 5.27 Nationality and RTs to word pairs with whole-word frequency relationships

Tests of Between-Subjects Effects					
Source	Type III Sum of Squares	df	Mean Square	F	Sig.
Intercept	34.352	1	34.352	78.642	.000
Nationality	3.115	4	.779	1.783	.152
Error	17.036	39	.437		

Table 5.26 (see above) shows that the variable ‘Nationality’ plays a significant role in the DRT of participants for the first group ($F(4,15) = 2.44$, $MS = .38$, $p = .05$). However, the above variable cannot be a significant predictor of the DRT for the second group ($F(4,39) = 1.78$, $MS = .43$, $p = .15$), as seen in Table 5.27 (see above). This variance and the mean difference found in the above groups of related words is displayed in Table 5.28 and Figure 5.5:

Table 5.28 Nationality and RTs

Report					
Nationality		Lemma1	Surface1	Lemma2	Surface2
Kazakh	Mean	.93952	.78632	.74961	1.02277
	Std. Deviation	.783515	.537292	.467408	.870182
Latvian	Mean	1.18539	1.25391	2.06219	1.21509
	Std. Deviation	.408033	.480766	.090872	.022614
Lithuanian	Mean	.68065	.75370	.64720	.63170
	Std. Deviation	.139346	.276364	.057016	.011304
Russian	Mean	.64823	.82152	.76926	.74061
	Std. Deviation	.332314	.602261	.524377	.459839
Ukrainian	Mean	.86025	.86729	.80189	.91928
	Std. Deviation	.543402	.457873	.407180	.719465
Total	Mean	.75599	.83793	.82336	.83289
	Std. Deviation	.492385	.559267	.539119	.572700

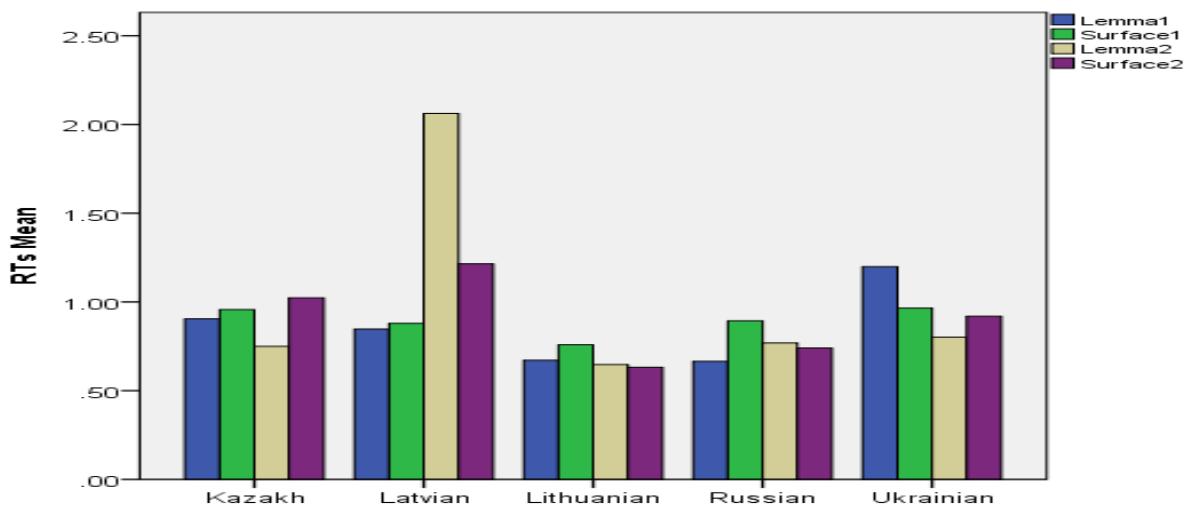


Figure 5.5 Nationality and RTs

The variation of words with DF seems more than words with WF. Thus, the former has a notable difference among all groups of the Russian speakers, whereas the latter does not seem to have a significant difference. The low numbers for some nationalities (e.g. one Latvian and Lithuanian) may make the outcomes of these statistics unreliable. In this case, the probability of rejecting the null hypothesis is likely to occur. In other words, these statistics can show differences in RTs of participants when there is no difference. Interestingly, all participants are native speakers of Russian although some of them are from former Soviet countries. The

Russian language is still regarded as a formal language in these countries. The variable of Nationality seems to be problematic since I have two contradicting statements. This variable is effective in experimental words with WF only, but only in filler words with DF. It seems that the relative frequency level has affected the DRT of groups of Russian native speakers. Another explanation can be that filler words with DF (7 related words) are used more than WF (two related words). That is why more variation of DRT is reflected in filler words with DF since the samples were bigger in terms of number.

5.4.3.2.4 Education

The above variable is also analysed by conducting a one-way ANOVA on two groups of related words. The first one is related to words with DF; the second is related to words with WF. The outcomes can be shown by the following two tables according to the above order of related words:

Table 5.29 Education and RTs to word pairs with decomposable frequency relationships

Tests of Between-Subjects Effects

Source	Type III Sum of Squares	df	Mean Square	F	Sig.
Intercept	195.400	1	195.400	503.310	.000
Educational level	1.532	1	1.532	3.946	.049
Error	59.011	152	.388		

Table 5.30 Education and RTs to word pairs with whole-word frequency relationships

Tests of Between-Subjects Effects

Source	Type III Sum of Squares	df	Mean Square	F	Sig.
Intercept	60.302	1	60.302	128.772	.000
Educational level	.483	1	.483	1.032	.315
Error	19.668	42	.468		

Table 5.29 (see above) shows that there is a significant DRT of participant according to their educational level: 1) Postgraduate (Lemma1 Mean = .66, SD = .37; Surface1 Mean = .80, SD = .59); and 2) Undergraduate (Lemma1 Mean = .88, SD = .60; Surface1 Mean = .87, SD = .49). Hence, this educational level is regarded as a significant predictor of participants' DRT for related words with DF ($F(1,15) = 3.94$, $MS = 39$, $p = .05$). However, Table 5.30 (see above) shows that related words with WF do not have a significant DRT of participants ($F(1,42) = 1.03$, $MS = .47$, $p = .31$). This is based on the following statistical numbers: 1) Postgraduate (Lemma2 Mean = .73, SD = .53; Surface2 Mean = .80, SD = .62); and 2) Undergraduate (Lemma2 Mean = .95, SD = .52; Surface2 Mean = .88, SD = .50).

5.4.3.3 Independent variables associated with data

5.4.3.3.1 Syllable

The first above variable associated with filler data is analysed here. A Pearson correlation coefficient is calculated to investigate whether there is a relationship between the number of syllables and the RTs of participants:

Table 5.31 Syllable and RTs

		Correlations	
		Syllable	RTs Mean
Syllable	Pearson Correlation	1	.307
	Sig. (2-tailed)		.215
RTs Mean	Pearson Correlation	.307	1
	Sig. (2-tailed)	.215	

This table shows that there is no significant correlation between the Syllable variable and the DRT of participants ($r = .30$ (positive weak correlation), $p = .21$). Thus, the number of syllables does not play a significant role in the DRT of participants.

5.4.3.3.2 Function

Filler words with different suffixes, particularly {+ик}, {+ок}, {+чик}, {+ник}, and {+иц(a)} deliver similar functions of the target words containing the suffix {+к(a)}. A repeated measures ANOVA is conducted to investigate whether the multiple functions of filler words can affect the DRT of participants in this experiment. Table 5.32 can answer this question:

Table 5.32 Function and RTs

ANOVA					
	Sum of Squares	df	Mean Square	F	Sig.
Between Groups	.001	2	.000	.013	.988
Within Groups	.366	15	.024		
Total	.367	17			

This table shows that there is no significant DRT of participants according to the Function variable ($F(15,17) = .01$ (positive weak correlation), $MS = .02$, $p = .98$). The variance between the various functions of filler words can be shown by Figure 5.6:

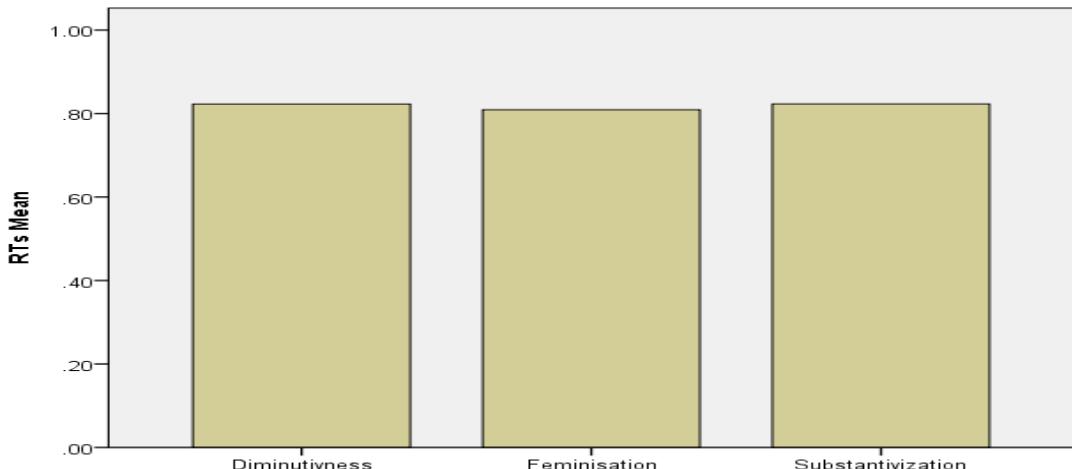


Figure 5.6 Function and RTs

5.4.3.3.3 Sentence Length

The above variable is also analysed in this experiment. The question arises, does this length have an effect on the RTs of participants or whether it matters if the sentence is long or short. To answer this, a repeated measures ANOVA is carried out because it is used when several measurements of the same dependent variable are taken at different time points or under different conditions. It is designed to compare variation between groups relative to variation within groups. Since I have to measure the RTs of participants according to two types of sentences whether short or long (measurements), this analysis seems appropriate for this purpose. Table 5.33 can show the result of this analysis:

Table 5.33 Sentence Length and RTs

ANOVA					
	Sum of Squares	df	Mean Square	F	Sig.
Between Groups	.023	4	.006	.217	.924
Within Groups	.344	13	.026		
Total	.367	17			

This table shows that the above variable cannot be considered as a significant predictor of the DRT of participants. This is based on the following statistical numbers obtained by the above test: ($F(4,17) = .22$, $MS = .03$, $p = .92$).

5.4.3.3.4 Type frequency

Filler words have also different Type Frequency values listed in the ARC (Mean = 59358.61; Minimum = 24.00; Maximum = 664580.00; SD = 156046.35). Thus, the question

arises: do words with high Type Frequency values differ in their RTs from words with low values for Type Frequency? A Pearson correlation coefficient is calculated to answer this question. Table 5.34 can show the result of this calculation:

Table 5.34 Type Frequency and RTs

Correlations		RTs Mean	Type frequency
RTs Mean	Pearson Correlation Sig. (2-tailed)	1 .168 .506	
Type frequency	Pearson Correlation Sig. (2-tailed)	-.168 .506	1

This table shows that the above variable cannot indicate any significant DRT of participants ($r = -.17$ (negative weak correlation), $p = .51$). The level of variance between the RTs of participants and the above variable can be shown by Figure 5.7:

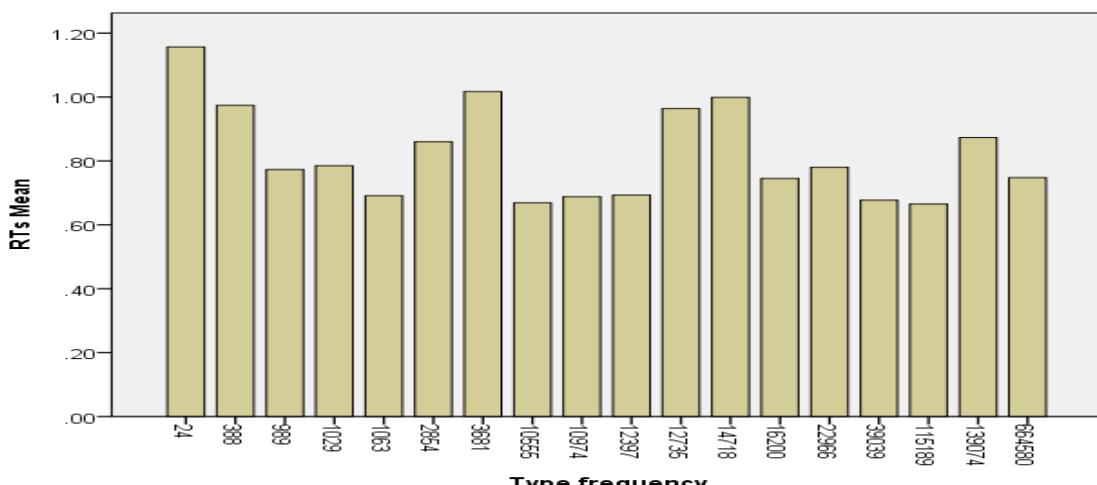


Figure 5.7 Type Frequency and RTs

5.5 General discussion

My analyses focused not only on the observed results regarding surface words with the suffix {+κ(a)}, but also included other counterpart suffixes used as filler words. Interestingly, these suffixes seem quite similar in terms of function to the main above suffix. This provides a valuable insight into the differences and commonalities observed between the suffix {+κ(a)} and other counterpart Russian suffixes in this experiment.

Unexpectedly, Table 5.21 (see above) shows that there is no significant DRT of participants for filler words with either a DF or a WF level. On the one hand, there was a slight difference between related words with DF (Lemma1 and Surface1). However, the level of statistical significance to validate a difference between related words, as was noticed with experimental

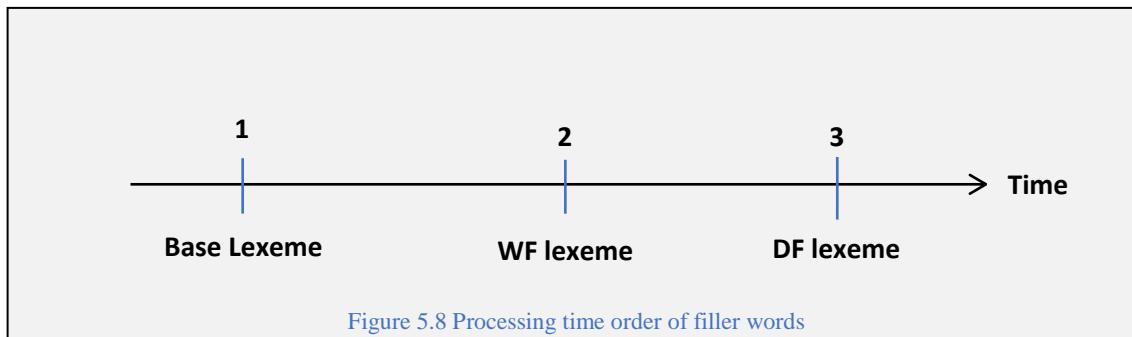
words with the suffix {+к(а)}, was not reached. On the other hand, WF words have not indicated even a small DRT of participants; both Lemma2 and Surface2 have almost the same mean.

These outcomes result from using multiple counterpart suffixes to indicate similar functions of the suffix {+к(а)}. These suffixes are listed as follows in Table 5.20 (see above): 1) suffixes {+ик} and {+чик} to denote Diminutiveness; 2) suffix {+иц(а)} to denote Feminisation; and 3) suffixes {+ок} and {+ник} to indicate Substantivisation. This diversity of employing various counterpart suffixes is intended to distract the participants while conducting the experiment. This goal so far has been achieved in this experiment; however, the observed results regarding the filler words were not as expected or assumed.

I used a variety of filler suffixes to increase the diversity of material seen by respondents. As the total number of sentences was 30 including experimental sentences, sentences allocated for each filler suffix are at maximum two paired sentences as shown by Table 5.20 (see above). Apart from the suffix {+чик} which has been used once in a paired sentence, other suffixes have been used twice. Thus, the more sample data used in a certain experiment, the more the variation and wide results are expected to be. Accordingly, I believe that the low number of lexemes per filler suffix may have affected their observed results in this experiment.

The distribution of filler suffixes in line with the above levels of relative frequency was not equal. Seven paired sentences with various filler suffixes have indicated DF level; however, only two paired sentences with suffixes like {+ок} (*прыгать* /prygat'/ ‘to jump, leap’ > *прыжок* /pryzhok/ ‘jump, leap’ and {+ник} (*заступать* /zastupat'/ ‘to defend, protect’ > *заступник* /zastupnik/ ‘defender, protector’) have indicated WF level. Notably, the overall mean of filler words with DF is still consistent with the level of relative frequency which these words reflect. In other words, it is still compatible with the main theme of the DF level which supposes that the base lexeme takes less time in processing than its surface word ($M = -.009532$) as shown by Table 5.21 (see above). By contrast, the findings of filler words with WF are not compatible with the main theme of WF level which they were supposed to reflect. The reason is that I have used a small number of filler words reflecting this level of relative frequency (only two words with WF level compared to seven words having a DF level). Consequently, their RTs’ mean ($M = -.081940$) does not indicate that surface words take less time in processing than their base lexemes as shown by Table 5.21 (see above).

Figure 5.4 (see above) shows that surface words with WF require slightly less time in processing than surface words with DF. This emphasises what I have expected with what I have observed regarding the processing time order for DF and WF words. The general assumption is that the surface words with WF take less time in processing than surface words with DF. This view has been maintained by the observed findings of this experiment. Accordingly, the mental order of processing base lemmas, DF words, and WF words in terms of processing time is as follows:



This order corresponds to the observed results found in this experiment. These results show that DF words take more time in processing than WF words and vice versa.

Various independent variables associated with filler words have been identified in this experiment. On the one hand, this analysis shows that certain variables like Age, Gender, Syllable, Function, Sentence Length, and Type Frequency are not considered as significant predictors of the participants' DRT. On the other hand, the Nationality variable has a significant effect on related words with DF level. However, it has not been regarded as effective variable with related words with WF level (it is otherwise unclear what it means that something is not an 'effective' variable). Similarly, the Education variable has a significant effect on related words with DF level, while related words with WF level have not been affected by the above variable.

Similarly, the same variables have been analysed with experimental words; the observed results seem quite similar. On the one hand, certain variables particularly Age, Gender, Syllable, Function, Sentence Length, and Type Frequency do not play a significant role regarding the DRT of participants. On the other hand, since I have small groups (e.g. Latvians and Lithuanians – only one participant), the Nationality variable yields two contradicting statements: 1) DF words have not had a significant effect on the RTs of participants; and 2) WF words have had a significant effect on the RTs of participants. Similarly, the 'Education' variable yields two contradicting statements: 1) there is no significant DRT between undergraduate and postgraduate participants for DF words; and 2) there is a significant difference between undergraduate and postgraduate participants for WF words.

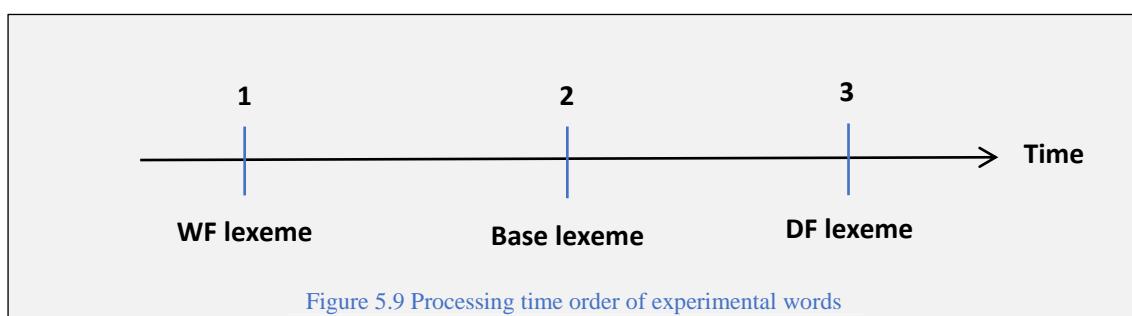
Thus, the only difference found between experimental and filler words is that the variables of Nationality and Education have only affected the RTs of DF words when analysing filler words. However, the same variables have only affected the RTs of WF words when analysing experimental words.

The variable Handedness was not worth including in this experiment because I have only one left-handed person among participants. This results from the fact that I did not obtain a high number of participants (only 22). This is because of the difficulty of finding Russian native speakers studying at Sheffield University. Therefore, maximising the number of participants is one of the recommendations for the research future regarding the DRT of related words in Russian.

Unlike the filler words, the observed results associated with experimental words seem to be as hoped: there are significant differences in processing time between base lemmas and surface words. The surface words with lower frequency than base lemmas (DF words) show significantly slower reaction times. However, the surface words with higher frequency than base lemmas (WF words) show significantly faster reaction times. Since the results seem to be quite conclusive, the null hypothesis is rejected in this experiment.

Interestingly, the observed results of experimental words seem different from the observed results of filler words. The main outcome of filler words is that the processing time order in the mind of the speaker is as follows: 1) the base lexeme; 2) WF lexeme; and 3) DF lexeme as shown by Figure 5.8 (see above).

However, Figure 5.1 (see above) shows that the outcomes associated with experimental words suppose that surface words with WF level occupied the first order in terms of time spent on processing words in the mind of the speaker. This surprising output is displayed in Figure 5.9:



This suggests that surface words produced by the suffix $\{+\kappa(a)\}$ are mentally realised and processed faster than even the base lexemes. This might account for the frequent usage of this suffix by the native speaker in their daily life. These outputs refer to the interesting fact that the frequent usage of this suffix is observed not only in the language of children; adults' speech and language can reflect that as well either in written or discourse application.

5.6 Conclusion

Two overlapping hypotheses have been tested in this experiment. The outcomes result in rejecting the null hypothesis. This experiment confirms the proposals of scholars (e.g. Berdan and Legum 1976; Whaley 1978; Tremblay et al. 2011) presented at the beginning of this chapter, suggesting that there is a mutual interaction between the word frequency and the processing time of that word in the mind of the speaker: the more time spent in processing, the more this word reflects a low level of frequency and vice versa. Additionally, this experiment has supported the arguments of specific scholars (e.g. Vennemann 1974; Taft and Forster 1975; Taft 1979; Bradley 1980; Anshen and Aronoff 1988; Burani and Caramazza 1987; Holmes and O'Regan 1992; Vannest and Boland 1999; Bertram et al. 2000; Taft 2004) when positing that the higher the WF level of a certain surface word, the less time spent in processing this word and vice versa.

Notably, this experiment shows that words produced by the suffix $\{+\kappa(a)\}$ behave differently than other words produced by other counterpart suffixes particularly $\{+\text{ик}\}$, $\{+\text{ок}\}$, $\{+\text{чик}\}$, $\{+\text{ник}\}$, and $\{+\text{иц}(a)\}$. This is based on the observed results which suggest that surface words produced by suffix $\{+\kappa(a)\}$ require less time in processing not only than surface words with DF, but they also take less time than the base lexemes. These results can be regarded as new findings regarding the processing time order of related words in Russian.

These experimental outcomes support the earlier discussions in Chapters 3 and 4 on the productivity of the suffix $\{+\kappa(a)\}$ and its mental representation. Also, these outcomes fit nicely with the preceding findings which show that words with $\{+\kappa(a)\}$ are mostly influenced by the WF level.

6 Chapter: Semantic analysis of words with the suffix {+κ(a)}

6.1 Introduction

Most morphological theories consider that surface forms are inclined to canonicity: they pair the form of the surface word with the meaning of the base lexeme. So, they propose full morpho-semantic correspondence and transparency. Derivational morphology considers canonicity as a basic feature of derivation (Corbett 2010); the canonical correspondence of elements of meaning and form as one-to-one is necessary between related words.

However, the assumption of canonicity is problematic for two reasons. Firstly, surface words can have a *semantically opaque* relationship with their base lexeme. In such cases, these surface words can express heterogeneity of semantic meaning. The controversy arises around how morphological models deal with this heterogeneity of meanings. Secondly, lexical items can possess a polysemy of semantic meanings. Does it imply that a certain morphological model is able to deal with, while another one has problems in doing this. Both these issues challenge morpho-semantic correspondence and transparency. This chapter explores how morphological models deal with heterogeneity and polysemy. It will suggest that the word-based approach can benefit from the insights of ‘cognitive semantics’ on the prototypicality concept.

Little attention has been paid to investigating the semantics of {+κ(a)} because the focus of scholars has so far concentrated on dictionary and handbook materials. This leads me to question whether there is a disparity in addressing the meanings/functions of the above suffix while using data extracted from handbooks, dictionaries and corpora. In other words, does the type frequency of a certain meaning/function of {+κ(a)} found in a dictionary differ from the same meaning/function found in a certain corpus or a handbook? Another question is whether I can identify previously unrecorded meanings/functions while analysing corpus data in comparison with dictionary and handbook data, along with new sub-meanings/functions that are derived from the main ones.

The Russian approach (e.g. Vinogradov, Istrina, and Barkhudarov 1952; Shvedova 1970; Rakusan 1981) shows that the semantic meanings of the suffix {+κ(a)} tend to be classified in separation from each other. A homonymous view is applied in this classification: various derivational suffixes, which happen to be identical in phonology/orthography, have different semantic functions to deliver. This is in contrast to the modern ‘cognitive semantics’ approach which organises the meanings/functions of one single suffix as the most prototypical one and the least prototypical one in relation to a main prototype. In such an approach, I have to identify which function is prototypical in having close relationships with many other functions and the highest type frequency in a corpus.

To answer the above questions, a thorough investigation was undertaken using data extracted from handbooks, corpora, and dictionaries. As a result, this analysis will provide a new detailed and comprehensive distribution of semantic meanings/functions of the suffix {+κ(a)}. The novelty of studying the suffix {+κ(a)} in connection with cognitive semantics approach provides a revealing case-study of semantics of {+κ(a)} based on the corpus material.

The structure of this chapter will be the following: 1) the effect of heterogeneity of meaning on morphological models; 2) the polysemy of the suffix {+κ(a)} and its implication for morphological models; 3) identification of other potential meanings/functions of {+κ(a)}; 4) a new distribution of semantic meanings/functions of {+κ(a)} based on ‘prototype theory’; 5) a discussion highlighting the important issues found in this analysis; and 6) a summary of the main outcomes of this analysis.

6.2 The effect of heterogeneity of meaning on morphological models

Although many words with the suffix {+κ(a)} reflect a transparency of semantic meaning, others can reflect a mismatch of meaning compared to their base lexemes. The transparency of meaning is when the meaning of the new surface word can be comprehended in association with the meaning of its base lexeme. Ryazanova-Clarke (1999: 216) notes that many words produced by the suffix {+κ(a)} tend to adhere to the meaning of their base lexemes. This has been called ‘adherent expressivity’. In this regard, Rakusan (1981: 49) notices that most deverbal coinages of {+κ(a)} observe this tendency, such as *ломать* /lomat'/ ‘to break’ > *ломка* /lomka/ ‘breaking'; *оценить* /otsenit'/ ‘to evaluate’ > *оценка* /otsenka/ ‘evaluation’, etc.

‘Subjective evaluation’ (e.g. Beard 1988: 163; Štekauer 2002: 109) is a term often associated with the usage of certain suffixes. The subjective expressivity of the speaker is manifested when s/he utilises specific affixes to express different meanings of human emotions. This means that certain Russian suffixes have the ability to modify the meaning of their base lexemes by adding a subjective evaluation of the speaker, mostly in discourse applications. Therefore, a new derived word with a certain suffix can indicate a slightly different semantic meaning compared to its base lexeme. Rakusan (1981: 51) defines the suffixes of ‘subjective evaluation’ as those morphemes situated at the end of the stem that create new words that express a subjective evaluation, as found in *ночь* /noch'/ ‘night’ > *ночка* /nochka/ ‘night (dim.)’; *мужчина* /muzhchina/ ‘man’ > *мужчинка* /muzhchinka/ ‘sort of man’, etc.

However, Rakusan (1981: 42) indicates that a great number of derived words do not carry an expressive feature. Their semantic meaning is shifted compared to their base lexemes. This leads to the creation of autonomous words with a mismatch in meaning in comparison with their base lexemes.

Shanskiĭ (1968: 144) underlines the main changes occurring between the base and derived words by the semantic drift of the latter with respect to the former. It means that the derived word ceases to be related to its base lexeme in meaning.

This mismatch of form-meaning is quite a common phenomenon during the word formation process. The ‘deviant word formation’ is represented when the morpho-semantic transparency becomes ambiguous and irrelevant between corresponding forms of base and derived one. This observation according to Hathout (2014: 177) is “widespread” in terms of word formation rules.

To investigate this issue further, I have extracted various examples from the RNC. These examples were selected on the basis of how surface words with {+к(a)} match or diverge in meaning to their base lexemes. I allocated first six examples with {+к(a)} which can retain similar meanings to their base lexemes. However, the remaining examples reflect a heterogeneity of meaning in line with their base lexemes. Each example contains two sentences: one includes the surface word with {+к(a)} and the other one includes its base form. This procedure shows how the semantic connection between related words can be preserved or distorted. I believe that the employed examples ideally illustrate the semantic connection between two different categories of words with {+к(a)}. Although the choice of selecting these examples/sentences was primarily based on my intuition and prediction, they were checked and filtered by Russian native speakers to assure their accuracy and eligibility to be used for the above purpose. These examples with their full sentences are displayed as follows:

1. (a) *Предлагал сначала называть кандидатов, а потом их баллотировать.*

/Predlagal snachala nazvat' kandidatov, a potom ikh ballotirovat'/

'He suggested first naming the candidates, then putting them to a vote'

- (b) *Я даже не знаю, когда и баллотировка наступит?*

/Ya dazhe ne znayu, kogda i ballotirovka nastupit?/

'I do not even know when the voting begins.'

2. (a) *Ты должна матери ноги мыть и воду пить...*

/Ty dolzhna materi nogi myt' i vodu pit'.../

'You have to wash your mother's feet and give her water'

- (b) *Мойка машины меня не касается, вдруг я че не так сделаю.*

/Moika mashiny menya ne kasaetsya, vdrug ya che ne tak sdelayu/

'Washing the car is not my problem, perhaps I may do something wrong'

3. (a) *Ни один акробат не может с ним сравняться.*

/Ni odin akrobat ne mozhet s nim sravnit'sya/

'No other acrobat can compare with him'.

- (b) *Акробатка Вельда производит на него сильное впечатление.*

/Akrobatka Vel'da proezvodit na nego sil'noe vpechatlenie/

'The acrobat Vel'da makes a strong impression on him'

4. (a) Я не русский, не украинец, я грек.

/Ya ne russkii, ne ukrainets, ya grek/

'I am not Russian, nor Ukrainian, I am Greek'

- (b) Она была украинка, но была у нее и татарская кровь.

/Ona byla ukrainka, no byla u nee i tatarskaya krov'/

'She was Ukrainian, but she had Tatar blood as well'

5. (a) Ампула может быть частично погружена в воду.

/Ampula mozhet byt' chastichno pogruzhena v vodu/

'The ampoule can be partly immersed in water'

- (b) Он с хрестом сломал стеклянную ампулку.

/On s khrustom slomal steklyannuyu ampulku/

'With a crunch, he smashed a glass-small ampoule'

6. (a) У тебя ещё была борода в то время.

/U tebya eshyo byla boroda v to vremya/

'At that time you still had a beard'

- (b) У него была донкихотская бородка.

/U nego byla donkikhotskaya borodka/

'He had a small beard like Don Quixote'

7. (a) Нельзя описать, как она была мила в этот день!

/Nel'zya opisat', kak ona byla mila v etot den'/

'It is impossible to describe how nice she was that day!'

- (b) В книгах сплошь и рядом встречались ошибки и описки.

/V knigakh splosh' i ryadom vstrechalis' oshibki i opiski/

'In the books mistakes and errata were found all over the place'

8. (a) Просто я вчера помыл ноги.

/Prosto ya vchera pomyl nogi/

'I just washed my feet yesterday'

- (b) Раньше в этой церкви был склад и помойка.

/Ran'she v etoi tserkvi byl sklad i pomoika/

'Previously in this church there was a store and rubbish heap'

9. (a) После начала штурма, экстремисты выбросили белый флаг.

/Posle nachala shturma, ekstremisty vybrosili belyi flag/

'After the attack began, the extremists put out the white flag'

(b) Белка бежала-бежала в своём колесе.

/Belka bezhala-bezhala v svoyom kolese/

'The squirrel ran round and round in his wheel.'

10. (a) Суп горячий из ягод и фруктов.

/Sup goryachii iz yagod i fruktov/

'A hot soup from berries and fruits'

(b) Я заболела, у меня была горячка на нервной почве.

/Ya zbolela, u menya byla goryachka na nervnoi pochve/

'I fell sick; I had a nervous fever.'

11. (a) Вода в озере была прозрачная, как слеза.

/Voda v ozere byla prozrachnaya, kak sleza/

'The water in the lake was pure, like a tear'

(b) Водка действует как вода на огонь.

/Vodka deistvuet kak voda na ogon'/

'Vodka works like water on fire'

12. (a) Старый друг лучше новых друзей.

/Staryi drug luchshe novykh dvukh/

'An old friend is better than two new ones'

(b) Младший дружка нёс невесте подарки от жениха.

/Mladshii druzhka nyos neveste podarki ot zhenikha/

'The younger bridesman carried the bride's gifts from the groom'

6.2.1 Discussion

In the above examples, the correspondence of semantic meaning between derived words with the suffix {+к(а)} is reflected by *баллотировать* /ballotirovat'/ 'to vote' > *баллотировка* /ballotirovka/ 'voting'; *мыть* /myt'/ 'to wash' > *мойка* /moika/ 'washing'; *акробат* /akrobat/ 'acrobat (m.)' > *акробатка* /akrobatka/ 'acrobat (f.)'; *украинец* /ukrainets/ 'Ukrainian (m.)' > *украинка* /ukrainka/ 'Ukrainian (f.)'; *ампула* /ampula/ 'ampoule' > *ампулка* /ampulka/ 'small ampoule'; and *борода* /boroda/ 'beard' > *бородка* /borodka/ 'small beard'.

However, the remaining examples do not have a regular, retrievable semantic relationship with their base lexemes. This semantic shift is exemplified by *описать* /opisat'/ 'to describe' > *описка* /opiska/ 'erratum'; *помыть* /pomyt'/ 'to wash' > *помойка* /pomoika/ 'rubbish heap, dump'; *белый* /belyi/ 'white' > *белка* /belka/ 'squirrel'; *горячий* /goryachii/ 'hot' > *горячка* /goryachka/ 'fever'; *вода* /voda/ 'water' > *водка* /vodka/ 'vodka'; and *друг* /drug/ 'friend' > *дружка* /druzhka/ 'bridesman'.

This heterogeneity of meaning between derived words imposes problems for certain morphological models. For example, in the IA (Item and Arrangement) model, the word is composed of independent units/morphemes. Each unit/morpheme is a representative of form and meaning respectively. Accordingly, the suffix {+к(а)} reflects a compatibility of form and meaning in some of the above examples which are listed as follows: 1) In the examples of *баллотировка* and *мо́йка* (see above 1.b and 2.b), the suffix {+к(а)} has been assigned as an action agent; 2) In the examples of *акробатка* and *украинка* (see above 3.b and 4.b), the suffix {+к(а)} has been assigned as a feminine agent; and 3) In the examples of *ампулка*, and *бородка* (see above 5.b and 6.b), the suffix {+к(а)} has been assigned as a diminutive agent.

However, this suffix has not been assigned any meaning when the surface word ceased to be related in meaning to its base lexeme. This can be observed by the above examples, particularly *описка*, *помойка*, *белка*, *горячка*, *водка*, and *дружска* (see above 7.b, 8.b, 9.b, 10.b, 11.b, and 12.b).

How then is it that the status of the suffix {+к(а)} and its semantic value is not identical in all words produced with it? In other words, how I can consider this suffix in some words like *баллотировка*, *мо́йка*, *акробатка*, *украинка*, *ампулка*, and *бородка* as a functional/meaningful morpheme. In contrast, this suffix is treated in certain words, particularly *описка*, *помойка*, *белка*, *горячка*, *водка*, and *дружска* as a non-meaningful one. This difference of status of the above suffix means that its treatment is not equal for all its coinages.

In addition, the IA model assumes that the possibility of splitting a word into different parts/morphemes hinges on their semantic indication in line with their order in the structure of the word. This helps to elucidate the composition order of morphemes within the word. Thus, the division of morphological parts/morphemes so far “depends in many cases upon the different standpoint of the semantic elements of that word” Vinogradov (1951: 9, my translation). Therefore, this division relies primarily on the degree of the semantic correspondence existing between the base and surface word.

Thus, I have noticed that some of the above words with {+к(а)}, which reflect semantic correspondence to their base form, do not have any constraints to split them in a linear fashion. This can be seen by *баллотировка* ({баллотиров+ка}), *мо́йка* ({мой+ка}), *акробатка* ({акробат+ка}), *украинка* ({украин+ка}), *ампулка* ({ампул+ка}), and *бородка* ({бород+ка}). Obviously, the semantic factor arranges segmentation of these words in a linear pattern.

However, the problem arises when some words express a mismatch of meaning. In some instances where the semantic correspondence is lost, as in *белка*, *водка*, *горячка*, and *дружска*, their morphological segmentation nevertheless clearly follows the linear model: {бел+ка},

{вод+ка}, {горяч+ка}, and {друж+ка}. But such a linear model flounders in explaining words that are composed out of more than two building elements. For example, instances like *описка* and *помойка* raise the question as to whether their segmentation occurs first according to the prefixation pattern: {о+писка}, {по+мойка}, or by the suffixation one: {опис+ка}, {помой+ка}. This is called the ‘bracketing paradox’ (Kiparsky 1982), which raises the issue of the mapping movement of morphemes. As noted in Section 2.4.2.1.5 (see above), the IA model assumes that prefixation happens first, and then the suffixation later. Yet in *описка* and *помойка* the suffixation occurs first in the decomposition process, followed by a prefixation process.

It becomes obvious that the account of morphological decomposition in the IA model may not be only limited to the accurate linear segmentation of the morphological parts of the word, but extends to the semantic relationship of these parts/morphemes and how they correspond to each other to express a particular meaning through the formation process.

I have seen that the inclusion of this suffix reflects an isomorphic correspondence of form and meaning respectively in some instances. However, in other instances, this suffix has ceased to be a representative of the form and the meaning respectively. This overlapping situation cannot be permitted in the theoretical framework of the IA model. Therefore, this contrast of meaningful/functional status and the disparity in the treatment of the above suffix leads to unresolved questions, which the IA model seems unable to solve. Thus, this model exhibits problems in dealing especially with surface words whose meaning cannot be related to the meaning of their base lexemes.

Similarly, particular accounts in the IP (Item and Process) model seem incapable of dealing with the mismatch of meaning found in some of the above examples. The main framework of this model assumes that units/words are generated from other units/words by the operation of WFRs (Word Formation Rules). This model utilises the terms *input* and *output* in defining its objects, which are the base and surface words. Two different accounts are suggested in this model. Firstly, the operation of WFRs occurs on the stem of inputs and outputs to generate new coinages (e.g. Matthews 1974; Anderson 1992). Accordingly, they treat the stem of inputs and outputs as standalone units, which makes this model closer to the IA model by decomposing the word into multiple units. Secondly, the operation of WFRs occurs on the whole inputs and outputs as one independent unit to create new coinages (e.g. Aronoff 1976; Stump 2001). Accordingly, they treat both the inputs and outputs at the word level. This makes them closer to the WP (Word and Paradigm) model in its treatment and theoretical concept. Interestingly, this model has been developed to cover the arbitrary phonological correspondence between its objects by providing a plausible interpretation as to why certain morphemes are altered,

truncated, or mutated. This is illustrated by *мыть* > *мойка*; and *украинец* > *украинка*. The semantic relatedness between the inputs (the base lexeme) and the outputs (the surface words) are preserved by WFRs. In other words, these rules maintain the mapping of the semantic function of both objects during processing.

The semantic function according to accounts of Matthews (1974) and Anderson (1992) cannot be divorced from the form of the word. Instead, it goes alongside WFRs, which contribute to mapping the semantics of its inputs onto the semantics of its outputs. Thus, the semantic function in this model is associated with the inputs and outputs of processes which change the shape of the stem by shifting, truncating, or adding morphemes to it. “Both Aronoff and Anderson envision some sort of semantic function that goes onto the semantics of the outputs of the rule, thus, semantics is not divorced from form.” (Antić 2010: 8).

Thus, the IP model suggests that the correlation between its objects can only be observed/measured by the semantic relatedness between the inputs and the outputs. Accordingly, accounts of Matthews (1974) and Anderson (1992) would observe/measure this semantic relatedness between the stem of inputs and outputs only, while accounts of Aronoff (1976) and Stump (2001) suppose that this relatedness is observed/measured at the word level of both its objects (the inputs and outputs). Thus, this model easily links the inputs (base lexeme) of *мойка*, and *украинка* as *мыть*, and *украинец*. This owes much to the existence of the semantic relatedness found in both objects despite the phonological correspondence being distorted by the occurrence of the phenomena of truncation and allomorphy.

However, the account (e.g. Matthews 1974; Anderson 1992) faces a problem when the semantic connection is lost between the input and the output. Since allomorphy and mutation break isomorphic phonological correspondence of input and output, identifying the input (the base lexeme) becomes more difficult, e.g. *помыть* > *помойка*; and *друг* > *дружка*. Interestingly, the IP model has treated the input of *мойка* as *мыть* but seems uncertain to claim that the input of *помойка* is *помыть* since the stem of the former does not correlate in meaning to the latter. By contrast, the WFRs assumes that the stem of the first person (*мою /moyu/* ‘I wash’) has been employed and merged with the suffix {+к(a)}. Thus, the heterogeneity of the semantic meaning found in the above examples makes it uncertain whether in the IP model I can consider the inputs of *помойка* and *дружка* to be *помыть* and *друг*. This means that the treatment of the above examples in this model is not equal.

Unlike the above models, the theoretical concept of the WP suggests the following pattern: [X] > [X_{ka}] to elucidate the way of producing words containing the suffix {+к(a)}. This model treats its members (the base lexeme and its surface word) as free independent units, which can correspond with each other either phonologically or semantically. Since, this correspondence

might be violated when coining words with the suffix $\{+\kappa(a)\}$, this model accepts that surface words might be divergent either phonologically or semantically in comparison to their base lexemes. The heterogeneity of meaning between related words is not considered as a dilemma for the above model. Therefore, neither, do *мо́йка*, *украинка*, *описка*, *по́мойка*, or *дру́жка* indicate problems in affiliating them to their base lexemes which are *мыть*, *украине́ц*, *опи́сать*, *по́мыть*, and *друг*.

6.3 The polysemy of the suffix $\{+\kappa(a)\}$ and its implication for morphological models

Many words can express multiple meanings ('polysemy'). Interestingly, the coinages of $\{+\kappa(a)\}$ have reflected this issue. Townsend (1975: 200) notices that words produced by the above suffix may refer to the diminutive meaning and another different meaning as well. Townsend (1975) instantiated this with the word *но́жка* /nozhka/, which can indicate 'small leg', 'stem of mushroom', and 'leg of chair'. This leads me to ask how this polysemy affects the morphological models of word formation, i.e. are some morphological models able to deal with polysemy in contrast to other models?

To investigate this point further and see its implication, I have extracted various examples produced by the suffix $\{+\kappa(a)\}$ from the RNC. These examples were selected on the basis of how words with $\{+\kappa(a)\}$ reflect a polysemous situation by comparing at least two sentences for the same coinage. In one sentence $\{+\kappa(a)\}$ indicates a certain meaning/function, whereas it indicates a different meaning/function in the other one. A variety of meanings/functions are intended to be shown in these examples. These meanings are the main conventional ones for the suffix $\{+\kappa(a)\}$. I allocated the first four examples with $\{+\kappa(a)\}$ to refer to a diminutive meaning/function in the first sentence. The second sentence for the same coinage of $\{+\kappa(a)\}$ indicates a different meaning/function for the sake of comparison. The second four examples with $\{+\kappa(a)\}$ are chosen to refer to a feminine meaning/function in the first sentence, while the same coinage with $\{+\kappa(a)\}$ denotes a different meaning in the second sentence. A similar procedure applies to the third meaning/function of $\{+\kappa(a)\}$ which is Substantivisation. The last four examples indicate this meaning in the first sentence; however, they refer to a different meaning of action in the second sentence.

This procedure shows how the polysemous aspect can be reflected in various meanings/functions of the suffix $\{+\kappa(a)\}$. The chosen examples are assumed to be the best to illustrate the implication of polysemy of $\{+\kappa(a)\}$ on various morphological models of word formation. Although these examples/sentences were primarily chosen on my intuition and prediction, they were evaluated by Russian native speakers in order to check that I used the

appropriate examples/sentences to explore the consequences of polysemy of {+к(а)} on morphological models. This leads me to ask how this polysemy affects the morphological models of word formations.

The polysemy of certain coinages of the suffix {+к(а)} is demonstrated by the following examples:

1. (a) *Вы так прекрасны с коронкой любви на голове.*

/Vy tak prekrasny s koronkoi lyubvi na golove/

'You are so wonderful with a small crown of love on your head.'

- (b) *Врач, пока коронку делает, поставил временный протез.*

/Vrach, poka koronku delaet, postavil vremennyi protez/

'The doctor, while making a tooth crown, installed a temporary prosthesis.'

2. (a) *Мимо меня проехала лошадка, везущая на дрожках отдыхающих.*

/Mimo menya proekhala loshadka, vezushhaya na drozhkakh otdykhayushhikh/

'A small horse pulling a runabout with people on vacation passed by me.'

- (b) *Муж приехал в больницу со слезами на глазах и игрушечной лошадкой.*

/Muzh priekhal v bol'nitsu so slezami na glazakh i igrushechnoi loshadkoi/

'Her husband arrived at the hospital with tears in his eyes and a toy horse.'

- (c) *Двигатель на моем скутере мощностью 3, 7 лошадок стоит.*

/Dvigatel' na moyom skutere moshhnost'yu 3, 7 loshadok stoit/

'The engine in my scooter has a capacity of 3.7 horsepower.'

3. (a) *Начни читать с выделенной клетки по направлению стрелок.*

/Nachni chitat' s vydelennoi kletki po napravleniyu strelok/

'Begin reading from the indicated square in the direction of the arrow.'

- (b) *Каждая секунда бесконечна, нельзя ускорить стрелки часов.*

/Kazhdaya sekunda beskonechna, nel'zya uskorit' strelki chasov/

'Each second is infinite, you cannot hasten the hands of the clock.'

4. (a) *Это тот случай, когда овечка сделала имя американской актрисе, а не наоборот.*

/Eto tot sluchai, kogda ovechka sdelala imya amerikanskoi aktrise, a ne naoborot/

'This is the case when a small sheep made the name of the American actress popular, not vice versa.'

- (b) *Надо сказать, что сотрудница была не трусливая овечка.*

/Nado skazat', chto сотрудnitsa byla ne truslivaya ovechka/

'Needless to say, that colleague was no cowardly sheep'

5. (a) *Положим, она не финка, а шведка была.*

/Polozhim, ona ne finka, a shvedka byla/

'I suggest she was not Finnish, but Swedish.'

- (b) Финка *была старая, тупая но все-таки оружие.*

/Finka byla staraya, tupaya no vsyo-taki oruzhie/

'The Finnish knife was old, dull, but still a weapon.'

6. (a) *В конце концов оказалось, что она венгерка.*

/V kontse kontsov okazalos', chto ona vengerka/

'In the end it turned out that she was Hungarian.'

- (b) *Наша Нина Н., красивая девушка, ловкая и гибкая, танцевала цыганскую венгерку.*

/Nasha Nina N., krasivaya devushka, lovkaya i gibkaya, tantsevala tsyganskuyu vengerku/

'Our Nina N., a beautiful girl, clever and flexible, danced a Gypsy Hungarian dance'

- (c) *Господин в венгерке взглянул на него с удивлением.*

/Gospodin v vengerke vzglyanul na nego s udivleniem/

'The gentleman in the dolman (jacket) looked at him with surprise.'

7. (a) *Ещё на море уточку, на песочке лебёдку.*

/Eshhyo na more utochku, na pesochke lebyodku/

'In the sea [there was] still a small duck, on sand [it turned out to be] a (female) swan'

- (b) *Ей не среди лебедей танцевать, а среди автомашин и лебедок!*

/Ei ne sredi lebedei tantsevat', a sredi avtomashin i lebedok/

'She does not dance among the swans, but among machines and hoists!'

8. (a) *Француженка Кювилье, поэтесса, авантюристка от природы, русская княгиня.*

/Frantsuzhenka Kyuvil'e, poetessa, avantyuristka ot prirody, russkaya knyaginya/

'Cuvilier, the French lady, a poetess, an adventurist by nature, was a Russian princess.'

- (b) *Эта женщина совсем не похожа на авантюристку.*

/Eta zhenshhina sovsem ne pokhozha na avantyuristku/

'This woman is completely unlike an impostor'

9. (a) *И от мгновенного решения прекратилась пляска мыслей.*

/I ot mgnovennogo resheniya prekratilas' plyaska myslei/

'And at that instantaneous decision the dancing of ideas stopped'

- (b) *Каждая пляска имеет свое название и свое особое содержание.*

/Kazhdaya plyaska imeet svoe nazvanie i svoyo osoboe soderzhanie/

'Each dance has its own name and its own special content'

10. (a) *Я сейчас вам припарку... — К чертовой матери твою припарку...*

/Ya seichas vam priparku... — K chertovoi materi tvoju priparku/

'I am now [putting a] poultice on you... - go to bloody hell with your poultice...'

(b) *Помогут ему эти припарки из картофеля?*

/Pomogut emu eti priparki iz kartofelya?/

'Will these potato poultices help him?'

11. (a) *A прописка — это уже вытекающее следствие, его мой отец прописал по моей просьбе.*

/A propiska — eto uzhe vytekayushhee sledstvie, ego moi otets propisal po moei pros'be/

'But registration - this is a consequent result; my father registered him according to my request'

(b) Я сказала, что мне их прописка не нужна.

/Ya skazala, chto mne ikh propiska ne nuzhna/

'I said that I did not need their residence permit'

12. (a) *Для этого на музеиных билетах будет ставиться специальная отметка.*

/Dlya etogo na muzeinykh biletakh budet stavit'sya spetsial'naya otmetka/

'For this a special note will be put on the museum tickets.'

(b) *Учителя считают, что двойка — это отметка и почему нельзя выдавать аттестат с двойками, вместо справки.*

/Uchitelya schitayut, chto dvoika — eto otmetka i pochemu nel'zya vydavat' attestat s dvoikami, vmesto spravki/

'Teachers hold that a "two" is a legitimate school mark, and that hence it is possible to issue a proper school leaving certificate with "twos" instead of a mere certificate of attendance.'

6.3.1 Discussion

Obviously, the underlined words in the above examples show that the suffix {+к(a)} is a polysemous suffix. However, this polysemy is a problem for certain morphological approaches. For instance, the IA model assumes that each morpheme is a representative of form and meaning respectively. However, in the above examples, the suffix {+к(a)} with a certain word in a specific sentence indicates a certain meaning/function. However, the same suffix with the same word has not been assigned any meaning/function in another sentence. This issue has been found with the following coinages of {+к(a)}:

- 1- The suffix {+к(a)} in the coinages of *коронка*, *лошадка*, *стрелка*, and *овечка* has been a representative of a diminutive agent ('small crown'; 'small horse'; 'small arrow'; and 'small sheep') as found by the sentence 1.(a); 2.(a); 3.(a); and 4.(a) (see above). However, it has

not been assigned any meaning/function particularly in the sentences 1.(b); 2.(b); 2.(c); 3.(b); and 4.(b) (see above). These formations with the suffix {+к(a)} indicate a unitary meaning, which is ‘tooth crown’; ‘toy horse’; ‘a unit of measurement of engine power’; ‘hands of clock’; and ‘harmless person’.

- 2- The suffix {+к(a)} in words like *финка*, *венгерка*, and *лебёдка* has participated to form a feminine meaning/function (‘Finnish woman’, ‘Hungarian woman’, and ‘(female) swan’) as shown by the sentences 5.(a); 6.(a); and 7.(a) (see above). However, this suffix with similar stems has not indicated any specific meaning in the sentences 5.(b); 6.(b); 6.(c); and 7.(b). These words indicate a unitary meaning, which is ‘Finnish knife’; ‘Hungarian dance’; ‘dolman (jacket)’; and ‘hoist’.

A slightly similar issue is found with the word *авантюристка*, the suffix {+к(a)} has resulted in forming a feminine meaning/function ‘adventurist woman’ as shown by sentence 8.(a) above, while *авантюристка* in 8.(b) means ‘female impostor’.

- 3- The suffix {+к(a)} in the coinages of *пляска*, *припарка*, *прописка*, and *отметка* has denoted a process of action (‘dancing’; ‘placing a poultice’; ‘registration’; and ‘note’) as shown by the sentence 9.(a); 10.(a); 11.(a); and 12.(a) (see above). However, this suffix with similar words has indicated a different meaning, which is the result of the action (‘dance’; ‘poultice’; ‘residence permit’; and ‘school mark’). This can be found in sentences 9.(b); 10.(b); 11.(b); and 12.(b) (see above).

Thus, at first glance, it seems difficult to establish the suffix {+к(a)} is representative of meaning or not. In the first group of examples, this suffix represents a meaning/function in one sentence, but not in another as shown above with *коронка*, *лошадка*, *стрелка*, and *овечка*. In the second group of examples, the suffix {+к(a)} reflects a conflicting situation. In some usages it has been assigned as a feminine agent, e.g. *финка*, *венгерка*, and *лебёдка*, while it does not reflect any meaning in others. Although *авантюристка* combines with the suffix {+к(a)} in order to create feminisation, this word nevertheless has two different meanings: one is ‘adventurist (female)’ and the other is ‘female impostor’. Therefore, the determination of one of these meanings depends on the context of the sentence. Finally, in the third group, a similar issue is found with *пляска*, *припарку*, *прописка*, and *отметка* where the suffix {+к(a)} has indicated more than one meaning for the same lexeme in various sentences. Hence, there is no certainty that this suffix is a representative of a process or a result of action unless the whole meaning of the sentence is grasped.

The IA model thus cannot deal with the polysemy of the suffix {+к(a)} because it does not allow multiple meanings/functions for the same lexeme at the same time. Therefore, it is not known whether the above suffix for example in the word *коронка* has been assigned a

diminutive meaning/function or whether it does not reflect any specific function since this word means an object (tooth crown). In addition, I cannot assign a specific function for the above suffix once it reflects more than one function at the same time. To illustrate this, I have seen that the word *пляска* can indicate two different meanings: 1) the process of action; and 2) the result of action as well. Consequently, it is confusing to assign a certain meaning/function for the suffix {+κ(a)} with this word unless its meaning is linked within the context of a specific sentence.

When this suffix indicates more than one meaning for the same coinage, as in *авантюристка*, it is unclear which specific meaning to assign to this word until the whole meaning of the sentence is comprehended.

Hence, this model results in a difficulty in dealing with the polysemy of the above suffix which can reflect the following: 1) specific meaning in one sentence; however, it has not been assigned any meaning for the same coinage in the other sentence; and 2) two different meanings for the same coinage in various sentences.

Similarly, specific accounts like Matthews (1974) and Anderson (1992) in the IP model assume that the outputs can express only one meaning which should be in line with the meaning of its inputs. Therefore, proposing that there are various meanings for the same input (the base) is not permitted in the theoretical concepts of this model. This is the same as saying that the above accounts do not tolerate the idea that the meaning of the output can indicate heterogeneity of meaning compared to its input, for example when the word *коронка* meaning ‘tooth crown’ has ceased to be related to the meaning of its input (the base) which is *корона* /korona/ ‘crown’. Thus, these problems prevent this model from dealing with this polysemy found in various above productions of {+κ(a)}.

Unlike the above models, the WP model deals with multiple meanings of the same word as various forms of the main paradigm which is the base lexeme itself. This model does not have any sensitivity whether the above productions of {+κ(a)} reflect the following: 1) there is a certain meaning in a specific production, while it does not reflect any meaning for the same production in another place; and 2) there are two contrasting meanings for the same word. To take an example other than *авантюристка*, a lexeme like *коронка* is considered as the main paradigm which has various forms with different meanings: 1) *коронка* indicating the meaning of ‘small crown’; and 2) *коронка* indicating the meaning of ‘tooth crown’. Similarly, the remaining examples reflect a similar issue by having one main paradigm and various forms whether matching or differing in their meaning to it. This is shown as follows:

- 1- *лошадка*: 1) ‘small horse’; 2) ‘toy horse’; and 3) ‘engine-horse’.
- 2- *стрелка*: 1) ‘small arrow’; and 2) ‘hands of clock’.

- 3- *овечка*: 1) ‘small sheep’; and 2) ‘harmless person’.
- 4- *финка*: 1) ‘Finnish woman’; and 2) ‘Finnish knife’.
- 5- *венгерка*: 1) ‘Hungarian woman’; 2) ‘Hungarian dance’; and 3) ‘dolman (jacket)’.
- 6- *лебёдка*: 1) ‘(female) swan’; and 2) ‘hoist’.
- 7- *авантюристка*: 1) ‘adventurist woman’; and 2) ‘female impostor’.
- 8- *пляска*: 1) ‘dancing’; and 2) ‘dance’.
- 9- *принарка*: 1) ‘placing a poultice’; and 2) ‘poultice’.
- 10- *прописка*: 1) ‘registration’; and 2) ‘residence permit’.
- 11- *отметка*: 1) ‘note’; and 2) ‘school mark’.

As a result, the WP seems to be the most appropriate model to cover the polysemy found in the various productions of the suffix {+κ(a)}.

6.4 Functions of {+κ(a)}

The above discussion of the polysemy of the suffix {+κ(a)} raises the question of the various functions that this suffix has. So far, the semantic meanings of the above suffix have not been given adequate research and emphasis in Russian. Multiple scholars (e. g. Shvedova 1970: 120; Rakusan 1981: 46) have identified that the suffix {+κ(a)} indicates particularly the following meanings: 1) *Diminutiveness*; and 2) *Gender alteration*. Other scholars (e.g. Shanskij 1968: 41; Potikha 1970: 133; Townsend 1975: 22) have noticed that the above suffix delivers a third meaning of performing the *Action*. These are the three meanings/functions of {+κ(a)} highlighted in the handbooks as typical. There is a need to establish, firstly, what other meanings/functions the suffix {+κ(a)} has and, secondly, which meanings/functions of {+κ(a)} are regarded as the most prototypical ones.

This can be achieved through an investigation using multiple resources particularly handbooks, dictionaries, and corpora. This helps to explore the wide range of meanings/functions that this suffix might impart. Also, it highlights the contrast of representation of the above meanings/functions of {+κ(a)} in the various resources mentioned above. This leads to the identification of the prototypical use of the above suffix by comparing the order and the type frequency of meanings/functions of this suffix in the above resources.

To extend my investigation, I have extracted data from the RNC (Russian National Corpus) containing words produced by the above suffix with a full sentence for each word. I set up a search tool to navigate only to words ending in the suffix {+κ(a)}. Later, the result shows plenty of examples with {+κ(a)}, then I downloaded them onto Excel sheet file. The data contain 3515 tokens with this suffix. I have noticed that plenty of words with the morpheme {+κ(a)} are either part of a compound suffix or as part of the root. I have eliminated these from the analysis,

and the number of lexemes has decreased as a result to 2343 words to be analysed in this chapter.

This procedure allows me to focus only on words produced by the suffix $\{+\kappa(a)\}$. I have annotated the data according to the variable *Function*. First, I read the sentence which presumably contains the word with $\{+\kappa(a)\}$, followed by translating its meaning in accordance with the context of the sentence. Later, I annotated which meaning/function of $\{+\kappa(a)\}$ was found in this particular sentence. A similar procedure was applied for the rest of the data. Six values were identified which are *Diminutiveness*, *Feminisation*, *Substantivisation*, *Concreteness*, *Tenderness*, and *Pejorativeness*. Within each value, I detected other sub-values (e.g. characteristics, definiteness, etc.) which represent other sub-meanings of the suffix $\{+\kappa(a)\}$. This helps to identify new semantic meanings/sub-meanings of the above suffix. Also, it finds out which meaning/function of $\{+\kappa(a)\}$ is dominantly used in this corpus according to its type or token frequency. This leads to know whether the order of meanings/functions of this suffix is treated differently in comparison to other resources mentioned earlier.

I came up with that particular list of values (Diminutiveness, Feminisation, Substantivisation, Concreteness, Tenderness, and Pejorativeness) relying on indications in the dictionary definitions – either specific epithets attached to the definitions (e.g. pejorative, endearment meaning) or to specific words/phrases in the definitions indicating their relationship to the base word. This simply explains how I systematically apply the above various values of semantic distribution of $\{+\kappa(a)\}$ in this thesis.

6.4.1 Discussion

In the above analysis particularly on the corpus data, I have identified six meanings delivered by the suffix $\{+\kappa(a)\}$ and noticed that there is a contrast in their level of frequency. More importantly, I have found that the prototypicality order of these meanings varies especially when comparing this representation according to their type frequency versus token frequency. In other words, the representation of $\{+\kappa(a)\}$ meanings is different when calculating them according to their token frequency compared to their type frequency. To illustrate this

point further, Figure 6.1 shows the meaningful representation of $\{+\text{k(a)}\}$ in line with the first category (the token frequency):

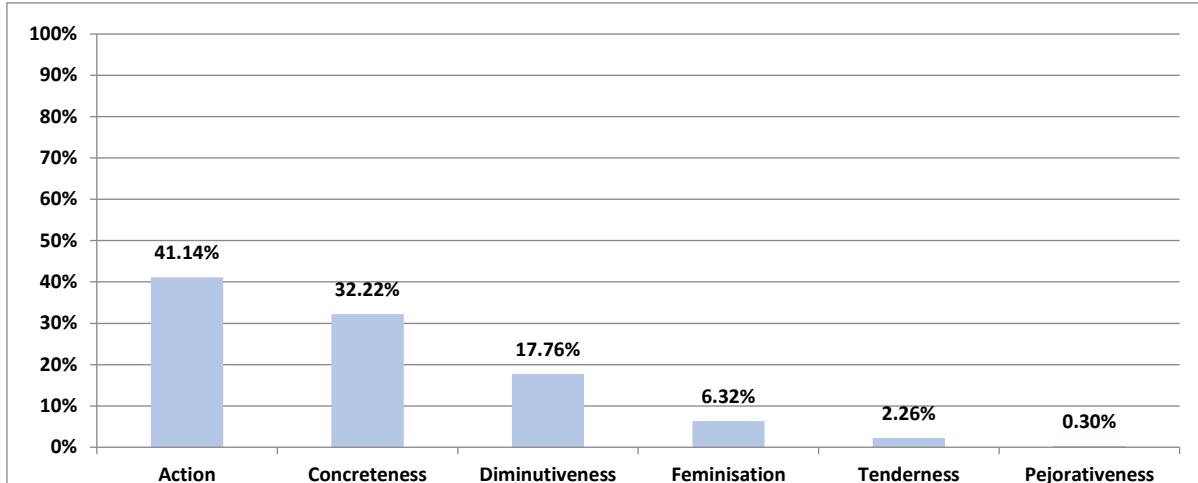


Figure 6.1 Functions of $\{+\text{k(a)}\}$ by token frequency in the RNC

In these data, I have noticed that a few words with a small number of types reflect a high frequency with a large number of tokens. This means that I have very few words with high-frequency and a significant number of words that appear only once. However, I have found that this representation varies when calculating words in line with their type frequency as illustrated in Figure 6.2:

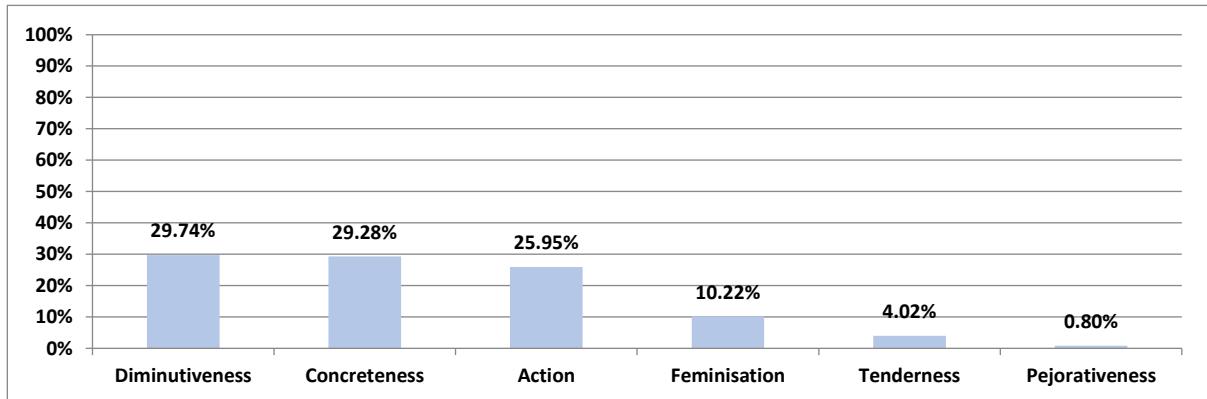


Figure 6.2 Functions of $\{+\text{k(a)}\}$ by type frequency in the RNC

Obviously, there is a contrast in the prototypicality of meanings of the above suffix when comparing the above types of frequency. The facts obtained from the above two figures are worthy of comment. Relying on token count, *Action* is by far the most frequent function of $\{+\text{k(a)}\}$, while by type count *Diminutiveness* and *Concreteness* are most common. Also, low-frequency types (Feminisation, Tenderness, and Pejorativeness) are even lower in frequency when looked at by token count. The question thus arises, which category (type and token frequency) seems more reliable in determining the proper order of prototypicality of meanings of this suffix. In this analysis, if both above types of frequency have produced identical

results/ratio, their differential effects would not be crucial. However, the results have shown that I have skewed data/ratio, so these effects would play a pivotal role in distinguishing between the above types of frequency.

This distinction between type and token frequency is regarded as one of the fundamental issues addressed in linguistics. Multiple scholars (e.g. Bybee 2001; Taylor 2002) have emphasized the differing effects between the above types of frequency with respect to diachronic and synchronic perspectives. Diachronically, a high type frequency reflects lexical enrichment via encouraging the creation of schemas. “It appears that the productivity of a pattern, expressed in a schema, is largely, though not entirely, determined by its type frequency: the more items encompassed by a schema, the stronger it is, and the more available it is for application to new items.” (Bybee 2001: 13).

Synchronously, high type frequency is associated with the productivity of the lexicon, while high token frequency can be associated with irregularity. In this regard, Berg (2014: 199) found in his empirical analysis that irregular verbs are strongly expected to be represented at the level of token frequency, whereas regular verbs indicate higher type frequency than irregular ones.

On the other hand, token frequency is associated with semantic complexity; it is used as an indirect means to measure semantic complexity. Aronoff (1983: 168) argues that “semantic complexity and [token] frequency go hand in hand”. His argument is based on his comparison of token frequency between words having the ending {+ivity} and {+iveness} in the Brown Corpus. Presumably, the speaker tends to coin words using the morpheme {+iveness} much more than the morpheme {+ivity}. However, Aronoff (1983) found that words ending with {+ivity} reflect a greater token frequency than words containing {+iveness}.

Accordingly, the findings of the meaningful representation of {+κ(a)} have shown that the small number of types with high frequency (the token frequency) are often perceived as ‘exceptions/irregular’, and not as ‘influential/regular’. By contrast, the number of types is likely to be more influential in creating patterns rather than the number of overall tokens. This results from the fact that lexemes with a high token count tend to be discounted as ‘exceptions’ in experiments of this sort. Therefore, the determination of the representation of meanings of this suffix is better to be taken with respect to the type frequency in this analysis.

After analysing corpus data, I have used the same data to trace the {+κ(a)} meanings in one of the renowned Russian dictionaries. This dictionary used in this analysis is called *Sovremennyi tolkovyi slovar' russkogo yazyka* (Efremova 2000). This dictionary is regarded as the most up-to-date one in the contemporary Russian language. The aim is to find out whether the order and the prototypicality of the above meanings are similar to what is found in the above corpus (particularly the representation of meanings according to the type frequency category). I record the meanings of the same data extracted before from the above corpus according to the definitions indicated in the above dictionary. Notably, there is a contrast in the meaningful representation of {+κ(a)} found in the dictionary data, as shown in Figure 6.3:

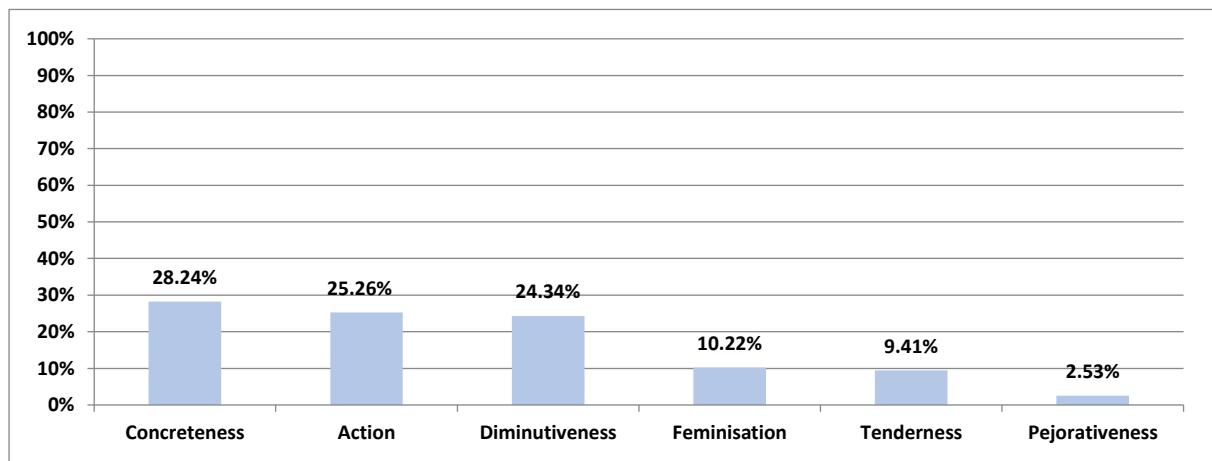


Figure 6.3 Functions of {+κ(a)} in the Efremova dictionary

The above figure shows that the *Concreteness* meaning occupies the first order of prototypicality, followed by *Action* as the second order and *Diminutiveness* as the third. This meaningful representation is different from what was found in the above corpus data. This results from the fact that dictionaries traditionally tend to put the meaning felt to be most ‘basic’ first, even if it is not necessarily the meaning that is most frequent in a corpus. Therefore, I can regard the first entry in a dictionary as being the one its authors judged to be more ‘basic’, which suggests that it is the prototypical definition.

To support this, for instance, the first top definition of the word *ручка* /ruchka/ in most Russian dictionaries is a diminutive/affectionate form of ‘hand’. Other meanings are ‘handle; arm (of chair)’ and ‘pen, penholder’ (Akademicheskii slovar' 1959: 982). However, I have traced the above meanings of *ручка* in the RNC, and then I found that the second above meaning (HANDLE) was in fact far more common by having 51% of usage. By contrast, the meaning of PEN has occupied the second order by having 29% of usage. Meanwhile, the meaning of HAND has become the last order of usage by having only 20%. The primary (prototypical)

meaning in a dictionary was the less frequent but more everyday meaning of HAND, ‘even if it is less interest to the mass media than the HANDLE’.¹⁷

This leads me to ask what the basis for identifying a prototype is. And how do I defend it in the absence of ‘psychological’ data (experiments, etc.)? To answer this, first of all, I need to distinguish the prototypicality (‘basicness’) from frequency (type/token) in its relation to the word formation process. Although the data are not that different, I need to ensure the definitions are kept separate. Example of *ручка* - the corpus would suggest that HANDLE is most frequent, but HAND is clearly most prototypical, and this is reflected in the ordering of a dictionary definition which can be regarded as a form of "offline measurement" of prototypicality. Thus, prototypicality is not entirely a function of either connectivity or frequency. It is primarily a psychological definition held in the mind of the author of a certain dictionary. These definitions are susceptible to the subjectivity of the author in defining the prototypicality order of a certain word. In other words, the explicit usage of frequency of dictionary order of definitions is regarded as a proxy for ‘psychological prototypicality’ of a certain word.

However, type frequency seems to be a more influential factor in representing the empirical order of prototypicality, which tends to be a more useful and powerful factor for the word formation process. Accordingly, taking into account the above factor would be more proper in recognising the most accurate order of prototypicality of a certain category. Otherwise, the dictionaries definitions would be subjective to the author’s views and thoughts and they are not related more to up-to-date language and usage.

Interestingly, I have noticed that some words indicate *Diminutiveness* as a first top definition; they may indicate second and third definitions which are *Tenderness* and *Pejorativeness* respectively. This polysemous representation of the diminutive suffix {+к(а)} found in the dictionary data is presented in Figure 6.4. Words defined with *Diminutiveness* only represents the highest number among dictionary data, whereas words indicating *Diminutiveness* and *Tenderness* repectively occupy the second representation. Meanwhile, words denoting three meanings simultaneously (*Diminutiveness*, *Tenderness* and *Pejorativeness*) represent the lowest number, as seen below:

¹⁷- The meaning of *ручка* as HAND seems common in a lot of spoken language, especially with children, that is not documented in the sources I was looking at. Apart from colloquial usage, the fact that children learn *ручка* as HAND before they learn other meanings may also be a factor as to why it is the prototypical meaning, even if not the most commonly used one. Any native speaker would share the intuition of the authors of dictionaries that ‘little hand’ is the basic meaning, from which HANDLE and PEN are derived in given contexts.

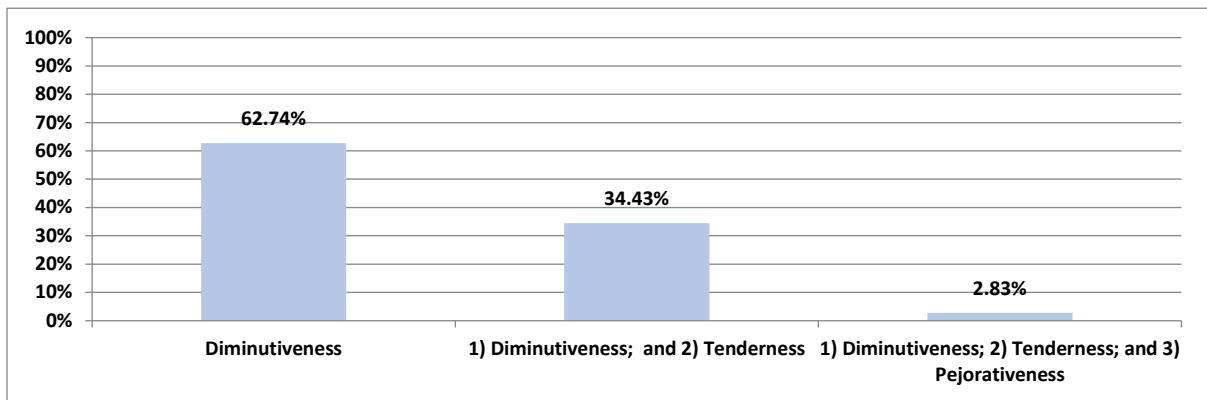


Figure 6.4 Polysemy of {+к(a)} in dictionary data

Importantly, new semantic meanings of {+к(a)} have been detected during the analysis of the corpus data, such as *Concreteness*, *Tenderness*, and *Pejorativeness*. Beside the above six meanings of {+к(a)}, I have found that this suffix can indicate other potential sub-meanings. These sub-meanings are derived from the main ones. The order of presentation of these meanings here comes from number of types of frequency as shown by Figure 6.2 (see above). Thus, new distribution of {+к(a)} meanings is presented in this analysis as follows:

I. Diminutiveness:

- 1) *Smallness in size/volume*: *комната* /komnata/ ‘room’ > *комнатка* /komnatka/ ‘small room’; *капля* /kaplya/ ‘drop’ > *капелька* /kapel'ka/ ‘droplet’, etc.
- 2) *Smallness in age (immaturity)*: *девка* /devka/ ‘girl’ > *девочка* /devochka/ ‘little girl’; *собака* /sobaka/ ‘dog’ > *собачка* /sobachka/ ‘puppy, doggy’, etc.
- 3) *Smallness in time*: *минута* /minuta/ ‘minute’ > *минутка* /minutka/ ‘minute (dim.)’; *неделя* /nedelya/ ‘week’ > *неделька* /nedel'ka/ ‘week (dim.)’, etc.

II. Concreteness:

- 1) *Inanimate objects*: *судомойный* /sudomoinyi/ ‘dish-washing’ > *судомойка* /sudomoika/ ‘dishwasher’; *тепогрея* /telogreya/ ‘jacket’ > *тепогрейка* /telogreika/ ‘quilted jacket’, etc.
- 2) *Characteristics*: *душа* /dusha/ ‘soul’ > *душка* /dushka/ ‘dear, nice (person)’; *недоучиться* /nedouchit'sya/ ‘to fail to receive full education’ > *недоучка* /nedouchka/ ‘half-educated person’, etc.
- 3) *Animate objects*: *бабка* /babka/ ‘grandmother, head, stock’ > *бабочка* /babochka/ ‘butterfly’; *оляпать* /olyapat/ ‘to daub’ > *оляпка* /olyapka/ ‘dipper’, etc.
- 4) *Definiteness* (to define one piece from a mass of the same items): *морковь* /morkov'/ ‘carrots’ > *морковка* /morkovka/ ‘one carrot’; *шоколад* /shokolad/ ‘chocolate’ > *шоколадка* /shokoladka/ ‘one chocolate’, etc.

III. Substantivisation:

- 1) *Result of action*: подсказать /podskazat'/ ‘to give a cue, prompt’ > подсказка /podskazka/ ‘cue, hint, prompt’; записать /zapisat'/ ‘to write down, note’ > записка /zapiska/ ‘note’, etc.
- 2) *Process of action*: строить /stroit'/ ‘to build, construct’ > стройка /stroika/ ‘building (site), construction (project)’; подготовить /podgotovit'/ ‘to prepare, train’ > подготовка /podgotovka/ ‘preparation, training’, etc.
- 3) *Tool for action*: сечь /sech'/ ‘to cut to pieces’ > сечка /sechka/ ‘chopper, vegetable-cutting knife’; тереть /teret'/ ‘to rub, grate, grind’ > мёрка /tyorka/ ‘grater’, etc.
- 4) *Object of action*: закусить /zakusit'/ ‘to have a snack, bite’ > закуска /zakuska/ ‘snack’; лить /lit'/ ‘to pour, shed, spill’ > лейка /leika/ ‘funnel (for pouring liquids), watering-can’, etc.

IV. Feminisation:

- 1) *Profession/career*: артист /artist/ ‘artist (m.)’ > артистка /artistka/ ‘artist (f.)’; пианист /pianist/ ‘pianist (m.)’ > пианистка /pianistka/ ‘pianist (f.)’, etc.
- 2) *Identity*: чеченец /chechenets/ ‘Chechen (m.)’ > чеченка /chechenka/ ‘Chechen (f.)’; бразильянец /brazil'yanets/ ‘Brazilian (m.)’ > бразильянка /brazil'yanka/ ‘Brazilian (f.)’, etc.
- 3) *Characteristics*: блондин /blondin/ ‘man with blonde hair’ > блондинка /blondinka/ ‘woman with blonde hair’; идиот /idiot/ ‘idiot (m.)’ > идиотка /idiotka/ ‘idiot (f.)’, etc.
- 4) *Religion*: католик /katolik/ ‘Catholic (m.)’ > католичка /katolichka/ ‘Catholic (f.)’; буддист /buddhist/ ‘Buddhist (m.)’ > буддистка /buddistka/ ‘Buddhist (f.)’, etc.
- 5) *Ideology*: ленинец /leninets/ ‘Leninist (m.)’ > ленинка /leninka/ ‘Leninist (f.)’; пролетарий /proletarii/ ‘proletarian (m.)’ > пролетарка /proletarka/ ‘proletarian (f.)’, etc.

V. Tenderness: дочь /doch'/ ‘daughter’ > дочка /dochka/ ‘daughter (dim.)’; тётя /tyotya/ ‘aunt’ > тётка /tyotka/ ‘aunty’, etc.

VI. Pejorativeness: идея /ideya/ ‘idea’ > идейка /ideika/ ‘paltry idea’; теория /teoriya/ ‘theory’ > теорийка /teoriika/ ‘sort of theory’, etc.

Obviously, the above distribution of {+κ(a)} meanings would follow the classic tendency adopted by Russian scholars. This tendency is used to classify these meanings by contrasting them with each other. Notably, the subcategorization approach within *Feminisation* category does not seem to be equivalent to those in the other categories above, as the suffix performs the same function in all of them. The semantic change is exactly the same for all these sub-groups: person (man) > same characteristics but always female. The difference is only in the characteristics defined in the masculine form. Consequently, this approach shows its

inadequacy in organising the semantic meaning on the same basis for all its categories. In the next section, I will attempt a new approach, affiliating these meanings on the basis of their connection and internal relationship to each other. More importantly, the above findings of {+κ(a)} meanings found in the corpus data will provide a basis for organising the above meanings according to the new approach.

6.5 The semantic distribution of the suffix {+κ(a)}

6.5.1 The classic cognitive approach of classifying the semantics of {+κ(a)}

The common tendency for organising the semantic meanings of a certain category in Russian is by allocating various autonomous meanings/functions for the same category. This means that a principle of homonymous suffixes is widely applied in the Russian literature for the semantic distribution of meanings. This implies that I have various homonymous categories, which are similar in shape/orthography, but different in meaning/function.

Along these lines, Vinogradov, Istrina, and Barkhudarov (1952: 212-73) have assigned multiple discrete meanings/functions to certain Russian suffixes, which can be shown as follows:

- 1- Masculinisation: *Австрия* /Avstriya/ ‘Austria’ > *австрияк* /avstriyak/ ‘Austrian’; *бороться* /borot'sya/ ‘to wrestle, fight’ > *борец* /borets/ ‘fighter’; *передовой* /peredovoi/ ‘advanced, foremost’ > *передовик* /peredovik/ ‘leading worker’; *гримаса* /grimasa/ ‘grimace’ > *гримасник* /grimasnik/ ‘grimacer’; *баня* /banya/ ‘bath’ > *баник* /banshhik/ ‘bath-house attendant’; *ходить* /khodit/ ‘to walk’ > *ходок* /khodok/ ‘walker’, etc.
- 2- Materialism: *пятый* /pyatyi/ ‘fifth’ > *пятак* /pyatak/ ‘five-copeck piece’; *резать* /rezat'/ ‘to cut’ > *резец* /rezets/ ‘cutter’; *рыжий* /ryzhii/ ‘red’ > *рыжик* /ryzhik/ ‘saffron, milk-cap (mushroom)’; *пыль* /pyl'/ ‘dust’ > *пыльник* /pyl'nik/ ‘dust-coat’; *жёлтый* /zhyoltyi/ ‘yellow’ > *желток* /zheltok/ ‘yolk’; *анисовый* /anisovyi/ ‘anise’ > *анисовка* /anisovka/ ‘anisette’; *больной* /bol'noi/ ‘sick’ > *больница* /bol'nitsa/ ‘hospital’; *чай* /chai/ ‘tea’ > *чайница* /chaynitsa/ ‘tea-caddy’; *слива* /sliva/ ‘plum’ > *слиянка* /slivyanka/ ‘plum brandy’, etc.
- 3- Diminutiveness: *амбар* /ambar/ ‘warehouse’ > *амбарец* /ambarets/ ‘small warehouse’; *арбуз* /arbuz/ ‘water-melon’ > *арбузик* /arbuzik/ ‘small water-melon’; *лист* /list/ ‘leaf’ > *листок* /listok/ ‘small leaf’; *дорога* /doroga/ ‘road’ > *дорожка* /dorozhka/ ‘small road’; *просьба* /pros'ba/ ‘request’ > *просьбица* /pros'bitsa/ ‘small request’, etc.
- 4- Feminisation: *домосед* /domosed/ ‘stay-at-home (m.)’ > *домоседка* /domosedka/ ‘stay-at-home (f.)’; *царь* /tsar'/ ‘tsar’ > *царица* /tsaritsa/ ‘tsarina’; *виновник* /vinovnik/ ‘author,

initiator, culprit (m.)' > *виновница* /vinovnitsa/ 'author, initiator, culprit (f.)'; *Китай* /Kitai/ 'China' > *китаянка* /kitayanka/ 'Chinese woman', etc.

Some of the above suffixes, particularly {+ак}, {+ник}, {+щик}, {+ниц(а)}, and {+янк(а)} have been assigned to express two discrete meanings. Meanwhile, suffixes like {+ец}, {+ик}, {+к(а)}, and {+иц(а)} have indicated three discrete meanings.

Shvedova (1970: 47-54) points out that certain suffixes like {+тель}, {+ец}, {+ун}, {+ок}, {+ат}, and {+лк(а)}, are able to indicate at least two autonomous meanings:

- 1- Agent of action: *преподавать* /prepodavat'/ 'to teach' > *преподаватель* /prepodavatel'/ 'teacher'; *творить* /tvorit'/ 'to create' > *творец* /tvorets/ 'creator'; *бегать* /begat'/ 'to run' > *бегун* /begin/ 'runner'; *ездить* /ezdit'/ 'to ride' > *ездок* /ezdok/ 'rider'; *адрес* /adres/ 'address' > *адресат* /adresat/ 'addressee'; *гадать* /gadat'/ 'to tell fortunes' > *гадалка* /gadalka/ 'fortune-teller', etc.
- 2- Concreteness: *глушить* /glushit'/ 'to muffle' > *глушитель* /glushitel'/ 'muffler'; *грызть* /gryzt'/ 'to gnaw, nibble' > *грызун* /gryzun/ 'rodent'; *аттестовать* /attestovat'/ 'to attest' > *аттестат* /attestat/ 'testimonial, certificate'; *зажигать* /zazhigat'/ 'to light' > *зажигалка* /zazhigalka/ 'lighter', etc.
- 3- Diminutiveness: *брать* /brat/ 'brother' > *братец* /bratets/ 'small brother', etc.

Rakusan (1981: 46-48) likewise classifies the semantic meanings of nouns indicating 'Subjective Evaluation' of the speaker into four main groups. Within each group, Rakusan listed multiple subsidiary meanings by which I notice that certain suffixes are given more than one autonomous meaning. For instance, the suffix {+ок} has been given three independent meanings: 1) Diminutiveness: *город* /gorod/ 'town' > *городок* /gorodok/ 'small town'; 2) Endearment: *ноготь* /nogot'/ 'fingernail' > *ноготок* /nogotok/ 'fingernail (dim.)'; and 3) Condescension: *жених* /zhenikh/ 'bridegroom' > *женишок* /zhenishok/ 'bridegroom'.

The common cognitive distribution for the semantics of the suffix {+к(а)} and other Russian suffixes suggested by multiple scholars has thus been affected by the concept of homonymy. This taxonomic homonymous view is widely applied in the Russian literature. Its characteristics reflect a separate independent status for each category. This leads to a sporadic classification of the above semantic distribution since it deals with each category separately from the others.

6.5.2 The modern cognitive approach for semantics of {+к(а)}

The cognitive approach has witnessed a significant change in organising the semantic distribution of a certain category. Churchland (1986: 252) points out that the characteristics of the older cognitive approach is featured by having an arbitrary classification of semantics of a

certain category. The framework of this earlier approach separates the semantic study from other scientific and linguistic fields. Therefore, this approach provided an ambiguous and inadequate understanding of the ‘prototype theory’ which deals with every prototype as a discrete unit. The lack of organising the interrelationships between the central prototype member and other subsidiary members was obvious in the features of this approach.

The mechanism of processing data inside the brain as discrete operations (first for storing, and then processing them) is no more logically accepted. The new explanation is based on the neurobiological net which organises this information inside the brain and processes them in association with other members/categories on basis of interrelated connection. As a result, any member of this network is accessed; its pattern has been activated.

Thus, a change in organising the above semantic comprehension was required. The necessity to construct an effective and accurate approach to describe the internal framework as a family of relatedness was essential. With respect to that, Janda (1993: 5) identifies a new approach proposed by Lakoff (1982, 1983, 1987), namely ‘cognitive semantics’, that entails an internal relationship between the main prototype of any category and other members whether they are close or peripheral according to their interrelationships with the main prototype.

‘Prototype theory’ is defined “primarily in contrast with the componential model of semantic analysis that was current in transformational grammar” (Geeraerts 2016: 588). Hence, this theory contradicts compositional theories and it does not propose an independent semantic structure for language.

Leblanc (2010: 46) indicates that the emergence of the ‘cognitive semantics’ approach in the 1980s was a response to 1) unresolved questions posited by structuralist approaches; and 2) new research and studies on human cognition.

The theoretical assumption of the above approach was based on *a priori* speculation about the philosophical description of things. It has been used to describe conceptual common properties of particular things or beings in the physical world. In a short time, this approach has become a major field of research and study within the discipline of cognitive psychology. This owes much to the pioneering research of Rosch and Mervis (1975) who made categorization and ‘prototype theory’ a major issue (Lakoff 1987: 7). This research aimed to show the prototype effect of the category *bird*. Thus, the intuition of the reader may limit the use of the above approach to categorise certain things sharing properties in common from a psychological perspective only.

However, this approach has been employed in a wide range of scholarly disciplines. Lakoff (1987: xi) states that this approach “brings together what is known about the mind from many

academic disciplines: psychology, linguistics, anthropology, philosophy, and computer science.”

Morphologically, Bybee and Moder (1983: 257-58) have noticed that strong verbs in English can create a morphological category, which shows prototype effects. Their argument is based on analysing certain verbs, such as *string/strung* whose past tense contain /ʌ/ as shown by /strʌŋ/ (its spelling is /u/ in the English orthography). These verbs can form a prototype-based category which indicates certain properties: 1) it should begin with /s/, followed by either one or two consonants; and 2) it should end with velar nasal phone: /ŋ/. Other verbs like *string*, *sting*, etc. share similar attributes which can be organised around the above proposed prototype.

Semantically, Lakoff (1987: 417) points out that “the senses of a word are related to one another more or less closely by various means, one of which is conceptual metaphor... The metaphorical mapping that relates the ICM (Idealized Cognitive Model) defines the relationship between the senses of the word.” Accordingly, Lakoff (1987) seeks to show the effect of ‘prototype theory’ on his case study regarding the polysemy of the word *over*. Similarly, the research conducted by Leblanc (2010) aimed to map the polysemy of the Russian prefix {po+} on basis of theoretical framework of ‘cognitive semantics’.

This new approach diverges from the traditional cognitive approaches. It applies the concept of how the organisation of linguistic knowledge is shaped, interpreted by radial categories. This approach aims to elucidate linguistic phenomena according to general cognitive mechanisms. Therefore, it does not treat language as an independent cognitive module.

“A radial structure generally, but not necessarily, consists of a central member—the prototype—surrounded by a bunch of less central members. A less central or peripheral member is not predictable from the central member, but it is motivated by it, i.e., there is some independently existing link that makes sense of their relationship” (Rainer 1992: 206).

Thus, the inclusion or exclusion of a certain category is determined by its degree of connection to the main prototype. Since the degree of relatedness varies between category members to the prototype; some of them are more prototypical, while others are peripheral members. In this manner, this approach offers internal structure to the category members.

Linguistic categories might be represented as radial categories; the central prototypical member is linked to more prototypical/less peripheral members by applying various cognitive mechanisms, such as ‘metaphor’ and ‘metonymy’ (Lakoff 1987: 91-114). Leblanc (2010: 56) posits that one meaning can be represented as the central/prototypical one, while others are either close or peripheral ones relating to it via cognitive links (usually metonymy and metaphor). Therefore, the radial category is often composed of a network of interconnected nodes; each node is represented by a certain subcategory (or in case of having polysemy and

polyfunctionality, this representation is made by a certain meaning). The lines linking nodes indicate various types of cognitive relatedness existing between these subcategories/meanings.

To distinguish the difference between subcategories, two fundamental concepts are highlighted in the theoretical approach of cognitive mechanisms (metonymy and metaphor). Taylor (1995: 65-141) states that both concepts are used as an extension of ‘prototype theory’: 1) Metonymical extensions take place once the image schema connects categories based on part/whole relationship; 2) Metaphorical extensions occur once the same image schema has been allocated a different domain. Therefore, a transition from spatial to non-spatial domains of human emotions, relations, and personal features is an example of this extension. In other words, *metaphor* is based on perceived similarity between categories while *metonymy* on the relationship within categories themselves.

6.5.3 Discussion

The above cognitive approach assumes that there is a common thread which connects the main prototype of a given category with other members, distributing them in accordance with their relationship and closeness to the main prototype. This approach imposes an organised network of interrelated family members. ‘Prototype theory’ talks typically about a radial approach, rather than a hierarchical one. There is a prototype with its schema, and the relationship between the prototype and other schemas is determined by the closeness of fit between them. A small change in schema will be perceived as a close relationship, whereas multiple changes in the schema create a more distant relationship.

Take for instance the word *brother* in English. Typically, a brother refers to ‘a person who has other equivalent members in the family sharing similar genetic characteristics’, as all of them come from the same parents. This prototypical meaning is specified as primary in most dictionaries and represents the category BROTHER. However, there are other types who, although still encoded by the word *brother*, vary by their relations to it such as:

- 1- Half-brother (HB): ‘a brother who descended from the same father or the same mother but not both of them’. It shares half of the DNA with the word *brother*.
- 2- Brother-in-law (BL): ‘the brother of your husband or wife, or the man who is married to your sister, or the man who is married to the sister of your wife or husband’. It shares no genetic relationships with the word *brother*, but it introduces (having) certain ties by the virtue of spouse relatedness.
- 3- Lay brother (LB): ‘someone who belongs to a religious group, especially a group living together in a monastery or convent, and who does simple work for the group’. Similarly, it

does not share genetic materials with the word *brother*; however, it connotes (having) certain obligations extracted from the sense of brotherhood.

- 4- Blood brother (BB1): ‘a man who has promised to treat another man as his brother in a ceremony in which they cut themselves and mix their blood together’. Also, it has similar connotation found in the above type of brother (LB).
- 5- Big brother (BB2): ‘a government, ruler or person in authority that has complete power and tries to control people's behaviour and thoughts, and limit their freedom’. Again, it does not share genetic material with the word *brother* rather than having certain responsibilities and services to provide. This type imports the sense of senior brother who takes care of the rest of his family.

These five types of brothers – HB, BL, LB, BB1, and BB2 – are non-prototypical examples of BROTHER. Each corresponds (with different levels of connection) to the ICM (e.g. Lakoff 1987: 68-90; Croft 2004: 28-32) of brotherhood. As Leblanc explains:

In simple terms, an ICM is a mental representation of a concept and all the background assumptions associated with that concept. An ICM thus represents not only a word's denotation, but also the word's connotations. Since ICMs are abstractions generated by multiple interactions with our environments, they do not always match reality perfectly. When a situation matches the ICM well – that is, most of the background assumptions are fulfilled – we can say that that instance is a prototypical case of the category under discussion (Leblanc 2010: 54).

To illustrate this, for example, the Western assumption of the ICM for the brotherhood can be interpreted as in the following steps:

- 1- The person who shares full genetic materials with other members of the family.
- 2- The person who shares half their genes with other members of the family whether from the father's or mother's side.
- 3- The person who obtains the status of brotherhood by virtue of his relativity to either a wife or husband.
- 4- The person who shares similar religious status with other members of the group.
- 5- The person who promises another person to become his brother in blood.
- 6- The person who leads others and considers himself as a senior brother for other members whether in a community, tribe, or government.

In the case of the prototypical brother (stereotypical brother), only one assumption (no.1 in the list above) matches the reality. Other non-prototypical examples do not fit with the ICM in multiple ways: 1) HB does not provide the full match of genes assumed by the ICM of brotherhood; and 2) BL, LB, BB1, and BB2 do not share the assumed genetic links to the word *brother*. So, they are said to be the most peripheral members.

A group of brothers are connected by ‘sharing attributes’ or ‘family resemblances’ concept – one attribute (brother) is in common for all members of the category. There are various prototypical members (peripheral and close ones). They represent the areal groupings of the main prototype of the category BROTHER. This radial map of the word *brother* is shown in Figure 6.5:

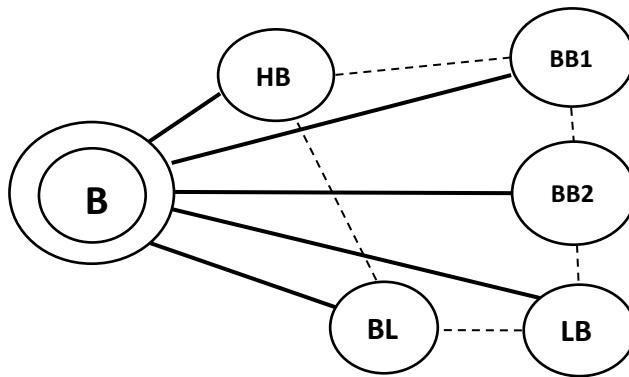


Figure 6.5 Radial schema of ‘brother’

The distribution of the above schema logically shows that the most prototypical member is HB since it shares half its genetic materials with the main prototype. The second prototypical member is BL since it reflects a very close emotional relationship. The third prototypical (the least prototypical or peripheral member) comes in association with categories of LB, BB1, and BB2. These three categories seem equal in their relation to the main prototype since they indicate a similar meaningful value of the word brotherhood. They do not express the close relationship that is found with categories of HB and BL. Therefore, these categories indicate a remote relationship in line with their main category BROTHER.

Subsequently, the multiple categories of the word *brother* can be represented in this cognitive analysis, that is, by having image schemas. An image schema is defined as a cognitive abstract pattern which depicts recurring relationships that exist in people’s embodied experience of life (Lakoff 1987: 453).

The full lines in Figure 6.5 are used to mark: 1) the path of each category within the schema; and 2) the extreme boundaries that exist between categories themselves. However, the dotted lines represent: 1) the relatedness and interaction of categories among themselves; and 2) prototypical order of categories with respect to the main prototype. Hence, the different senses of the word *brother* result from the metonymic and metaphoric extension of the prototypical image schema.

Similarly, the above version of image schemas can be applied to the polysemy of the suffix {+κ(a)} by having a radial network. Metonymic and metaphoric extensions of the prototypical image schemas can be represented in this network. However, as I have seen in section 6.4 (see above), the semantic structure of the suffix {+κ(a)} has received multiple treatments in various

resources, such as handbooks, corpus data, and dictionary data. The question arises: which resource seems better than the others in accounting for the semantics of the suffix {+к(a)}? Consequently, the prototypicality of {+к(a)} can be regarded as a challenge in cognitive semantics, especially with the existence of a wide range of meanings to be considered.

To answer this, corpus data tends to be up-to-date and more representative of the modern development of the language. The radial network of {+к(a)} semantics will take into account the semantic distribution of meanings found in the above resource. Thus, *Diminutiveness* is considered to be the main prototype of the above suffix. In addition, this attitude is based on the following criteria:

1- Corpus frequency is a contributing factor for assessing the prototypicality of a certain category. Therefore, the frequency of occurrence a certain suffix in a certain corpus (type frequency) determines its prototypicality. Accordingly, *Diminutiveness* is regarded as the main prototype of the suffix {+к(a)} since it reflects the highest type frequency found in the RNC as illustrated by Figure 6.2 (see above). The frequent use of diminutiveness in Russian gives rise to reflections the highest type frequency of diminutive function of {+к(a)} in the above corpus. Kempe (2007: 58) indicates that the most frequent suffixes used to create diminutive feminine nouns in Russian are {+к(a)} and {+оčк(a)}.

As a matter of fact, the Slavonic group of languages is abundant in diminutive usage, especially east Slavonic languages: Belarusian, Ukrainian and Russian. Russian is famous for sets of synonyms that convey varying degrees and shades of expressivity of the speaker. This expressivity is often expressed by the use of diminutive suffixes. Hence, Russian linguists often consider the diminutive form as the primary factor conveying the expressivity of the speaker (Rakusan 1981: 51).

In comparison with other languages, the diminutive usage is widely applied in Russian. Kempe (2007: 56) points out that English has restricted the use of diminutiveness only with “proper names, and a restricted range of animals, body parts and child-related objects”. Bratus (1969: 2) notices that apart from proper names, the number of common English diminutive nouns may barely exceed a dozen. By contrast, “in Russian, as preliminary calculations have shown, out of 25,000 of the most commonly used Russian words, more than a thousand nouns and adjectives have or can have diminutive forms”.

2- Regarding the language acquisition, Kempe and Brooks (2001: 145) found that usage of diminutiveness in speech directed to children is common for Russian native speakers. This attitude is supported by the estimation of the type and token frequency of diminutiveness, which is around 35% and 40% (Kempe and Brooks 2001). This significant portion of diminutive usage has been found in the language of Russian mothers addressed to their

children. The above calculation of frequency is based on samples of Russian speech extracted from the CHILDES database (MacWhinney 1995).

Moreover, one of the main findings of my experiment in Chapter 5 is that I have found that the use of diminutive function is not only popular with children. On the contrary, adult language shows that the use of the diminutive suffix {+κ(a)} is much higher than other diminutive suffixes in Russian. This fact is based on measuring the processing time of multiple Russian diminutive suffixes in the mind of the speaker, which found that the suffix {+κ(a)} requires much less time to be processed than other counterparts. This results from the frequent usage of this suffix not only for children, but among adults as well.

Thus, the wide usage of the suffix {+κ(a)} in Russian with diminutive meaning means that the *Diminutiveness* function has the highest type frequency in the RNC. Consequently, this function is considered the main prototype for the above suffix.

- 3- The ‘semantic proximity’ of *Diminutiveness* to other meanings/functions is considered as a substantial factor in determining the prototypicality of the suffix {+κ(a)}. In other words, the shared ‘family resemblance’ or ‘sharing attributes’ between members of the category is regarded as a solid criterion to define which category is the main prototype and others that are not. In this respect, Rosch and Mervis (1975: 598-99) state that “the most prototypical members of...categories are those which bear the greatest family resemblance to other members of their own category”. Also, Lakoff (1987: 42) indicates that categories can be structured according to concept of ‘family resemblance’. This concept hinges on the similarities found among categories themselves.

Thus, I have noticed that the *Diminutiveness* can share a semantic connotation with other meanings/functions of the suffix {+κ(a)} on the basis of ‘family resemblance’ or ‘semantic proximity’. This can be illustrated by the following:

- a. I have observed that *Diminutiveness* in many instances can reflect an affectionate meaning. To support this, Kempe (2007: 56) notes that semantically, *Diminutiveness* refers to smallness, whereas pragmatically, it can connote a sense of affection and endearment. This feature is noticeably observed in adult speech directed to children using diminutive nicknames and forms. This can be exemplified by *дочь* > *дочка* whereby the diminutive form of *дочь* refers to an affectionate meaning ‘lovely daughter’.
- b. Another connotation of *Diminutiveness* is to render a sense of pejorativeness. This means that there is no definite fixed meaning for the above diminutive suffix. Indeed, it varies positively or negatively depending on the context and the lexical expressivity of the original word. Also, the speaker’s intonation may affect the interpretation of a

spoken word. The use of diminutive forms and their variety of meanings can vary based on the sort of conversation, whether formal or informal. It usually occurs between friends, family, lovers, children, etc.

In many instances, the mood of speakers may intervene to define their attitude towards the referent or subject of conversation. Consequently, their emotions are based on their ability, disposition, and the circumstances that surround them. This issue has been defined and explained by the concept of ‘Subjective Evaluation’ of the speaker (e.g. Rakusan 1981: 48-51; Beard 1988: 163; Hippisley 1996: 201-02). Hence, the speaker may render a pejorative connotation of the word *мужчина* /muzhchina/ ‘man’ by using its diminutive form which is *мужчинка* /muzhchinka/ ‘sort of man’ in a certain conversation or expression.

To support this, I have observed that the definitions of certain words particularly in dictionary data differ from each other in terms of their connotation and variety of meanings. I have seen that some words can indicate *Diminutiveness*, *Tenderness*, and *Pejorativeness* respectively as found by Figure 6.4 (see above).

- c. The ‘family resemblance’ of meaning for *Diminutiveness* can be represented with other meanings/functions of the suffix {+к(а)}. *Feminisation* can connote a sense of diminutivisation in various forms. Female role/participation can be diminutivised via treating them discriminately in terms of employment, social responsibilities, etc.

Traditionally, the names of professions in Russian are denoted by the masculine names. For example, the category *учитель* /uchitel'/ ‘teacher (m.)’ covers all teachers regardless of gender, while *учительница* /uchitel'nitsa/ ‘teacher (f.)’ only covers female teachers. The result is that the feminine is one specific instance of a thing which reflects a diminutive connotation of usage and social role.

Skelton (2002: 88) observes that “feminisation of teaching is portrayed as something that carries negative connotations.” This owes much to the ongoing absence and the declining number of women as scientists and mathematicians. This has led them to be treated as a second class in society. This pejorative image and perception has been held towards women’s roles and activities in various fields of life.

An effective and active participation in public life seems to be more exclusively for the men rather women. Thus, shifting the gender from male to female can diminutivise the role of women in terms of their contribution or participation in a society or workplace.

- d. *Substantivisation* can also reflect a diminutive connotation in terms of having a reduction of action compared to its deverbal base form. For instance, *заметить* /zametit'/ ‘to notice’ > *заметка* /zametka/ ‘mark, notice’ has shown that the action has

been diminutivised from doing it to ending up with making a notice or a mark. This implies certain restrictions on semantic values of action for the verb *заметить*.

- e. *Concreteness* can also denote a diminutive connotation. This can be seen by *peðuc /redis/* ‘radishes’ > *peðuská /rediska/* ‘radish’, whereby the number of *radishes* has been diminutivised/decreased from a mass of items to only one concrete *radish*. Therefore, *Diminutiveness* has contributed to limit and restrict the quantity to only one concrete item.

Consequently, the semantic relatedness and the internal connection of the above meanings/functions of {+κ(a)} to the main prototype (*Diminutiveness*) becomes evident.

The alternative scenario is by assuming that, for instance, *Substantivisation* is the main prototype of the above suffix. However, the ‘semantic proximity’ and ‘family resemblance’ of this category to other meanings/functions constitute a dilemma in applying this assumption. This leads to questions of how I define the connection of other meanings to the main prototype (*Substantivisation*) if there is no sharing of attributes which can be assumed among them. For example, how can I relate the meaning of *Concreteness* to the above main prototype especially with the absence of resemblance of meaning between them? Thus, it is doubtful that there is a semantic link or proximity of meaning between such categories.

Likewise, it is unlikely that one of the other categories such as *Concreteness*, *Feminisation*, *Tenderness*, and *Pejorativeness* would be the main prototype of the above suffix. However, organising other members on the basis of the meaningful relatedness and the proximity of meaning is the main concern of this suggestion.

This proves that only the category of *Diminutiveness* is able to have a network of semantic connections with other categories whether they are close or peripheral ones. The richness of *Diminutiveness* connotations like I have seen above makes it the most appropriate meaning/function to be considered as the main prototype for the suffix {+κ(a)}. This array of meaningful relatedness adheres very well with the main concept of radial network since it applies interrelated connections of meanings among its members.

As a result, the semantic network of the suffix {+κ(a)} can be modelled as radial categories regulated around locative/spatial prototype (*Diminutiveness*). The distribution of meanings according to the ‘family resemblance’ concept would be as follows:

- 1- Diminutiveness.
- 2- Tenderness.
- 3- Pejorativeness.
- 4- Feminisation.
- 5- Substantivisation.

6- Concreteness.

Basic cognitive mechanisms like metaphor or metonymy or partial modifications of prototype image schema lead language users to relate/link the other sub-meanings/subcategories. Thus, these sub-meanings/subcategories are not regarded as discrete nodes. This method of modelling the polysemy of the suffix $\{+\kappa(a)\}$ is supported by the main framework of cognitive linguistics (e.g. Lakoff 1987; Janda 1993; Taylor 1995; Geeraerts 2016; Lewandowska-Tomaszczyk 2007; Evans 2007).

Thus, the new semantic schemas of $\{+\kappa(a)\}$ based on the above approach is shown in Figure 6.6:

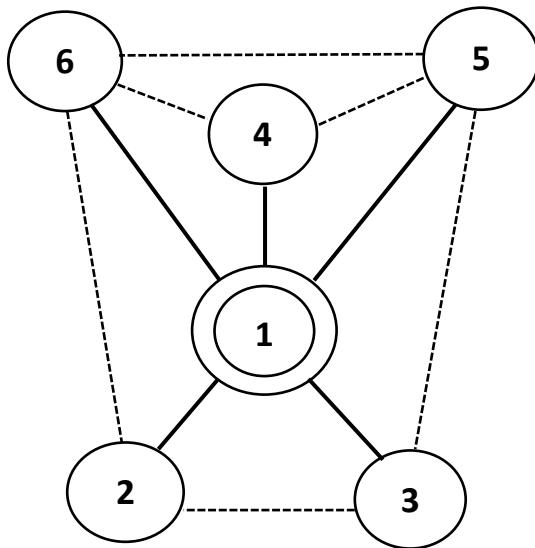


Figure 6.6 Semantic schemas of $\{+\kappa(a)\}$

Figure 6.6 depicts the proposed semantic model of the suffix $\{+\kappa(a)\}$. It shows the radial network which captures the semantic meanings/functions of this suffix. *Diminutiveness* has been allocated to be the main prototype which brings other categories/meanings into one radial network. *Tenderness* and *Pejorativeness* are regarded as the most prototypical members, followed by *Feminisation* as the third prototypical member in terms of its closeness and relatedness order of prototypicality. *Substantivisation* and *Concreteness* are treated as peripheral members. Notably, various members are connected via the prototypical meaning of *Diminutiveness*. These members are driven by different interpretations of the main prototype: 1) proximity; and 2) maintaining the distance among categories themselves. The dotted lines that run between those members serve to indicate the closeness of relationship between each other. This closeness can indicate two types of relations: 1) two members can be closely related in terms of meaning/function or they are at the same level of closeness to the main prototype; and 2) one member can be regarded as a source for another one. This means that it can create another or multiple sub-members (metonymical dimension). So, this organisation represents

the essence of the interrelated network of meanings rather than having autonomous semantic classification.

The above radial schema provides an organised coherence to all more/less prototypical members without affecting the integrity of the category itself. Janda (1993: 6) points out that “by positing an internal structure for categories, cognitive semantics avoids the dilemma of choosing between unity and diversity presented by set theory”. This means that searching for more details to describe subsidiary information becomes more available than before by the virtue of having radial categories.

In this regard, I have seen that certain categories particularly *Diminutiveness*, *Concreteness*, and *Substantivisation* can denote multiple sub-meanings. Hence, the above ‘prototype theory’ can be extended to link other sub-meanings to the above categories on the basis of metonymical extension. Therefore, this radial schema shapes the interrelationship and governs the relatedness of those sub-meanings according to the ‘family resemblance’ concept. Similar criteria particularly ‘type frequency’ and ‘proximity of meanings’ are used to organise the affiliation of those sub-meanings to other peripheral and close prototypical meanings of the above schema. The former is used to organise the order of closeness of these sub-meanings to the more/less prototypical meanings. However, the latter is used to organise the following: 1) the internal connections of these sub-meanings to their prototypical meanings; and 2) the interaction of these sub-meanings among each other. Thus, *Diminutiveness* can have other sub-meanings which are organised in terms of their closeness of fit by the following order:

- 1- *Smallness in size/volume*.
- 2- *Smallness in age*.
- 3- *Smallness in time*.

Accordingly, the above sub-meanings can be affiliated in terms of their relatedness to the main prototypical meaning *Diminutiveness* (D) as shown by Figure 6.7:

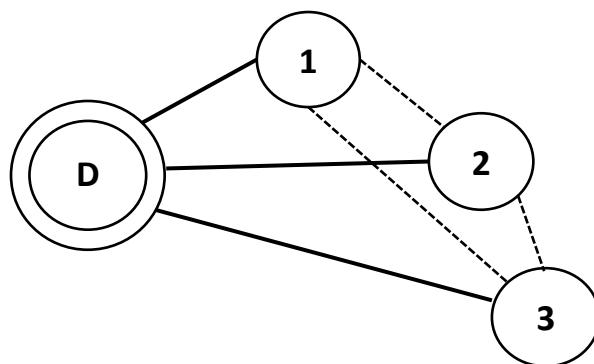


Figure 6.7 Semantic schemas of Diminutiveness

Similarly, *Concreteness* (C) can reflect a network of sub-meaningful relatedness which is organised and shown by the following order and figure as well:

- 1- Inanimate objects
- 2- Characteristics
- 3- Animate objects
- 4- Definiteness

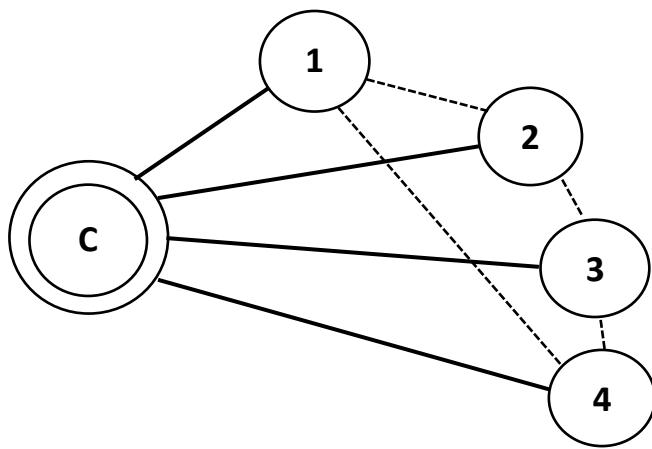


Figure 6.8 Semantic schemas of Concreteness

Also, *Substantivisation* (S) can reflect a network of sub-meanings which can be organised according to the above radial schemas. These sub-meanings can indicate various relatedness; the closeness of fit of these sub-meanings to the above less prototypical meaning (S) is shown by the following order and figure as well:

- 1- Result of action
- 2- Process of action
- 3- Tool for action
- 4- Object of action

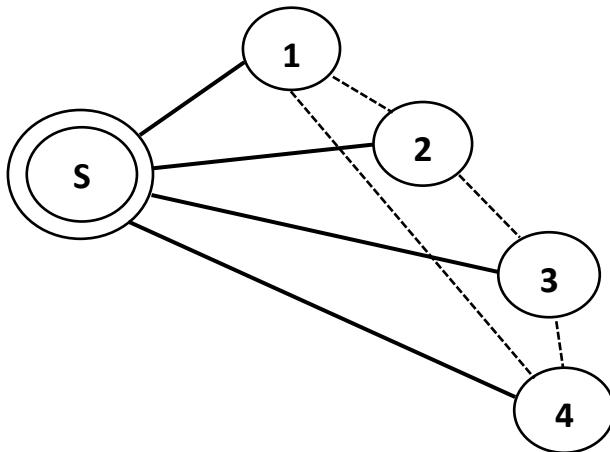


Figure 6.9 Semantic schemas of Substantivisation

6.6 Summary

I have seen that the heterogeneity of semantic meanings of words with the suffix {+к(а)} causes problems for certain morphological models to deal with. The IA model exposes certain restrictions in dealing with this issue because the assumption that each morpheme should reflect a meaningful and formal representation is no more valid. For instance, the suffix {+к(а)} in specific surface words like *описка*, *помойка*, *белка*, *горячка*, *водка*, and *дружка* has not been assigned a meaningful representation. This infringes the basic rule of the IA model by assuming that each morpheme must represent a form and meaning respectively.

In addition, the IA model suggests that the decomposition of morphemes does not impose putting morphemes in a linear pattern only, but it also includes having a meaningful representation for each morpheme. This helps to segment words in a linear sequence from left

to the right since the composition occurs in association with the meanings of their morphemes. However, I have found that where surface words express a mismatch of meanings, their decomposition in a linear pattern seems difficult. This can be explained by *онуска* and *помойка* by which two overlapping scenarios can be posited. The first one assumes that a prefixation process occurs first, followed by adding the suffix {+κ(a)}. Alternatively, suffixation process occurs first, followed by adding a prefix. Hence, this contradiction creates an additional problem for the IA to deal with.

Similarly, the IP model encounters problems that flow from the mismatch of meaning between base and surface words. Due to the phonological correlation usually subjected to violation via occurring certain processes (e.g. truncation, allomorphy, and mutation), the semantic correlation must be presented between the objects of this model (the inputs and outputs) in regard to accounts of Matthews (1974) and Anderson (1992). Thus, it is questionable to affiliate surface words (the outputs) particularly *онуска*; *помойка*; and *дружска* cause questioning to their base lexemes (the inputs) since the semantic connection is lost. This issue would be considered a dilemma for the above model to deal with and explain as well.

Another controversial issue would be regarded as the polysemy of the suffix {+κ(a)}. I have seen that there is a contrast between morphological models which deal with this phenomenon. For instance, the suffix {+κ(a)} in certain coinages has been assigned specific meaning/function. However, it has not been assigned any meaning/function in another sentence. In addition, other coinages assume that this suffix has been assigned one function with two different meanings to deliver. Also, this suffix reflects two different meanings/functions for the same lexicon. This is shown in Section 6.3.1 (see above).

Consequently, this polysemy causes questioning for the IA model regarding the representation of meanings assigned for the suffix {+κ(a)} in multiple sentences for the same lexicon. In other words, how can this suffix indicate a certain meaning/function, but not be assigned anything when it indicates a different meaning in another sentence as found by the above examples? This conflict of meanings/functions caused by polysemous suffix {+κ(a)} has represented an unresolved question for the IA model.

Similarly, the polysemy of the above suffix is considered a dilemma for the IP model according to accounts of Matthews (1974) and Anderson (1992) since the semantic correspondence is essential in mapping the relationship between the inputs and outputs. Having more than one meaning for the same lexicon poses difficulty to affiliate two different outputs for the same input. Thus, it is a straightforward process to identify the semantic correspondence when the output indicates similar meaning to its input. By contrast, it becomes difficult to do so once the same output can denote another meaning which seems so far from the meaning of

its input. Hence, this polysemy of $\{+\kappa(a)\}$ makes the IP unable to deal or explain when its output mismatches the meaning of its input.

Unlike the above models, the WP model does not express any constraints whether surface words match their base lexemes in terms of meaning or not. Also, this model does not seem to be sensitive to the polysemy of the suffix $\{+\kappa(a)\}$. This fact results from the treatment of this model for its coinages. This treatment is not based on either morphemes like those found in the IA model or on having certain rules/processes to map the affiliation of morphemes or words as inputs and outputs as is the case in the IP model. By contrast, this model deals with both (the base and surface word) at the level of words; the word-based approach is the main pillar of this model. Thus, it does not matter whether surface words are correlated semantically or phonologically to their base lexemes or not. In addition, the treatment of this model is the same in instances when the word denotes more than one meaning as a result of polysemy. Consequently, only this model shows its ability to deal with various linguistic phenomena without reflecting any problems or constraints especially with the heterogeneity of meaning and the polysemy of the suffix $\{+\kappa(a)\}$.

In this chapter, much attention has been paid to analysing the semantics of the suffix $\{+\kappa(a)\}$. Three main resources particularly handbook, dictionary, and corpus data have been utilised in this analysis. This has led me to identify other semantic meanings/functions of the suffix $\{+\kappa(a)\}$ which are not identified/mentioned in the Russian literature. At the same time, I have noticed that there is a contrast in addressing the semantics of $\{+\kappa(a)\}$ between the above resources. While scholarly consensus points out three typical semantic meanings/functions, other potential meanings were observed. By means of corpus data I was able to determine six basic meanings for this suffix and many other sub-meanings. These sub-meanings extend the enquiry of semantics of $\{+\kappa(a)\}$. This makes the semantics of $\{+\kappa(a)\}$ represent an internal network of connections which seems to be best described by the modern cognitive approach (prototype theory) rather than organising them according to the classic approach (the structuralist classification).

- To sum up, the semantic analysis of the suffix $\{+\kappa(a)\}$ has shown the following findings:
- 1- The WP is the most efficient model to address the mismatch of meaning and the polysemy of coinages of $\{+\kappa(a)\}$. This leads to support my main hypothesis which is in favour of the word-based approach.
 - 2- The polysemy of the suffix $\{+\kappa(a)\}$ is an interesting area to look at; I notice that meanings/functions which seem to be common in the corpus may not always be the "top" definitions in dictionaries or handbooks. This is a fruitful angle for comparison. Thus, using corpus data has led me to determine the prototypicality order of $\{+\kappa(a)\}$ and identify new

semantic meanings/functions that the above suffix may impart. This means that identifying new meanings/sub-meanings are not applicable while using data extracted from handbooks and dictionaries. Thus, we cannot rely on these resources in defining new meanings/functions of {+κ(a)}, and then determining which meaning/function is regarded as the main prototypical one. Therefore, corpus data constitutes a far more reliable, up-to-date, useful and powerful tool in analysing the semantics of the suffix {+κ(a)}.

- 3- Having multiple meanings for the suffix {+κ(a)} at the same time that each meaning might indicate a set of other sub-meanings implies that they cannot be described by the classic cognitive approach (the structuralist classification). The reason is that these meanings and sub-meanings share internal relatedness between each other which cannot be ignored if I assume that each meaning or sub-meaning should be treated independently, or they are distributed in isolation to each other. Thus, to account for the rich polysemy of the suffix {+κ(a)} and its semantic nuances, I adopt the approach of ‘cognitive semantics’. This framework has provided an effective methodology to describe the polysemy of this suffix and modelled it as a radial category, or a network of interrelated meanings. Thus, this chapter suggests a proposed semantic distribution of {+κ(a)} based on the theoretical framework of the above approach. Consequently, I have presented an empirically-based, cognitively plausible account of the semantics of {+κ(a)}. In so doing, I have rejected the traditional tendency for distributing the semantics in Russian which is based on a structuralist classification. This means that the Russian tendency of classifying the semantics of {+κ(a)} cannot be valid and applied more.
- 4- The ‘cognitive semantics’ approach may share similar concepts with the WP model by having a family of relatedness: the main paradigm and its relevant members. However, this does not mean that a radial category approach is really an outcome of the current hypothesis of this thesis - yet! Instead, it will probably look more like a further hypothesis about the connectedness of the various meanings of the suffix {+κ(a)} (one that is based on my data, but ultimately not completely provable).

7 Chapter: Conclusion

7.1 Summary of research work

Research has long been concerned with the internal structure and interrelationships of related words. The main cores of conflict among morphological theories are whether it is best to describe the internal structure of related words by having:

1. Deterministic symbolic rules and memorised morphemes (morpheme-based approach);
2. Deterministic generative process governed by WFRs (Word Formation Rules) and two objects defined as inputs and outputs (process-based approach); or
3. Memorised words within a complex network controlled by probabilistic structures (word-based approach).

Which approach best accounts for the correspondence of related words and their morphological structure? To answer this, my research examined all words containing the suffix {+κ(a)} and subjected them to various angles of investigation and interrogation.

In Chapter 1, I have seen that several types of languages might require different sort of morphological descriptions. The main aim was to give an overview of the theoretical assumptions of these models. This has helped to anticipate which model seems better than others in describing the whole picture of word formation in Russian.

From a morphological perspective, the structure of the Russian word has been treated with various morphological models to examine the validity of each model for the Russian lexicon. This has provided a comprehensive insight into which model is appropriate to harmonize with this structure. Accordingly, I have demonstrated in Chapter 2 that the WP (Word and Paradigm) model is the most convincing one to cover the morphological production of words with the above suffix in Russian. This results from the fact that this model was adequately able to explain the coinages of surface words whose morphological structure has witnessed a variety of linguistic phenomena, such as allomorphy, truncation, and mutation.

The framework of the WP model presents a minimal unit as a lexeme. This lexeme is introduced as a unit of morphological, semantic, syntactic, and phonological class properties, and so it leads to distinguishing one word from another. Hence, the usage of the paradigm shows that there is a contrast in the arrangement of elements of this model since it does not follow any linearity, but instead they are represented in the formula/pattern: [X] > [Xκ(a)]. The label [X] indicates the base lexeme and the latter shows the adding of the affix {+κ(a)} to the main paradigm to produce a novel word. This assumes that the affiliation of surface words to their base lexemes can be represented by having a paradigm which is the base lexeme and new forms

connects to it in many ways. This connection can be still seen although surface words might be distorted phonologically and semantically from their base lexemes.

The capability of the WP model to treat diverse types of linguistic phenomena implies considering it to be the most suitable and relevant one to the production of words with the suffix $\{+\kappa(a)\}$. This model adopts the above formula/pattern ($[X] > [X\kappa]$) in defining its members (the paradigm and its new derivative forms). This formula gives rise to representing other inflectional and derivational forms of a certain word, and this feature cannot be found in the merits of other models. For example, the inflectional forms of the paradigm *студент* are: *студента*, *студенту*, *студентом*, and *студенте*. In this model, all forms are simultaneously related to the main paradigm (студент). However, this cannot be found in the IP (Item and Process) model, in which each form individually requires a process to manifest its formative relation to the main paradigm. In particular, *студент* $>$ *студента* has its own process: $[X] \rightarrow [X\kappa]$; and another inflectional pattern, such as *студенту*, acquires another process: $[X] \rightarrow [Xy]$ and so on, for the rest of the inflectional forms. Similarly, in the IA (Item and Arrangement) model, each inflectional form is treated in separation from other relevant forms, and so each one requires a separate description/formula for its formation. For instance, the formation of *студент* $>$ *студента* requires this formula: $[X] > [X+a]$, whereas another inflectional form (студенту) for the same lexeme requires different formula that is $[X] > [X+y]$.

From a cognitive perspective, the main interest in Chapter 3 was in exploring the mechanism of processing words in the mental lexicon. Two competing accounts were identified; SR (Single-route account) versus DR (Dual-route account). This has led me to identify which mental account seems more adequate than the other one in describing the recognition, processing, and production of words with the suffix $\{+\kappa(a)\}$.

I have seen that the former employed two terms (regularity and irregularity) in the mental processing of words. Regular forms are generated by a rule while acquiring, processing, and producing these forms and irregular forms are stored as one unit though. This adds a complexity to the native speaker since they must differentiate which forms are regular and which are not. Once they realise the correct form, then they need to process this form according to whether a rule or a storage concept. This would lead language users to spend more time while taking the decision and identifying the correct pattern for each form. By contrast, the latter employs only one straightforward method which is the storage concept; the most frequent form in memory is used to analyse similar coinages. Thus, this account seems simpler and more efficient than the other one in producing a considerable number of surface words with the suffix $\{+\kappa(a)\}$.

The consequences of that lead me to suggest that the SR account seems more applicable and simpler to be used by the speaker when producing new surface words than the DR account.

Accordingly, the SR account seems better in describing the mental process of this suffix and its relationship to the productivity and frequency notions. This elucidates why this suffix is regarded as a productive one in Russian; this productivity results from the way that this suffix is processed in the memory (the SR account). Also, it provides a plausible explanation about the relatedness of frequency concept with the mental realisation of words. The more frequent a word is in the memory, the more its chances are of being used as a model to coin novel words. Surface words containing the above suffix are generated by similarity/analogy to the most frequent words in memory. Thus, the speaker spends less time in processing/producing surface words with the suffix {+κ(a)} than relying on the complex pattern (regularity and irregularity) in the DR account.

From a corpus-based studies perspective, Chapter 4 has investigated how the relative frequency level influences the recognition of related words with the suffix {+κ(a)} and their morphemic components. This investigation has produced interesting results, in that surface words with the suffix {+κ(a)} are mostly influenced by WF (Whole-word frequency) level. These words tend to have a higher frequency than the corresponding base (non-suffixed) words. Taking these results to imply that surface words with the suffix {+κ(a)} tend to be recognised, processed, and produced by the SR account. This adds more support to my main hypothesis which relies in its mental processing and theoretical description on the SR account.

In addition to these findings, I have identified new/non-registered forms as neologisms containing the suffix {+κ(a)}. This considerable number represents ongoing enrichment in the stock of the Russian lexicon.

From an experimental-based studies perspective, a considerable amount of research and number of experiments in English and other European languages has focused on measuring the time spent in processing words in the mind of the speaker. However, Russian has received relatively little research and emphasis at exploring this critical issue. One target of this research work was to fill this gap by conducting an experiment on words containing the suffix {+κ(a)} with two opposing levels of relative frequency. Therefore, this experimental research can be considered as a unique and pioneering one in Russian. Accordingly, Chapter 5 has aimed to explore whether coinages of {+κ(a)} with WF require less time in processing in line to their base lexemes than words with DF (Decomposable frequency) with respect to their base lexemes.

Interestingly, this experiment has suggested that as the difficulty of processing surface words with DF level is increased in line to their base lexemes, the RTs of participants are observed to rise as a result. Therefore, the RT (Reaction time) seems to be sensitive to certain properties including the frequency of words and the level of relative frequency as well. Hence, memorising

low-frequency/DF forms requires a higher processing load. By contrast, memorising high-frequency/WF forms requires a lower processing load.

These findings have provided additional support for my main hypothesis which assumes that words with the suffix {+κ(a)} are best described by the WP model. This attitude is based on a continuation of other arguments in the previous chapters. I have argued in Chapter 3, 4, and 5 that the suffix {+κ(a)} is best described by the SR account because words are realised/processed as one unit in the memory of language users. This leads them to spend less time while processing/memorising words. This adheres nicely with the outcomes of this experiment which show less time in processing for words with WF since the SR account stands for their mental description/process. This account does not need much difficulty/load either in acquiring, processing, or producing new surface words. Therefore, this account spends less time in processing than other surface forms created by a rule.

From a semantic perspective, the meanings of {+κ(a)} have received little research and emphasis in Russian. Thus, Chapter 6 has aimed to investigate further the above issue from various points of views. The first point was whether the heterogeneity of meaning found in coinages of {+κ(a)} implies different treatments by morphological models. Secondly, do morphological models impose different treatment regarding the polysemous status of this suffix or not? Thirdly, few semantic meanings are found in the literature; however, other meanings/sub-meanings were likely to be observed. Lastly, the old cognitive approach in Russian used to organise the semantic meanings of the suffix {+κ(a)} in isolation to each other. By contrast, this organisation contradicts the modern cognitive approach which assumes a family of relatedness concept in this organisation.

In my semantic analysis, I have found that the WP model was the best one to treat the mismatch of meaning between related words containing the suffix {+κ(a)}. Also, this model was the only one to deal with the polysemy of this suffix without indicating any constraints/problems in its treatment. Double semantic meanings and plenty of other sub-meanings could be observed by using corpus data materials. This indicates that the ‘structuralist approach’ was not valid to classify the above meanings/sub-meanings of {+κ(a)} since they share an internal connection. Thus, a ‘cognitive semantics’ approach was utilised in this classification. This approach organises various meanings of {+κ(a)} according to the closeness of fit a certain meaning to the main prototype. So, some meanings are regarded as more prototypical and others are less. This modern cognitive organisation of meanings reflects the recent development in recognising the effect of the ‘prototype theory’ and its relatedness to the cognitive perception.

Consequently, all answers to the above research questions have participated in supporting my main hypothesis which prefers the WP model to describe my data with the suffix {+κ(a)}. The WP model has demonstrated its ability to be valid in description of my data, whereas other models revealed specific problems in their treatment to the structure of the Russian data with the above suffix as submitted earlier.

Thus, the above formula/pattern ($[X] > [X\kappa]$) of the WP model can exhibit the semantic and phonological correlation without having any problems when this correspondence is infringed, whether semantically, phonologically, or both together. Thus, both units: the base and surface lexeme are paradigmatically related to each other, so this represents the essence of the whole-word approach which is regarded as the main theme of the WP model. Moreover, this pattern appears to fit well with the concept of ‘analogy’ when intending to create new forms; it can also be used as a model to create novel words by imitating the formation of the most frequent form in the memory. This suggests what is at work here is analogy rather than rule-based word formation. Consequently, an analogical account will work much better than a rule-based one at explaining the variety of relationships that exist between the surface form and the base form.

The description of the WP model plays a pivotal role in its dominance and popularity whether for Russian data or other languages whose morphological structure seems similar to Russian. Presenting the relationship between words and their affiliation to the paradigm as a discrete unit resulting in each word formation in cross-linguistics can be manifested by this concept. Subsequently, all data with the suffix above have shown the accessibility of applying this model on their formation process. Although note that their derivational process is triggered by the intervention of various linguistic phenomena. The interrelationship between the derivative words and their paradigms emphasizes the fact that it is simply a network of mutual relations. Therefore, in this model the meaning is associated with words and neither roots nor affixes, so that they are not considered to be stand-alone units. However, this does not neglect the fact that a semantic compositionality between words and other parts of base words is exhibited in this model. This can be explained by the phonological and semantic properties that both sides preserve. This illustrates how new derivative words express different, or similar meaning compared to their base lexeme.

7.2 Restrictions

I faced a difficulty in finding a high number of Russian native speakers in Sheffield for my experiment. As the number of participants increases, a wider variation of answers and observed results are predicted. In this regard, due to the limitation of having only one left-handed person among participants, it was not worth including the variable ‘Handedness’ in the experiment in

Chapter 5. Also, the small numbers of non-RF (Russian Federation) native speakers (9 participants) made it difficult to say whether nationalities who lived outside the RF react similarly to those from the RF.

Another restriction found: the RNC (Russian National Corpus) presents difficulties for investigating the effect of relative frequency levels on words with the suffix $\{+\kappa(a)\}$. Instead, I have utilised the ARC (Araneum Rossicum Corpus) using the Russian interface of the CNC (Czech National Corpus) for sake of usability. This interface provides a possibility to count the frequency of each word containing the above suffix in this corpus and this was not accessible/available in the RNC.

7.3 Recommendations

My research seeks to further the incorporation of insights from a variety of fields like cognitive, corpus, and experimental-based studies in morphological linguistics, for example by applying the effect of relative frequency in future studies of Russian suffixes and morphology more generally. To this end, it is hoped that other studies will maximise the number of participants who are Russian native speakers which would be ideal to obtain more contrastive results in such experiments. Also, conducting more experiments to measure the RT of participants for related words containing rival suffixes of $\{+\kappa(a)\}$, which share similar functions, would be useful. This would help to compare the DRT (Difference in reaction time) between related words with the suffix $\{+\kappa(a)\}$ and other counterpart suffixes in Russian. This yields to investigate further whether the processing time order would be different from the one observed in my experiment or not.

I noticed that the Russian language has received little emphasis regarding conducting linguistic experiments and having observed data extracted from experimental methods such as SPR (Self-paced reading) and ETM (Eye-tracking movement). Therefore, it is highly recommended to conduct more experiments to measure particularly the RT of processing of related words in such kinds of experimental research which engages with the word formation process in Russian.

Another issue: I have extracted 88,788 lemmas from ARC. After eliminating all messy data, I have come up with only 7332 lemmas to be annotated. This resulted in discovering 3309 words which are treated as neologisms. This significant portion (almost half of data annotated) reflects the expansion in usage of this suffix in Russian. Therefore, many more neologisms expected to be observed once I maximise the data obtained from such kinds of corpora in my future research.

7.4 Main findings

The main contributions of this research work in the field of linguistics can be summarised by the following points:

1. The variance of characteristics of three morphological models has led me to discover which model is the most appropriate one to completely fit my data. Hopefully, this research work has provided adequate answers to the research questions raised earlier. Also, it has allowed me to validate my main hypothesis which favours the WP model to be the best one to describe my data in Russian. Although this attitude was based on examining specific Russian data with a certain suffix, the word formation process associated with this suffix can be reflected in other rival building elements of the word formation. Therefore, it seems practical to suggest that this model is the best one to describe the morphological process of word formation in Russian.
2. The capability of the WP model has covered most of problems encountered in the process of word formation in Russian which might be reflected across languages. Therefore, it seems possible to generalise the same hypothesis predicted in this research work to be valid for other languages whose morphological structure seems similar to Russian.
3. This research work has focused on one of the most commonly used Russian suffixes that is the suffix $\{+k(a)\}$. This suffix has reflected an important interaction with a wide range of critical topics and concepts that are prominent in the literature. I have seen that specific accounts/concepts like mental representation (SR and DR accounts); type and token frequency; storage and analogy; relative frequency level; corpus-based studies; experimental based studies; neologisms; homonymy; polysemy; semantic heterogeneity; and cognitive semantics have played a pivotal role in elucidating the use of this suffix and its relationships to other means of word formation (suffixes) in Russian. This suffix has had a substantial influence in Russian due to the following reasons:
 - 1) Its morphological formation includes a variety of linguistic phenomena which are associated with the process of word formation, such as allomorphy, truncation, and mutation. This suffix has reflected a variation of form in many coinages compared to its base lexeme. This makes it a unique instance in comparison with other rival suffixes like $\{+ok\}$ and $\{+ik\}$ which reflect a uniform manner while coining surface words.
 - 2) Several bases (e.g. noun, verb, adjective, number, adverb, conjunction, pronoun, interjection, and preposition) have participated to produce words with this suffix as shown by Figure 2.4 (see above). However, other suffixes like $\{+тель\}$ and $\{+ость\}$ are distinguished in Russian by having only one specific base (the verbal base) to produce

surface words. Also, {+κ(a)} has resulted in creating distinct categories which might be a suffix, compound suffixes, and a root as well as found in Figure 2.1 (see above). This makes the formation of the suffix {+κ(a)} a controversial one in Russian.

- 3) It has been used in producing a larger number of words compared to other suffixes. This was noticed by its type frequency found in the *Obratnyi slovar'* which is more than 7000 words, whereas this number is significantly higher in the ARC (over 88000 words). Meanwhile, this number is much higher in the RNC. That is 101 901. Accordingly, this suffix seems to play a powerful role in Russian morphology.
- 4) A substantial stock of neologisms (3309 existing words) has been found with the inclusion of the suffix {+κ(a)} in Russian. This considerable number indicates the capability and the substantial contribution of this suffix to maintain and enrich the Russian language with novel words used in a variety of contexts and applications. This sheds light upon the modern development represented by observing new non-registered/existing forms (neologisms) in Russian.
- 5) Its formation has led me to refute some assumptions posited by certain scholars. It was argued in Section 2.4.3 (see above) that inflectional items reflect high semantic relevance, while derivational are much less. However, Figure 2.14 (see above) has shown that related words with the suffix {+κ(a)} reflects high semantic relatedness of meaning in line to their base lexemes (almost 90%). This has led me to refute another assumption by considering inflectional items as more predictable than derivational ones. By contrast, the suffix {+κ(a)} has shown its predictability to indicate specific meaning/function. The speaker is pretty sure to use this suffix to attribute a certain meaning like Diminutiveness to the referent while they speak or write in various applications.
- 6) There are indicators in the literature that point strongly to considering {+κ(a)} a productive suffix, but it is not entirely clear-cut and questions remain. I found that a single-route account gives the best explanation of how this suffix is used in the lexicon. This account utilised the most frequent form in a memory to analogise other oriented coinages. Therefore, the link between mental representation, productivity, and frequency has become evident.

In addition, certain uses/functions of the above suffix have caused a contention whether to regard it as a homonymous suffix: one is inflectional and the other one is derivational. The semantic relevance of this suffix to its base form has led me to object this assumption. This shows that it is simply a derivational suffix with several meanings/functions to deliver in Russian.

- 7) Coinages of {+κ(a)} have assisted to show which mental account requires much/less time in processing/memorising with two contrasting levels of relative frequency. This has shown that the SR account is more adequate than the other one to describe the mental realisation of this suffix in the mind of the speaker.
- 8) The experimental findings of the suffix {+κ(a)} has imposed different RT in terms of the processing time order of related words in Russian. While the common scholarly view assumes that related words having this order: 1) Base lexeme; 2) WF lexeme; and 3) DF lexeme, this suffix has suggested a new order where the second category (WF lexeme) precedes the first one (Base lexeme). This means that the former requires less time in processing than the latter in the mind of the speaker as shown by Figure 5.9 (see above). These surprising outcomes would be critical and novel in such languages like Russian.
- 9) The suffix {+κ(a)} has provided a multiplicity of semantic meanings; six main meanings (Diminutiveness, Tenderness, Pejorativeness, Feminisation, Substantivisation, and Concreteness) and many other sub-meanings that number 11. Thus, it was practical to adopt the modern cognitive approach (cognitive semantics) to organise the network of connections of the above meanings/sub-meanings of {+κ(a)} by having radial categories. I found that the main prototype (Diminutiveness) shares semantic proximity to other more/less prototypical meanings. The shared attributes character reflected by the above meanings of {+κ(a)} has made applying this modern cognitive approach applicable. This radial schema of {+κ(a)} contradicts the old cognitive approach (structuralist classification) which organises the meanings/functions of {+κ(a)} in separation to each other.

This makes this suffix a typical and useful example of a derivational suffix; I have seen that this suffix has a broad distribution of functions and is in competition or complementary distribution with a range of other suffixes across all its functions. Hence, {+κ(a)} is simply a good example that I employed to see the problems encountered in trying to model how derivation works; I therefore used it to test my hypotheses. This suffix represents a complex issue in Russian, so once I had explained this complexity, I provided a lot of information about suffixation in Russian. It may be used as a guide for other formations in Russian and for other languages which share similar features to Russian as well.

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Appendix 1: Glossary

Term	Definition
AML - Analogical modelling of language	A technique, based on a theory of language, used to compare a large set of forms in order to find the most analogous exemplar to serve as a model for other formations.
DF - Decomposable frequency	A word-formation category in which the frequency of the base form/word is higher than the frequency of its surface (derivative) form/word.
DR - Dual-route account	This account of word formation assumes that accessing/processing the mental representation of words relies on two pathways: one for regular and one for irregular forms. The former hinges on decomposition, whereas the latter relies on storage.
IA - Item and Arrangement	Morphological models categorised as IA assume that words are decomposed into independent units; each unit must represent an isomorphic correspondence of form and meaning together.
IP - Item and Process	Morphological models categorised as IP assume the generation of different Word Formation Rules for each coinage to interpret its formation.
SR - Single-route account	This account of word formation assumes that words are by default mentally realised/processed as indivisible units.
TiMBL - Memory Based-Learner	A technique that uses stored forms to generate near-neighbour classifications that allow researchers to predict new cases. Thus, two techniques are implemented in this approach: storage and similarity-based concept.
WF - Whole-word frequency	A word-formation category in which the frequency of surface (derivative) words is higher than their base lexemes. Therefore, they require faster reaction time to perceive/process in the mind of language users
WP - Word and Paradigm	Morphological models categorised as WP adopt the paradigmatic scope to define its members which are the paradigm (the base lexeme) and its derivative form (the surface word). It does not consider affixes as standalone units since meaning typically operates at the word level and affixes have meaning only as generalisations over large amounts of word-based data.

Appendix 2: List of Neologisms

1- абилка	51- Алексеевка	101- анодировка
2- Абрамовка	52- Алексейка	102- анорексичка
3- абрикоска	53- Аленька	103- антенка
4- абушка	54- Алена	104- антиёлка
5- авантюрка	55- алёнка	105- антикоррозийка
6- аварийка	56- алешка	106- антипка
7- аватарка	57- Алешина	107- антисоциалка
8- Аввакумовка	58- Алинка	108- антисталинистка
9- Авдеевка	59- Алиска	109- антошка
10- авдотка	60- алкашка	110- анфиска
11- аверка	61- алла	111- анька
12- автоаптечка	62- алматинка	112- анютка
13- автогражданка	63- алтайка	113- апельсинка
14- автономка	64- Алферовка	114- апрелевка
15- автосигналка	65- Алферьевка	115- арафатка
16- автосотка	66- альбинка	116- Арбузовка
17- агаповка	67- альтанка	117- аринка
18- агафоновка	68- альтернативка	118- аришка
19- агашка	69- аляска	119- арочка
20- агнешка	70- амбарка	120- аркашка
21- агрегатка	71- амвросиевка	121- арматурка
22- Адамовка	72- амилка	122- армировка
23- адептка	73- аминовка	123- аромка
24- админка	74- аммофоска	124- Арсенька
25- административка	75- аморалистка	125- Арсентьевка
26- азаровка	76- аморалка	126- Арсеньевка
27- азиаточка	77- амурка	127- артёмка
28- Азовка	78- амурчанка	128- артемка
29- азорка	79- Анапка	129- артишка
30- азямка	80- анапчанка	130- Артиховка
31- айлочка	81- анастасиевка	131- архангелогородка
32- акка	82- анатолька	132- Архипка
33- академка	83- Анашка	133- Архиповка
34- акашка	84- ангарчанка	134- Аршиновка
35- аквагорка	85- Ангелинка	135- Асафьевка
36- аквинка	86- ангелочка	136- астронавтка
37- акимовка	87- ангорка	137- аська
38- аккордеонистка	88- Андреевка	138- Атамановка
39- аккуратистка	89- Андрейка	139- аташка
40- аксютка	90- Андрияновка	140- атлетка
41- актка	91- Андрюшка	141- аудиокартинка
42- актировка	92- Анжелка	142- аутистка
43- актриска	93- аничка	143- Афанасьевка
44- акулка	94- Аникеевка	144- Афонька
45- аларка	95- анимешка	145- афроамериканка
46- алатырка	96- Анисимовка	146- Афросимовка
47- алевтинка	97- Аниська	147- ахметка
48- Александринка	98- анкетка	148- ахтырка
49- Александровка	99- Анкудиновка	149- ачивка
50- Алексашка	100- аннинька	150- аэрофлотка

151-	бабанинка	204-	бекка	257-	бобочка
152-	бабулька	205-	бекетовка	258-	Бобровка
153-	бабуська	206-	белгородка	259-	бобслеистка
154-	багаевка	207-	белинка	260-	богатовка
155-	бадминтонистка	208-	белобочка	261-	богдановка
156-	баевка	209-	белобровка	262-	боголюбовка
157-	бажовка	210-	белобрюшка	263-	богословка
158-	бакка	211-	Беловка	264-	Богоявлена
159-	Баканка	212-	белоглинка	265-	богуславка
160-	баковка	213-	белогорка	266-	богучарка
161-	балгарка	214-	белогрудка	267-	боевка
162-	балеринка	215-	Белозерка	268-	божедомка
163-	балетка	216-	белозубка	269-	божка
164-	балочka	217-	Белокаменка	270-	бокка
165-	балонка	218-	белокрылка	271-	боковинка
166-	балицка	219-	белорусочка	272-	боковушка
167-	бальзака	220-	Белоснежка	273-	болка
168-	бамбучка	221-	белужка	274-	болтинка
169-	бандеришка	222-	белька	275-	болтовка
170-	бандитка	223-	беляевка	276-	болтышка
171-	банкетка	224-	бенка	277-	больничка
172-	баннерка	225-	бензозаправка	278-	большемерка
173-	барабанщикка	226-	бердчанка	279-	бонька
174-	барабарка	227-	бережновка	280-	бондарка
175-	барабашка	228-	березовчанка	281-	борька
176-	баракка	229-	берекка	282-	боренька
177-	Барановка	230-	берендеевка	283-	боренка
178-	брашечка	231-	беретка	284-	Бориска
179-	барбариска	232-	берлинка	285-	Борисовка
180-	барбашка	233-	берсеньевка	286-	Борковка
181-	барбоська	234-	бессарабка	287-	бормашинка
182-	барковка	235-	бессоновка	288-	бормотушка
183-	барнаулка	236-	бесхвостка	289-	бородавчатка
184-	барсуковка	237-	бетонка	290-	бородинка
185-	барщинка	238-	бехтеевка	291-	бортировка
186-	баська	239-	бечевочка	292-	борутка
187-	басенька	240-	бешка	293-	борцовка
188-	басистка	241-	бешенка	294-	боречка
189-	баушка	242-	биатлонистка	295-	борщёвка
190-	бахаревка	243-	Бийка	296-	ботка
191-	бахмутка	244-	бийчанка	297-	бочечка
192-	бацька	245-	биомаска	298-	бошка
193-	башиловка	246-	бирочка	299-	бракка
194-	башмаковка	247-	бирюсинка	300-	бранка
195-	бегунка	248-	бисексуалка	301-	брассистка
196-	бедолажка	249-	битимка	302-	братчанка
197-	бедрышка	250-	бойка	303-	браузерка
198-	беженька	251-	бичёвка	304-	брахманка
199-	беззеркалка	252-	бичевка	305-	брежневка
200-	безлимитка	253-	бишка	306-	брекка
201-	безрамка	254-	благовещенка	307-	брилка
202-	безручка	255-	бликовка	308-	бровочка
203-	бейсболка	256-	блиновка	309-	бродилка

310-	брущатка	363-	варюшка	416-	взаимоувязка
311-	Брянка	364-	варька	417-	вздрюочка
312-	бубка	365-	Василинка	418-	взлётка
313-	бугровка	366-	Васильевка	419-	взлетка
314-	будайка	367-	Васинька	420-	вибротрамбовка
315-	будочка	368-	Васютка	421-	видюшка
316-	буженинка	369-	Васюшка	422-	визажистка
317-	букка	370-	вафелька	423-	визиточка
318-	букарка	371-	введенка	424-	викка
319-	букреевка	372-	вебка	425-	викулька
320-	булгарка	373-	вебка	426-	Виленка
321-	булька	374-	веганка	427-	вилька
322-	бульбашка	375-	ведучка	428-	винка
323-	бунгка	376-	ведьмачка	429-	виноградовка
324-	буржуазка	377-	Вежайка	430-	виньетка
325-	буровка	378-	вейделевка	431-	виолетка
326-	буська	379-	векка	432-	виртуалка
327-	Бутка	380-	Вековка	433-	виставка
328-	бутилька	381-	великолучанка	434-	виталька
329-	Бутовка	382-	Величка	435-	витаминка
330-	Бутурлиновка	383-	велодорожка	436-	витринка
331-	бутылька	384-	велька	437-	Витька
332-	буханочка	385-	велошушка	438-	вихляевка
333-	буянка	386-	венька	439-	Вихоревка
334-	Быковка	387-	венерка	440-	вишивка
335-	быстровка	388-	венесуэлка	441-	вкладочка
336-	быстрянка	389-	венецианка	442-	вкуснятина
337-	бытовка	390-	венечка	443-	вкусняшечка
338-	бытылочка	391-	веничка	444-	владька
339-	быховка	392-	веночка	445-	владка
340-	бюджетка	393-	верка	446-	Владимировка
341-	вавка	394-	верблюдка	447-	владиславовка
342-	вагонка	395-	верблюжка	448-	владыченька
343-	вадичка	396-	веремеевка	449-	власовка
344-	вадимка	397-	веретенка	450-	влашка
345-	Валька	398-	верещагинка	451-	вмененка
346-	Валгомка	399-	вероничка	452-	вмятинка
347-	валентинка	400-	вертикалка	453-	внеурочка
348-	валентинка	401-	вертлюжка	454-	внешка
349-	Валентиновка	402-	вертолетка	455-	воблерка
350-	Валерка	403-	верховка	456-	вовка
351-	Валечка	404-	верхотомка	457-	водилка
352-	валовка	405-	веселинка	458-	водолазка
353-	валуйка	406-	веселовка	459-	водолейка
354-	ванилька	407-	веселушка	460-	водорезка
355-	ванюшка	408-	весняночка	461-	водоэмульсионка
356-	ванятка	409-	ветеринарка	462-	военка
357-	вапнярка	410-	ветлужанка	463-	Воздвиженка
358-	варваровка	411-	ветреничка	464-	воздухоочистка
359-	варенка	412-	ветровка	465-	Вознесенка
360-	варенька	413-	ветрянка	466-	войновка
361-	варламовка	414-	вешенка	467-	вокалистка
362-	варшавка	415-	взаимовыручка	468-	волгоградка

469-	волжаночка	522-	вышиванка	575-	гифка
470-	вологжанка	523-	вышиловка	576-	гладка
471-	володарка	524-	выштамповка	577-	глажка
472-	володаровка	525-	вьетнамка	578-	гладковка
473-	Володька	526-	вьюнка	579-	гладкостволка
474-	волоколамка	527-	вязалка	580-	Гладышевка
475-	волоконовка	528-	вяземка	581-	глазуновка
476-	волонтерка	529-	Вязовка	582-	глашка
477-	волостка	530-	гавайка	583-	глебка
478-	Волочаевка	531-	гаврилка	584-	глистогонка
479-	волочанка	532-	Гавриловка	585-	глотовка
480-	волочка	533-	гагарочка	586-	глушилка
481-	воловка	534-	газелька	587-	гнедка
482-	Волхонка	535-	газетенка	588-	гнетка
483-	Волька	536-	газодувка	589-	гномка
484-	вонка	537-	газоочистка	590-	гобеленка
485-	вопрошайка	538-	газопереработка	591-	говорушка
486-	ворка	539-	газорезка	592-	годка
487-	воробьевка	540-	газосварка	593-	голка
488-	воробьёвка	541-	гайдучка	594-	головенка
489-	вороненка	542-	гаиска	595-	головинка
490-	Вороновка	543-	галеристка	596-	голосовка
491-	воронцовка	544-	галиевка	597-	голубовка
492-	воротка	545-	галилеянка	598-	гольфистка
493-	ворошиловка	546-	Галинка	599-	гольцовка
494-	Воскресенка	547-	галичанка	600-	гомилка
495-	воспитка	548-	галогенка	601-	гончарка
496-	восстановка	549-	ганька	602-	гончаровка
497-	восточка	550-	гандболистка	603-	горбатка
498-	восьмерочка	551-	ганка	604-	горбатовка
499-	восьмидесятка	552-	гантелька	605-	горбуновка
500-	восьмилетка	553-	гарантийка	606-	горбылька
501-	вотка	554-	гаревка	607-	Гордеевка
502-	вохринка	555-	гаровка	608-	гордейка
503-	вражка	556-	гаррика	609-	гордынька
504-	всесезонка	557-	гарцовка	610-	горелочка
505-	всечка	558-	гатка	611-	Горетовка
506-	вскопка	559-	гашка	612-	горизонталка
507-	встречка	560-	Гвоздянка	613-	Горловка
508-	вторичка	561-	генька	614-	горловинка
509-	вушка	562-	генка	615-	горнолыжка
510-	выворотка	563-	генералка	616-	горностаевка
511-	выгородка	564-	Георгиевка	617-	городочка
512-	выделенка	565-	геосетка	618-	Гороховка
513-	выклейка	566-	Герка	619-	горочка
514-	выкружка	567-	герасимовка	620-	горьковка
515-	вylка	568-	геройка	621-	горькушка
516-	вымечка	569-	Гжелка	622-	горючка
517-	вымостка	570-	гигиеничка	623-	горяйновка
518-	выпрессовка	571-	гидроочистка	624-	гордячка
519-	вырыпаевка	572-	гидропонка	625-	господарочка
520-	высоковольтка	573-	гидорезка	626-	госприемка
521-	выстовка	574-	гитарка	627-	гостиничка

628-	готка	681-	даманка	733-	дежка
629-	гофрокоробка	682-	Данка	734-	дерзка
630-	гофротрубка	683-	Данилка	735-	десятиминутка
631-	гошка	684-	Даниловка	736-	десятирублевка
632-	грабка	685-	данчинка	737-	десятиэтажка
633-	гравийка	686-	данька	738-	деталька
634-	градка	687-	Даренка	739-	детдомовка
635-	гражданинка	688-	дарёнка	740-	дефектовка
636-	грамка	689-	дармовщина	741-	деффектовка
637-	Грачевка	690-	дароватка	742-	джайка
638-	Грачёвка	691-	Датка	743-	Джалка
639-	Гремячка	692-	дашка	744-	Джамбулька
640-	гренка	693-	Дашковка	745-	джанка
641-	гречишка	694-	двадцатиминутка	746-	джинсовка
642-	грешка	695-	двадцатипятирублевка	747-	джойка
643-	грибановка			748-	джотка
644-	грибовка	696-	двадцатка	749-	джуська
645-	грибочка	697-	двенадцатилетка	750-	дзекка
646-	гриденка	698-	дверька	751-	дзержинка
647-	григоровка	699-	двойняшечка	752-	диаммофоска
648-	Григорьевка	700-	двукратка	753-	Дианка
649-	гримёрка	701-	двусторонка	754-	диетка
650-	гримерка	702-	двухминутка	755-	дизелька
651-	Гришка	703-	двухполоска	756-	дизировка
652-	громка	704-	двухсторонка	757-	дикарька
653-	громовка	705-	двухтрубка	758-	дилечка
654-	громоздка	706-	двухэтажка	759-	Димка
655-	грузоперевозка	707-	двушечка	760-	динка
656-	группка	708-	дебетовка	761-	динамовка
657-	групперовка	709-	дебилка	762-	динька
658-	групповушка	710-	дебиторка	763-	дипломка
659-	Грушевка	711-	деблокировка	764-	диска
660-	грушинка	712-	девченочка	765-	дискетка
661-	Грязновка	713-	девятиэтажка	766-	диссидентка
662-	губочка	714-	девяточка	767-	дистанционка
663-	гузка	715-	дединька	768-	дитка
664-	Гуляевка	716-	дедулечка	769-	дифференцировка
665-	гуманистка	717-	дедулька	770-	длинноножка
666-	гуманитарка	718-	дезья	771-	Дмитриевка
667-	Гуменка	719-	дезориентировка	772-	Дмитровка
668-	гурка	720-	декоративка	773-	дневничка
669-	гусаровка	721-	декорировка	774-	дневка
670-	Гусевка	722-	делка	775-	добавочка
671-	густерка	723-	демка	776-	добивка
672-	густёрка	724-	дёмка	777-	добрынька
673-	гуська	725-	Демидовка	778-	Добрянка
674-	гуцулочка	726-	Демьянка	779-	добыточка
675-	давалка	727-	демьяновка	780-	дозагрузка
676-	давидка	728-	денечка	781-	дозакупка
677-	давыдка	729-	Дениска	782-	дозарядка
678-	давыдовка	730-	Денисовка	783-	дозаявка
679-	далиборка	731-	дербеневка	784-	доилка
680-	далька	732-	деревянка	785-	докатка

786-	докопка	839-	дятловка	892-	жижка
787-	докторишка	840-	Евгеньевка	893-	жилеточка
788-	документалка	841-	еврокнижка	894-	Жилинка
789-	долбёжка	842-	евстигнейка	895-	жихарка
790-	долговка	843-	Егорка	896-	жменька
791-	долевка	844-	Егорушка	897-	жмурка
792-	домашка	845-	единорожка	898-	ジョンカ
793-	домовичка	846-	единоросска	899-	жопка
794-	донастройка	847-	ежевичка	900-	Жорка
795-	дончанка	848-	ежовка	901-	жоржинька
796-	донька	849-	Екатерингофка	902-	Жорновка
797-	дооценка	850-	екатеринославка	903-	Жуковка
798-	допоставка	851-	екатеринаславка	904-	жуланка
799-	доразведка	852-	Еланка	905-	Журавлевка
800-	дормидонтовка	853-	Еленка	906-	забирка
801-	дорошка	854-	Еленинка	907-	забраковка
802-	досветка	855-	Еленочка	908-	забурка
803-	досочка	856-	Елизаветинка	909-	завка
804-	досрочка	857-	Елисейка	910-	завадка
805-	доставочка	858-	елифановка	911-	заверстка
806-	доупаковка	859-	елишка	912-	загвозка
807-	дочька	860-	Еловка	913-	загогулька
808-	дошка	861-	Елховка	914-	загорка
809-	дошколка	862-	Ельцовка	915-	заготовочка
810-	древка	863-	Емельяновка	916-	задка
811-	Дресвянка	864-	епифановка	917-	задумка
812-	дробеструйка	865-	епишка	918-	зажарка
813-	дробленка	866-	ереминка	919-	зажигалочка
814-	дроблёнка	867-	ермоловка	920-	закка
815-	дрочка	868-	ермошка	921-	закличка
816-	дружинка	869-	Ершовка	922-	заколочка
817-	дружковка	870-	есинка	923-	закольцовка
818-	дублянка	871-	ефросимовка	924-	закрытка
819-	дублировка	872-	жабка	925-	залка
820-	дубравка	873-	Жабинка	926-	зала
821-	дубровенка	874-	жадовка	927-	залеска
822-	Дудинка	875-	жанка	928-	залётка
823-	дуловка	876-	жаропрочка	929-	заловка
824-	дунайка	877-	жгучка	930-	замалевка
825-	дунька	878-	Жданка	931-	заматовка
826-	дурасовка	879-	Ждановка	932-	заморочка
827-	дурилка	880-	желанка	933-	Занка
828-	дуська	881-	железочка	934-	заначка
829-	душанбинка	882-	желтушка	935-	заочка
830-	душенка	883-	жемчужка	936-	запаска
831-	душинька	884-	Женька	937-	запечатка
832-	дыбка	885-	женька	938-	запитка
833-	дыхалка	886-	жерка	939-	запояска
834-	дьячка	887-	Жердевка	940-	запретка
835-	дьяковка	888-	жерешка	941-	заработка
836-	дюймовочка	889-	жженка	942-	зарботка
837-	дюралька	890-	живка	943-	зарезка
838-	дятелка	891-	живородка	944-	заремка

945-	Заринка	998-	зоринка	1051-	исакогорка
946-	зарисовочка	999-	зубка	1052-	искалка
947-	зарничка	1000-	зубовка	1053-	истинка
948-	зарплатка	1001-	зубочка	1054-	историчка
949-	зарубежка	1002-	зубрежка	1055-	крышка
950-	зарубочки	1003-	зубриловка	1056-	Кабанка
951-	Зарка	1004-	Зуевка	1057-	каблучка
952-	засветка	1005-	зуйка	1058-	кавка
953-	засидка	1006-	зэчка	1059-	кадарка
954-	засранка	1007-	зябровка	1060-	кадровичка
955-	заставочка	1008-	Иванка	1061-	кадыковка
956-	застойка	1009-	Ивановка	1062-	каемочка
957-	зауска	1010-	Ивантеевка	1063-	казанлька
958-	заучка	1011-	Игарка	1064-	Казановка
959-	захалка	1012-	игнатья	1065-	казенка
960-	Захарка	1013-	игнатовка	1066-	Казинка
961-	захаровка	1014-	игнашка	1067-	каинка
962-	захватка	1015-	Игуменка	1068-	какашка
963-	захлопка	1016-	иеговистка	1069-	калка
964-	заявочка	1017-	ижорка	1070-	каланка
965-	Званка	1018-	извращенка	1071-	каланчевка
966-	звенигородка	1019-	излишка	1072-	калевка
967-	зверка	1020-	измайловка	1073-	калининградка
968-	звонилка	1021-	Изюмка	1074-	Калиновка
969-	звуковичка	1022-	иконочка	1075-	калистратка
970-	здоровьичка	1023-	иленка	1076-	калифорнийка
971-	зеленовка	1024-	илинка	1077-	кальманка
972-	зеленоградка	1025-	иллирика	1078-	Калужка
973-	зеновка	1026-	Иловка	1079-	калужанка
974-	зерка	1027-	илюнка	1080-	камаевка
975-	зеркалка	1028-	Ильинка	1081-	Камбарка
976-	зефирка	1029-	Ильичевка	1082-	камейка
977-	зечка	1030-	Илюшка	1083-	камелька
978-	зиговка	1031-	именинка	1084-	камерка
979-	зикка	1032-	иммунка	1085-	Камзолка
980-	зиминка	1033-	индивидуалка	1086-	каминка
981-	Зинка	1034-	Индигирка	1087-	камнеобработка
982-	зиновьевка	1035-	индуистка	1088-	камфорка
983-	златовласка	1036-	инерка	1089-	камчадалка
984-	златоглазка	1037-	инженерка	1090-	Камышенка
985-	златогорка	1038-	иннокентьевка	1091-	канавка
986-	златошвейка	1039-	инопланетянка	1092-	каналка
987-	Змёевка	1040-	инсцинировка	1093-	канатка
988-	змеинка	1041-	интеллектуалка	1094-	канатоходка
989-	змиевка	1042-	информантка	1095-	кандачка
990-	Знаменка	1043-	информатика	1096-	канопка
991-	знахорка	1044-	информатичка	1097-	Кантемировка
992-	золотаревка	1045-	иолка	1098-	канька
993-	золотарёвка	1046-	йорданка	1099-	капка
994-	золотозубка	1047-	йошкаролинка	1100-	капиталка
995-	золотушка	1048-	ипатовка	1101-	капитанка
996-	зоофилка	1049-	Ипполитовка	1102-	капризулька
997-	зорка	1050-	Иринка	1103-	каптерка

1104-	каптёрка	1157-	киноёлка	1210-	колосовка
1105-	капустянка	1158-	киноманка	1211-	колумнистка
1106-	каравайка	1159-	кирька	1212-	колунка
1107-	карамболька	1160-	Киреевка	1213-	колоыбелка
1108-	каратистка	1161-	Кирилка	1214-	колька
1109-	каргаска	1162-	кирилловка	1215-	кольцовка
1110-	карглазка	1163-	кириловка	1216-	кольчужка
1111-	карелочка	1164-	кирочка	1217-	командировка
1112-	каринка	1165-	кировка	1218-	комаровка
1113-	карловка	1166-	кировчанка	1219-	комбинашка
1114-	кармалейка	1167-	кирюшка	1220-	Комиссаровка
1115-	карманка	1168-	Киселёвка	1221-	комиссионка
1116-	каролинка	1169-	кисличка	1222-	коммуналка
1117-	Карповка	1170-	кисломолочка	1223-	коммунарка
1118-	картиночка	1171-	китка	1224-	коморка
1119-	картузка	1172-	китаевка	1225-	компановка
1120-	каруселька	1173-	claveka	1226-	коммуналка
1121-	каска	1174-	клевка	1227-	кондитерка
1122-	касьяновка	1175-	клееночка	1228-	кондратьевка
1123-	каталка	1176-	кленовка	1229-	конкурсантика
1124-	Катериничка	1177-	клещёвка	1230-	коноваловка
1125-	кателька	1178-	клещевка	1231-	консолька
1126-	катинка	1179-	клиновка	1232-	Константиновка
1127-	катонка	1180-	клубенька	1233-	Кончинка
1128-	катька	1181-	клубочка	1234-	конышевка
1129-	катюшка	1182-	Ключевка	1235-	копилочка
1130-	катька	1183-	клячка	1236-	копринка
1131-	качалка	1184-	Князевка	1237-	копытка
1132-	качалочка	1185-	кобелька	1238-	корабелка
1133-	качелька	1186-	Ковалевка	1239-	коралка
1134-	качулька	1187-	ковровчанка	1240-	корбка
1135-	качурка	1188-	ковырялочка	1241-	коректировка
1136-	Кашинка	1189-	кодировка	1242-	кореновка
1137-	Каширка	1190-	козелка	1243-	корешка
1138-	кашиворка	1191-	козерожка	1244-	кореяночка
1139-	каштанка	1192-	Козинка	1245-	коржистка
1140-	квасничка	1193-	Козловка	1246-	кормозаготовка
1141-	квасовка	1194-	козулька	1247-	коробовка
1142-	квачка	1195-	кокошка	1248-	коробочонка
1143-	квиточка	1196-	кокшаровка	1249-	Королевка
1144-	квокка	1197-	колготка	1250-	королька
1145-	кедринка	1198-	колебалочка	1251-	короткометражка
1146-	кемеровчанка	1199-	коленька	1252-	короткохвостка
1147-	кемска	1200-	колеровка	1253-	корчака
1148-	кенийка	1201-	колеровка	1254-	коряжемка
1149-	Кешка	1202-	колесниковка	1255-	коска
1150-	кидка	1203-	коллективка	1256-	космонавтка
1151-	Киевка	1204-	коллекционерка	1257-	Косовка
1152-	киевлянка	1205-	колобка	1258-	костадинка
1153-	кизиловка	1206-	кологривовка	1259-	Костинка
1154-	киляковка	1207-	колоночка	1260-	костка
1155-	киндяковка	1208-	колористка	1261-	костька
1156-	киноелка	1209-	колосяка	1262-	косыка

1263-	косячка	1316-	крыльчатка	1369-	лавинка
1264-	котка	1317-	крымчанка	1370-	ладка
1265-	котёночка	1318-	крыска	1371-	ладожанка
1266-	Котловка	1319-	кряковка	1372-	лаечка
1267-	котофейка	1320-	ксенька	1373-	лазаревка
1268-	кофеварка	1321-	ксенка	1374-	лазурка
1269-	кофеварка	1322-	ксюшка	1375-	лаишевка
1270-	кофейка	1323-	кубаночка	1376-	Ламарка
1271-	кофеманка	1324-	кувадка	1377-	лапатка
1272-	коцка	1325-	куватка	1378-	Лаптевка
1273-	кочетка	1326-	кувшиновка	1379-	лапулька
1274-	кочетовка	1327-	Кудка	1380-	лапшинка
1275-	кошельевка	1328-	куделка	1381-	ларка
1276-	кошелька	1329-	кудрявка	1382-	Лариска
1277-	краватка	1330-	кузэмка	1383-	латиноамериканка
1278-	краинка	1331-	кузенька	1384-	лауреатка
1279-	кранка	1332-	кузнецка	1385-	лебяжка
1280-	крапанка	1333-	кузнецова	1386-	левенцовка
1281-	Красивка	1334-	Кузьминка	1387-	Левинка
1282-	краснодарка	1335-	кукурузка	1388-	Левшинка
1283-	краснознаменка	1336-	кулатка	1389-	легалка
1284-	краснокаменка	1337-	кулевка	1390-	легендарка
1285-	красноярка	1338-	Кулешовка	1391-	ледка
1286-	краснушка	1339-	куликовка	1392-	лежневка
1287-	красоточка	1340-	кулирка	1393-	лезгиничка
1288-	красочка	1341-	кулиска	1394-	лекаревка
1289-	крашенка	1342-	культурристка	1395-	лекска
1290-	креативка	1343-	куманька	1396-	лелечка
1291-	кредиторка	1344-	куминка	1397-	лелька
1292-	Кременка	1345-	кумыска	1398-	Ленка
1293-	кремлёвка	1346-	кунашовка	1399-	лёнка
1294-	кремлевка	1347-	Кунгурка	1400-	ленивка
1295-	креплянка	1348-	купалка	1401-	ленинградка
1296-	креселка	1349-	купка	1402-	ленинградка
1297-	кречетка	1350-	купринка	1403-	леночка
1298-	криворучка	1351-	курганка	1404-	ленька
1299-	кривошапка	1352-	курдюмка	1405-	Леонидовка
1300-	кривошеевка	1353-	Курейка	1406-	Леоновка
1301-	Кристинка	1354-	куриловка	1407-	лерочка
1302-	кровососка	1355-	курковка	1408-	Лермонтовка
1303-	кровянка	1356-	куртинка	1409-	леська
1304-	кроссировка	1357-	курымушка	1410-	лесазаготовка
1305-	кроссовка	1358-	курянка	1411-	лесовичка
1306-	кровертка	1359-	кустарничка	1412-	лесовозка
1307-	круглоголовка	1360-	кутка	1413-	лесочки
1308-	кругосветка	1361-	кутузовка	1414-	леталка
1309-	кружочка	1362-	кучевка	1415-	Летовка
1310-	крупеничка	1363-	кучёвка	1416-	лешка
1311-	крутилка	1364-	Кушка	1417-	лианка
1312-	крутишка	1365-	кушелевка	1418-	ливанка
1313-	крыжка	1366-	кущевка	1419-	ливневка
1314-	крыловка	1367-	кущёвка	1420-	ливнёвка
1315-	крылоножка	1368-	Кызылка	1421-	лидка

1422-	лизка	1475-	любимовка	1528-	мамулька
1423-	ликерка	1476-	любимка	1529-	Манежка
1424-	лилька	1477-	любинька	1530-	манетка
1425-	лимитка	1478-	Любинка	1531-	мануйловка
1426-	линковка	1479-	Любовка	1532-	манюнька
1427-	линочка	1480-	любочка	1533-	Манька
1428-	лиска	1481-	людка	1534-	мараловодка
1429-	Лиственка	1482-	Людмилка	1535-	марафонка
1430-	листовидка	1483-	людоедочка	1536-	маргариточка
1431-	листогибка	1484-	лютнистка	1537-	мариечка
1432-	листопадовка	1485-	люшка	1538-	мариинка
1433-	листорезка	1486-	лягушечка	1539-	мариночка
1434-	Литвиновка	1487-	лялька	1540-	маркеровка
1435-	литейка	1488-	лялька	1541-	Марковка
1436-	литературка	1489-	лянка	1542-	марлевка
1437-	литковка	1490-	ляховка	1543-	марска
1438-	лицеистка	1491-	магистрантка	1544-	мартиника
1439-	личка	1492-	магнитка	1545-	марточка
1440-	лобановка	1493-	магнитолка	1546-	мартынка
1441-	ловка	1494-	мадленка	1547-	Мартыновка
1442-	логиновка	1495-	маевка	1548-	маруська
1443-	лозанка	1496-	мазайка	1549-	Марушка
1444-	локка	1497-	мазохистка	1550-	марфинька
1445-	локалка	1498-	маечка	1551-	марфутка
1446-	ломарка	1499-	майорка	1552-	марфушка
1447-	Ломовка	1500-	майоровка	1553-	маршрутка
1448-	Ломоватка	1501-	макарка	1554-	маршрутка
1449-	лопанка	1502-	макаренка	1555-	Марьянка
1450-	Лопухинка	1503-	Макаровка	1556-	Марьиновка
1451-	лопуховка	1504-	Макарьевка	1557-	маська
1452-	лорка	1505-	макеевка	1558-	масочка
1453-	Лосинка	1506-	макетка	1559-	масленичка
1454-	лолоска	1507-	максаковка	1560-	Масловка
1455-	Лососинка	1508-	Максимка	1561-	масовка
1456-	лотка	1509-	максималка	1562-	массажка
1457-	лохушка	1510-	Максимовка	1563-	матвеевка
1458-	луарка	1511-	макушечка	1564-	матвейка
1459-	лудка	1512-	малька	1565-	материнка
1460-	лузановка	1513-	Малакка	1566-	матюшка
1461-	лукка	1514-	маланка	1567-	мачка
1462-	луканка	1515-	малаховка	1568-	Машка
1463-	Лукъяновка	1516-	Малашка	1569-	машиночка
1464-	лурка	1517-	малиnochка	1570-	машенка
1465-	луцка	1518-	малогабаритка	1571-	маячка
1466-	лучка	1519-	малосемейка	1572-	Маяковка
1467-	лученка	1520-	малоценка	1573-	мебелировка
1468-	лушка	1521-	малоэтажка	1574-	Медведевка
1469-	лысогорка	1522-	мальвинка	1575-	Медвежка
1470-	лычка	1523-	малявочка	1576-	мединка
1471-	львовка	1524-	малярка	1577-	медкнижка
1472-	льоська	1525-	Мамайка	1578-	медка
1473-	любанька	1526-	мамедка	1579-	мелка
1474-	любашка	1527-	мамонтовка	1580-	меловка

1581-	мелька	1634-	мокеевка	1687-	мухинка
1582-	Мельгуновка	1635-	молявка	1688-	мухоморка
1583-	мельниченка	1636-	молдовка	1689-	мухтарка
1584-	менорка	1637-	молдаванка	1690-	мыколка
1585-	меркуловка	1638-	молодежка	1691-	мылка
1586-	меселька	1639-	молодёжка	1692-	мынка
1587-	металка	1640-	молодчинка	1693-	мычка
1588-	металлистка	1641-	молоковка	1694-	мышевидка
1589-	метелочка	1642-	молчановка	1695-	мякотка
1590-	метражка	1643-	Молебка	1696-	мясоедка
1591-	мечка	1644-	Молёбка	1697-	мятка
1592-	мечетка	1645-	монокубка	1698-	наброска
1593-	мигрантка	1646-	монтажка	1699-	наведенка
1594-	миграционка	1647-	мончка	1700-	наверянка
1595-	мигулка	1648-	мордовочка	1701-	навка
1596-	микешка	1649-	мореходка	1702-	наградка
1597-	миколка	1650-	морковочка	1703-	нагрузочка
1598-	микроволновка	1651-	мороженка	1704-	надвижка
1599-	микросетка	1652-	морозка	1705-	надеждинка
1600-	микросхемка	1653-	Морозовка	1706-	надиктовка
1601-	миленка	1654-	Мортка	1707-	надпечатка
1602-	миленочка	1655-	мортирка	1708-	надрезка
1603-	миллионка	1656-	моска	1709-	наждачка
1604-	миловка	1657-	москалька	1710-	нажитка
1605-	минка	1658-	москвичка	1711-	наземка
1606-	минералочка	1659-	московка	1712-	назимка
1607-	минералка	1660-	Мостовка	1713-	найка
1608-	миниатюрка	1661-	мотанка	1714-	накрутка
1609-	минибайка	1662-	мотовиловка	1715-	накрутка
1610-	минималка	1663-	моточка	1716-	накрывка
1611-	минусовка	1664-	мотыжка	1717-	налепка
1612-	минчанка	1665-	мужиченка	1718-	наличка
1613-	Мироновка	1666-	музка	1719-	наложка
1614-	мысочка	1667-	музычка	1720-	нанка
1615-	митрофановка	1668-	музыкалка	1721-	нанотрубка
1616-	Митька	1669-	мулька	1722-	нападка
1617-	митка	1670-	мультиварка	1723-	напевка
1618-	Михайловка	1671-	мультимедийка	1724-	напряженка
1619-	михалка	1672-	мультишшка	1725-	нарка
1620-	михалевка	1673-	муниципалка	1726-	наработка
1621-	мишелька	1674-	мурка	1727-	нареченка
1622-	многоборка	1675-	Муравейка	1728-	наркоманка
1623-	многоглазка	1676-	Муравьевка	1729-	наркоторговка
1624-	многодневка	1677-	Муратовка	1730-	нармонка
1625-	многолистовка	1678-	муренка	1731-	наружка
1626-	многорычажка	1679-	Мурзинка	1732-	населенка
1627-	многоходовочка	1680-	Муромка	1733-	насечка
1628-	многоэтажка	1681-	мурочка	1734-	настенька
1629-	мобилка	1682-	муска	1735-	настенка
1630-	мобилочка	1683-	мусячка	1736-	настёнка
1631-	моевка	1684-	мусорка	1737-	настолка
1632-	моисеевка	1685-	мусоровозка	1738-	настройка
1633-	мойсейка	1686-	Муська	1739-	наталка

1740-	наталька	1793-	Николашка	1846-	обналичка
1741-	наталочка	1794-	Николка	1847-	обнимка
1742-	натуралка	1795-	никотинка	1848-	обноска
1743-	наумка	1796-	Нинка	1849-	оборонка
1744-	Наумовка	1797-	нинелька	1850-	оборотка
1745-	Нахабинка	1798-	нитроаммофоска	1851-	обоюдка
1746-	нахлестка	1799-	нитчатка	1852-	образка
1747-	началка	1800-	ничейка	1853-	обратка
1748-	начатка	1801-	нишка	1854-	обрешотка
1749-	начитка	1802-	нобелевка	1855-	обручалка
1750-	нашистка	1803-	новгородка	1856-	обставновка
1751-	неаполитанка	1804-	новиковка	1857-	обуховка
1752-	небоська	1805-	новиночка	1858-	обхлестка
1753-	Невка	1806-	новоалександровка	1859-	общинка
1754-	невесточка	1807-	новозеландка	1860-	объективка
1755-	невинка	1808-	новоконстантиновка	1861-	овинка
1756-	невротичка	1809-	новокузнецка	1862-	овиновка
1757-	Неглинка	1810-	новопавловка	1863-	овочка
1758-	негретоска	1811-	новоселовка	1864-	овсяночка
1759-	недвижка	1812-	новосимбирка	1865-	огаревка
1760-	недопоставка	1813-	новосибирка	1866-	огарёвка
1761-	недоработочка	1814-	новоукраинка	1867-	огнёвка
1762-	недоспелка	1815-	новка	1868-	оговорочка
1763-	нееврейка	1816-	ноготочка	1869-	оголовка
1764-	нежка	1817-	ноготка	1870-	огрузка
1765-	незавершенка	1818-	номерка	1871-	Одарка
1766-	нейтралка	1819-	номинантка	1872-	оддержка
1767-	некрасовка	1820-	норильчанка	1873-	оделка
1768-	нелегалка	1821-	нормативка	1874-	одесситка
1769-	нелинька	1822-	норовка	1875-	одеялка
1770-	немчиновка	1823-	носочка	1876-	одиннадцатилетка
1771-	ненька	1824-	нудистка	1877-	однозубка
1772-	неонка	1825-	нулевка	1878-	однократка
1773-	неотложка	1826-	нутка	1879-	одноуска
1774-	непонятка	1827-	нычка	1880-	озвучка
1775-	непутёвка	1828-	нырка	1881-	озерка
1776-	Нестеровка	1829-	нырялка	1882-	озонка
1777-	нестыковочка	1830-	њьюмарка	1883-	ойланка
1778-	нетканка	1831-	Нявка	1884-	оккультистка
1779-	нетленка	1832-	нямка	1885-	окопка
1780-	неточка	1833-	няшка	1886-	окрошечка
1781-	нетребка	1834-	няшечка	1887-	оксанка
1782-	неурожайка	1835-	обамка	1888-	Окуловка
1783-	неустановка	1836-	обваловка	1889-	Окуневка
1784-	неформалка	1837-	обзорка	1890-	окунька
1785-	нефтепереработка	1838-	обивочка	1891-	окупка
1786-	нефтеразведка	1839-	обложечка	1892-	Оленевка
1787-	нечаевка	1840-	обломовка	1893-	оленушка
1788-	нижегородка	1841-	обмеловка	1894-	Олењка
1789-	ижка	1842-	обменка	1895-	оленка
1790-	Никитка	1843-	обметка	1896-	олеська
1791-	Никитинка	1844-	обнаженка	1897-	олимпийка
1792-	никифоровка	1845-	обнажёнка	1898-	олинька

1899-	Олинка	1952-	отслежка	2005-	парилочка
1900-	Олечка	1953-	отслушка	2006-	паркетка
1901-	ольгинка	1954-	отстрочка	2007-	парковка
1902-	Ольховка	1955-	отступка	2008-	парковочка
1903-	омичка	1956-	отстыковка	2009-	парничка
1904-	Омулёвка	1957-	отсушка	2010-	партнерка
1905-	оношка	1958-	оттолчка	2011-	партнёрка
1906-	онуфриевка	1959-	оттяжечка	2012-	паска
1907-	операционка	1960-	отфильтровка	2013-	паська
1908-	опечаточка	1961-	отцентровка	2014-	пасмурка
1909-	Опочка	1962-	отчистка	2015-	пассивка
1910-	опуска	1963-	отчитка	2016-	пасхалка
1911-	ордынка	1964-	отштамповка	2017-	патракеевка
1912-	орлинка	1965-	официалка	2018-	патрицианка
1913-	Орловка	1966-	охлажденка	2019-	Пахотка
1914-	орловка	1967-	оценка	2020-	пацанка
1915-	оружейка	1968-	оценочка	2021-	Пашка
1916-	орфограммка	1969-	оцилиндровка	2022-	пегаска
1917-	орхидейка	1970-	оцифровка	2023-	педалька
1918-	Оршанка	1971-	оченка	2024-	педерастка
1919-	осаночка	1972-	очепка	2025-	пекка
1920-	осенка	1973-	очиска	2026-	пекинка
1921-	осетрёнка	1974-	ошибка	2027-	пеленочка
1922-	Осиновка	1975-	ошиповка	2028-	пенёчка
1923-	Осиповка	1976-	проститутка	2029-	Пензячка
1924-	ослабка	1977-	павка	2030-	пенсионка
1925-	особинка	1978-	Павелка	2031-	пенсионерочка
1926-	осокоровка	1979-	павлинка	2032-	пепка
1927-	оставка	1980-	Павловка	2033-	первичка
1928-	острожка	1981-	павлоградка	2034-	первомайка
1929-	остроженка	1982-	Павлушка	2035-	первородка
1930-	остроушка	1983-	падка	2036-	перебалансировка
1931-	осьминожка	1984-	пакка	2037-	перевербовка
1932-	осяка	1985-	палаточка	2038-	переверстка
1933-	отверточка	1986-	палашка	2039-	перегазовка
1934-	ответка	1987-	паленка	2040-	переговорка
1935-	отворотка	1988-	Палешка	2041-	перегруппировка
1936-	отдувка	1989-	палинка	2042-	перезагрузка
1937-	отдушка	1990-	палька	2043-	перезаправка
1938-	отеска	1991-	пальцовка	2044-	переклиника
1939-	отключка	1992-	панелька	2045-	перекодировка
1940-	открутка	1993-	панковка	2046-	перекраска
1941-	отлежка	1994-	панкратовка	2047-	перекредитовка
1942-	отмазка	1995-	панкушка	2048-	перелётовка
1943-	отмазочка	1996-	пановка	2049-	перелиновка
1944-	отметочка	1997-	пантелеймоновка	2050-	перелиновка
1945-	отморозка	1998-	пантелеюшка	2051-	перемаркировка
1946-	отмостка	1999-	пантюшка	2052-	перемешка
1947-	отпарвка	2000-	панька	2053-	перенавеска
1948-	отрисовка	2001-	панюшка	2054-	перенагрузка
1949-	отрубка	2002-	паперка	2055-	перенастройка
1950-	отрывка	2003-	парадизка	2056-	переобувка
1951-	отсепаровка	2004-	парижанка	2057-	переозвучка

2058-	перепаковка	2111-	пластмасска	2164-	поклевка
2059-	перепевка	2112-	платёжка	2165-	поклёвка
2060-	перепелочка	2113-	платежка	2166-	поклевочка
2061-	переполировка	2114-	платоновка	2167-	поклейка
2062-	перепроверка	2115-	плащевка	2168-	покровка
2063-	перепрошивка	2116-	плащёвка	2169-	полежаевка
2064-	перепутка	2117-	племяшка	2170-	поленька
2065-	пересменка	2118-	пленка	2171-	ползунка
2066-	пересборка	2119-	плёнка	2172-	поливалка
2067-	переставка	2120-	плеточка	2173-	полидевка
2068-	перестыковка	2121-	плетка	2174-	поликушка
2069-	пересылка	2122-	плехановка	2175-	полимерка
2070-	переустановка	2123-	плюска	2176-	полинка
2071-	переформулировка	2124-	плющилка	2177-	политичка
2072-	переходка	2125-	пневмоочистка	2178-	поличка
2073-	перештукатурка	2126-	победка	2179-	полнометражка
2074-	персидка	2127-	побочка	2180-	положка
2075-	персоналка	2128-	поваренка	2181-	полонка
2076-	перспективка	2129-	поваровка	2182-	полоскашка
2077-	перунка	2130-	повеска	2183-	полотнянка
2078-	перфекционистка	2131-	погановка	2184-	полпузырька
2079-	песенька	2132-	поготовка	2185-	полтавка
2080-	пескоструйка	2133-	подарочка	2186-	полтавчанка
2081-	пестровка	2134-	подборочка	2187-	полубочкa
2082-	Петка	2135-	подвертка	2188-	полубусинка
2083-	петелинка	2136-	подгородка	2189-	полудневка
2084-	петриковка	2137-	поденка	2190-	полуколонка
2085-	петроградка	2138-	подзарядка	2191-	полукультурка
2086-	петрозаводчанка	2139-	подзарядка	2192-	полуночка
2087-	петропавловка	2140-	подкладочка	2193-	полуостровка
2088-	петуховка	2141-	подключка	2194-	полурамка
2089-	Петька	2142-	подложка	2195-	полуфиналистка
2090-	печалька	2143-	подозерка	2196-	полушутка
2091-	пиалка	2144-	подпевка	2197-	поляковка
2092-	пижамка	2145-	подпечка	2198-	помоечка
2093-	Пижанка	2146-	подпитка	2199-	понька
2094-	пиктограммка	2147-	подплясочка	2200-	понизовка
2095-	пилька	2148-	подпрессовка	2201-	пономаревка
2096-	пиратка	2149-	подрешетка	2202-	пономарёвка
2097-	Пироговка	2150-	подсветочка	2203-	пономарка
2098-	пироженка	2151-	подсказочка	2204-	поняшка
2099-	писька	2152-	подслушка	2205-	попельушка
2100-	писалка	2153-	подсборка	2206-	поперечка
2101-	писаревка	2154-	подстраховка	2207-	поплавочка
2102-	писечка	2155-	подтанцовка	2208-	попутка
2103-	пискаревка	2156-	поездочка	2209-	порнушка
2104-	пискулька	2157-	пожарка	2210-	порожка
2105-	питерка	2158-	поздка	2211-	поролонка
2106-	Пихтовка	2159-	познайка	2212-	порошенка
2107-	плайка	2160-	покка	2213-	портативка
2108-	планетка	2161-	покатиловка	2214-	порушка
2109-	планетарка	2162-	покеристка	2215-	порфишка
2110-	пластмаска	2163-	покладка	2216-	поршенька

2217-	поска	2270-	продлёнка	2323-	работяжка
2218-	поселочка	2271-	прозвонка	2324-	рабочка
2219-	послушничка	2272-	пролежка	2325-	рабоработка
2220-	постоянка	2273-	проливка	2326-	равномерка
2221-	посудка	2274-	проложка	2327-	радка
2222-	потничка	2275-	промысловка	2328-	радиалка
2223-	потогонка	2276-	пропечатка	2329-	радиобашка
2224-	потрошка	2277-	прориска	2330-	радиогорка
2225-	потяжка	2278-	прослушка	2331-	Раевка
2226-	пофигистка	2279-	проставка	2332-	Раечка
2227-	почемучка	2280-	простановка	2333-	разбалансировка
2228-	почеревка	2281-	простилка	2334-	разбаловка
2229-	почивка	2282-	прострожка	2335-	разблакировка
2230-	почитайка	2283-	простройка	2336-	разблокировка
2231-	почтальонка	2284-	просыпка	2337-	разбортовка
2232-	почтарка	2285-	просянка	2338-	развалочка
2233-	пояска	2286-	протасовка	2339-	развлекаловка
2234-	правда-матка	2287-	протеска	2340-	разводиловка
2235-	правилка	2288-	противотуманка	2341-	Разгуляевка
2236-	пражечка	2289-	противоугонка	2342-	раздатка
2237-	праздничка	2290-	протопоповка	2343-	раздачка
2238-	предметка	2291-	проторговка	2344-	разетка
2239-	предсезонка	2292-	прохоровка	2345-	разлочка
2240-	предустановка	2293-	процедурка	2346-	разменка
2241-	премка	2294-	проческа	2347-	разморозка
2242-	преображенка	2295-	пруженка	2348-	разнесёнка
2243-	привалка	2296-	псинка	2349-	разработка
2244-	привычка	2297-	псковитянка	2350-	разрегулировка
2245-	пригрузка	2298-	псковичка	2351-	разувайка
2246-	призёрка	2299-	публичка	2352-	разуклонка
2247-	приколистка	2300-	пугалка	2353-	разукрашка
2248-	прикрутка	2301-	пуделька	2354-	разумовка
2249-	примолвка	2302-	пулка	2355-	Райка
2250-	приморка	2303-	пуленка	2356-	районка
2251-	принцевка	2304-	пунка	2357-	Раиска
2252-	принцесска	2305-	пуночка	2358-	ракча
2253-	припуска	2306-	пуська	2359-	ракка
2254-	пристежка	2307-	пустобайка	2360-	Ракитинка
2255-	пристыковка	2308-	путанка	2361-	Раковка
2256-	притенка	2309-	путиловка	2362-	Раменка
2257-	прихожка	2310-	пучковка	2363-	рамэнка
2258-	пришлифовка	2311-	пушишка	2364-	ранеточка
2259-	прищепочка	2312-	Пушкинка	2365-	ранжировка
2260-	проблемка	2313-	пуэрториканка	2366-	рапиристка
2261-	роверочка	2314-	пшеника	2367-	расистка
2262-	провинциалочка	2315-	пшонка	2368-	раскадровка
2263-	проговорка	2316-	пятачка	2369-	раскладушечка
2264-	програмка	2317-	пятидверка	2370-	раскодировка
2265-	программистка	2318-	пятидесятка	2371-	раскоксовка
2266-	прогрузка	2319-	пятисотметровка	2372-	раскряжевка
2267-	продажка	2320-	пятиэтажка	2373-	распашенка
2268-	продержка	2321-	пятновыводка	2374-	распевка
2269-	продленка	2322-	рабка	2375-	распечатка

2376-	распломбировка	2428-	рикка	2481-	рыбка
2377-	распрыжка	2429-	римка	2482-	рыбалочка
2378-	распушка	2430-	риночка	2483-	рыжинка
2379-	рассеянка	2431-	рисовалка	2484-	рыковка
2380-	рассказка	2432-	ритка	2485-	рыська
2381-	рассказовка	2433-	рифленка	2486-	рычажка
2382-	расскладка	2434-	рицка	2487-	рычка
2383-	рассорка	2435-	роборыбка	2488-	рюкзачка
2384-	расстаможка	2436-	роверка	2489-	рябка
2385-	расстекловка	2437-	ровка	2490-	рябушка
2386-	расстыковка	2438-	рогачевка	2491-	рядка
2387-	расшифровка	2439-	рогачёвка	2492-	рядовка
2388-	растаможка	2440-	роговка	2493-	Рязанка
2389-	растерзайка	2441-	рогожка	2494-	рязаночка
2390-	растушовка	2442-	рогулка	2495-	рязановка
2391-	растяжечка	2443-	Рожайка	2496-	Саблинка
2392-	расформовка	2444-	Рождественка	2497-	саблистка
2393-	расходка	2445-	Розка	2498-	сабуровка
2394-	расцементировка	2446-	розеточка	2499-	савка
2395-	расчетка	2447-	рокка	2500-	савельевка
2396-	расчлененка	2448-	ролевка	2501-	садовка
2397-	расшивровка	2449-	ролёвка	2502-	сазанка
2398-	расшифровка	2450-	ромка	2503-	саксофонистка
2399-	рахмановка	2451-	ромочка	2504-	салаирка
2400-	рашка	2452-	роска	2505-	Саламанка
2401-	ребалансировка	2453-	рословка	2506-	саламатовка
2402-	ребровка	2454-	россияночка	2507-	салгирка
2403-	ребячка	2455-	Россошка	2508-	саловка
2404-	ревучка	2456-	ростка	2509-	саломатка
2405-	регинка	2457-	ростовка	2510-	салтановка
2406-	регионалка	2458-	ростовчанка	2511-	салтыковка
2407-	регулеровка	2459-	Роська	2512-	самарка
2408-	регулярка	2460-	ротоглотка	2513-	самарянка
2409-	регуляторка	2461-	Рощинка	2514-	саметка
2410-	рекламка	2462-	рубцовка	2515-	самоволка
2411-	ремарочка	2463-	рудка	2516-	самодуровка
2412-	репейничка	2464-	Рудневка	2517-	самозарядка
2413-	Репинка	2465-	рудницка	2518-	самойловка
2414-	репортажка	2466-	Рудовка	2519-	самокалибровка
2415-	репьевка	2467-	рузка	2520-	самокопирка
2416-	репьёвка	2468-	рузанка	2521-	самонастройка
2417-	респондентка	2469-	рукоделка	2522-	саморазрядка
2418-	рефка	2470-	руконожка	2523-	саморегулировка
2419-	рефералка	2471-	рулежка	2524-	Самородинка
2420-	рефератгруппиров ка	2472-	рулонка	2525-	самосборка
		2473-	рулька	2526-	самофаловка
2421-	рефератоценка	2474-	рунетка	2527-	самоценка
2422-	речевка	2475-	русановка	2528-	самсоновка
2423-	речовка	2476-	русиновка	2529-	Санька
2424-	решеточка	2477-	русистка	2530-	санка
2425-	Ржавка	2478-	русичка	2531-	санитарочка
2426-	Ржевка	2479-	руска	2532-	саночки
2427-	ривочка	2480-	ручечка	2533-	сапка

2534-	сарапулка	2587-	сердючка	2640-	смикка
2535-	сарафанка	2588-	сероглазка	2641-	Смоленка
2536-	сарафановка	2589-	серпуховка	2642-	Смолинка
2537-	Сатка	2590-	серфингистка	2643-	смолька
2538-	сатанистка	2591-	Сетунька	2644-	смышляевка
2539-	сафоновка	2592-	Сеченка	2645-	снайперка
2540-	сахалинка	2593-	сигналка	2646-	Снегиревка
2541-	саханка	2594-	сидоровка	2647-	Снегирёвка
2542-	сахарка	2595-	сикка	2648-	снеговичка
2543-	сахаровка	2596-	силинка	2649-	снежка
2544-	сахновка	2597-	симочка	2650-	снобка
2545-	Сашка	2598-	симоновка	2651-	сносочка
2546-	свеколка	2599-	симпатяжка	2652-	сноубордистка
2547-	свердловка	2600-	синарка	2653-	Соболевка
2548-	светка	2601-	синдошка	2654-	содержанка
2549-	светочка	2602-	синеглазка	2655-	сокка
2550-	светланка	2603-	синехвостка	2656-	сокирка
2551-	свиданка	2604-	синка	2657-	Соколка
2552-	свирилька	2605-	синикка	2658-	соколинка
2553-	свистушка	2606-	синхронистка	2659-	Соколовка
2554-	свитерочка	2607-	синоюшка	2660-	солистка
2555-	свищевка	2608-	синявка	2661-	соловцовка
2556-	своротка	2609-	сиска	2662-	Соловьевка
2557-	сгустка	2610-	Ситка	2663-	сологубовка
2558-	сделка	2611-	Ситовка	2664-	солька
2559-	севка	2612-	сказка	2665-	соляночка
2560-	северка	2613-	скалолазка	2666-	Соминка
2561-	севериновка	2614-	скелетонистка	2667-	сомооценка
2562-	северяночка	2615-	складовка	2668-	Сонка
2563-	Седанка	2616-	Скнижка	2669-	сонастройка
2564-	седелка	2617-	скобянка	2670-	сонька
2565-	сезонка	2618-	скоренка	2671-	сорокапятка
2566-	сейка	2619-	скорпионка	2672-	Сосновка
2567-	сейсморазведка	2620-	скребка	2673-	сосновоборка
2568-	секретарка	2621-	скрепочка	2674-	состыковка
2569-	секционка	2622-	скромняжка	2675-	софийка
2570-	селеовка	2623-	скугареевка	2676-	софтингка
2571-	селезневка	2624-	скульптурка	2677-	софьянка
2572-	селенка	2625-	слабачка	2678-	социалка
2573-	селиверстка	2626-	слаботочка	2679-	сочинка
2574-	семка	2627-	славенка	2680-	сочка
2575-	Семеновка	2628-	славочka	2681-	спарка
2576-	Семёновка	2629-	славяночка	2682-	Спасовка
2577-	семерочка	2630-	славяновка	2683-	спирька
2578-	семиборка	2631-	следка	2684-	спиридоновка
2579-	семидневка	2632-	слесарка	2685-	сработка
2580-	семочки	2633-	слоновка	2686-	сретенка
2581-	сенаторка	2634-	служебка	2687-	срочка
2582-	сенечка	2635-	Слюдянка	2688-	ссылочка
2583-	Сенька	2636-	смеловка	2689-	стрелка
2584-	серверовка	2637-	сменка	2690-	ставочka
2585-	Сергеевка	2638-	смесовка	2691-	стажерка
2586-	Сергиевка	2639-	смеховка	2692-	стажерочка

2693-	сталинка	2746-	суперфишка	2799-	текстилька
2694-	сталинистка	2747-	сурка	2800-	текстовочка
2695-	становка	2748-	сухановка	2801-	текстурка
2696-	старикашечка	2749-	сухаревка	2802-	тележурналистка
2697-	старлетка	2750-	Суховка	2803-	телекартинка
2698-	стаська	2751-	суховоздушка	2804-	телешка
2699-	статуетка	2752-	сушинка	2805-	телешовка
2700-	статуэточка	2753-	счастливка	2806-	телочка
2701-	стаховка	2754-	Сызранка	2807-	тематичка
2702-	стебелечка	2755-	сыктывкарка	2808-	температурка
2703-	стеганка	2756-	сыночка	2809-	тенисистка
2704-	стежочка	2757-	сырка	2810-	тенька
2705-	стелка	2758-	сыроватка	2811-	тенка
2706-	стенька	2759-	сыроедка	2812-	Тепловка
2707-	степка	2760-	сысоевка	2813-	Терентьевка
2708-	степанька	2761-	Сытинка	2814-	тереховка
2709-	степанка	2762-	Сычевка	2815-	Терешка
2710-	Степановка	2763-	сявка	2816-	терешечка
2711-	степендиатка	2764-	таблеточка	2817-	термичка
2712-	степочка	2765-	тайка	2818-	термопленка
2713-	стерженька	2766-	таечка	2819-	термоплёнка
2714-	стикеровка	2767-	таитянка	2820-	термоформовка
2715-	стиралка	2768-	таксидермистка	2821-	терочка
2716-	стодневка	2769-	таксистка	2822-	теска
2717-	столбовка	2770-	таламанка	2823-	тесемочка
2718-	столечка	2771-	Таловка	2824-	тетька
2719-	стонка	2772-	тамарка	2825-	тефтелька
2720-	сторожевка	2773-	тамбовка	2826-	техногенка
2721-	стотинка	2774-	тамбовчанка	2827-	техноложка
2722-	страховочка	2775-	танка	2828-	тиарка
2723-	страшилка	2776-	танеевка	2829-	тизерка
2724-	стрелинка	2777-	танечка	2830-	тикка
2725-	стрелковка	2778-	Танечка	2831-	тимка
2726-	стрелька	2779-	Танька	2832-	Тимирязевка
2727-	стриптизерка	2780-	Таракановка	2833-	тимурка
2728-	Строгановка	2781-	тарановка	2834-	тинка
2729-	Студенка	2782-	тараска	2835-	тинька
2730-	студеновка	2783-	тарасовка	2836-	тихоновка
2731-	студенточка	2784-	тарашка	2837-	тихододка
2732-	стучка	2785-	тарзанка	2838-	Тишинка
2733-	стыковка	2786-	тартаletточка	2839-	Тишкя
2734-	субботка	2787-	тартаletка	2840-	тканька
2735-	сувенирка	2788-	тарховка	2841-	тоболячка
2736-	суворовка	2789-	таська	2842-	товка
2737-	суглинка	2790-	тасемка	2843-	тодорка
2738-	судка	2791-	татарочка	2844-	токка
2739-	судачка	2792-	татошка	2845-	токарка
2740-	сuerка	2793-	татушка	2846-	Толковка
2741-	сузка	2794-	таунка	2847-	толька
2742-	сукка	2795-	тауска	2848-	Томка
2743-	султановка	2796-	тахарка	2849-	томаровка
2744-	супергеройка	2797-	тверитянка	2850-	томичка
2745-	суперсемейка	2798-	текилка	2851-	тоналка

2852-	тонировочка	2905-	туссовочка	2958-	установка
2853-	Тонька	2906-	туукка	2959-	установка
2854-	топорка	2907-	тушка	2960-	устиновка
2855-	топтыжка	2908-	тханка	2961-	устинька
2856-	торбеевка	2909-	тхэквондистка	2962-	устройка
2857-	торопыжка	2910-	тырковка	2963-	утилитка
2858-	торсионка	2911-	толенька	2964-	уточненка
2859-	тоська	2912-	тюменка	2965-	утряска
2860-	точка	2913-	тючевка	2966-	утушка
2861-	травиночка	2914-	тютька	2967-	утяганка
2862-	традиционка	2915-	тяжка	2968-	уфимка
2863-	транзитка	2916-	тяжелоатлетка	2969-	ухтышка
2864-	транспортировка	2917-	уваровка	2970-	учебка
2865-	траспортировка	2918-	угубка	2971-	учетка
2866-	транссексуалка	2919-	углеродка	2972-	училка
2867-	тренажерка	2920-	угловка	2973-	учителка
2868-	тренировка	2921-	углубленка	2974-	Ушаковка
2869-	тренировочка	2922-	уголовка	2975-	ушаночка
2870-	трепка	2923-	уголька	2976-	ушенка
2871-	Третьяковка	2924-	удаленка	2977-	фабрикантка
2872-	трехглазка	2925-	удалёнка	2978-	Фадеевка
2873-	трехгорка	2926-	ударка	2979-	фазовка
2874-	трёхгорка	2927-	указывка	2980-	файловка
2875-	трехдверка	2928-	украиночка	2981-	фалка
2876-	трёхдверка	2929-	укрывка	2982-	фанатка
2877-	трехдневка	2930-	улановка	2983-	фарка
2878-	трехлинейка	2931-	улиточка	2984-	фармакопейка
2879-	трехминутка	2932-	улучшенка	2985-	фарцовка
2880-	трехполоска	2933-	улыбайка	2986-	фасовка
2881-	трехслойка	2934-	ульянка	2987-	фасолинка
2882-	трехходовка	2935-	Ульяновка	2988-	фасолька
2883-	трехэтажка	2936-	умка	2989-	фасонка
2884-	тридцаточка	2937-	умачка	2990-	фатьянинка
2885-	тринка	2938-	умничка	2991-	фацетировка
2886-	тройничка	2939-	умолка	2992-	Фёдоровка
2887-	троицка	2940-	умочка	2993-	Федоровка
2888-	тролька	2941-	универсалка	2994-	федосеевка
2889-	tronка	2942-	упаковочка	2995-	федосейка
2890-	трофимовка	2943-	упрощёнка	2996-	федюнька
2891-	трошка	2944-	уразовка	2997-	федюшка
2892-	тряянка	2945-	уралка	2998-	фенька
2893-	труповозка	2946-	уранка	2999-	фиговинка
2894-	туапсинка	2947-	урванка	3000-	физрукча
2895-	Тукка	2948-	усановка	3001-	филатовка
2896-	тулка	2949-	усатка	3002-	филимошка
2897-	Тургеневка	2950-	усилка	3003-	филиппка
2898-	туртовка	2951-	условка	3004-	филиппка
2899-	турочка	2952-	Усманка	3005-	филлиповка
2900-	турпоездка	2953-	усовка	3006-	фимка
2901-	Туска	2954-	Усолка	3007-	финиалистка
2902-	туська	2955-	успенка	3008-	финалка
2903-	тусовка	2956-	уссурка	3009-	финнмарка
2904-	тусовочка	2957-	уставка	3010-	фирочка

3011-	фирсановка	3064-	херсоннефтеперера	3116-	чанка
3012-	флешка		ботка	3117-	чатка
3013-	флиска	3065-	хетка	3118-	Чапаевка
3014-	флэшка	3066-	химка	3119-	чаплинка
3015-	фолька	3067-	хитровка	3120-	часовенька
3016-	Фоминка	3068-	хитрюшка	3121-	частка
3017-	фомочка	3069-	хлебовозка	3122-	частотка
3018-	Фонтанка	3070-	хлебопечка	3123-	частушечка
3019-	форелька	3071-	хмелевка	3124-	чатрулетка
3020-	форсировка	3072-	ходка	3125-	чебоксарка
3021-	форумка	3073-	ходовка	3126-	чеботаевка
3022-	форумчанка	3074-	холинка	3127-	чебурашка
3023-	фотка	3075-	холмогоровка	3128-	чебурашка
3024-	фотожурналистка	3076-	холмогорка	3129-	чайка
3025-	фотокабинка	3077-	холодилка	3130-	челябинка
3026-	фоторамка	3078-	хомка	3131-	Чемодановка
3027-	фототочка	3079-	хомуистка	3132-	чепецка
3028-	фраерка	3080-	Хомутовка	3133-	Червенка
3029-	фразировка	3081-	хомячка	3134-	черемушка
3030-	фрезировка	3082-	хонка	3135-	Черемшанка
3031-	франковка	3083-	хонинговка	3136-	черепичка
3032-	франтишка	3084-	хопка	3137-	череповецка
3033-	фристайлистка	3085-	хорошистка	3138-	черкасса
3034-	фронталка	3086-	хорька	3139-	Черкасовка
3035-	фроська	3087-	Хохловка	3140-	черкеска
3036-	фурмановка	3088-	хохлушка	3141-	чернавка
3037-	фупторка	3089-	хромка	3142-	черниковка
3038-	фырочка	3090-	хрушевка	3143-	Черновка
3039-	хабалка	3091-	хрушовка	3144-	черноморка
3040-	хабаровка	3092-	хрящевка	3145-	черноплодка
3041-	хабаровчанка	3093-	художникка	3146-	чернохвостка
3042-	хавка	3094-	хусточка	3147-	чернышевка
3043-	хазарка	3095-	хэнка	3148-	чернявка
3044-	хайрюзовка	3096-	царька	3149-	Чернянка
3045-	хакка	3097-	целочка	3150-	Чертановка
3046-	халка	3098-	целка	3151-	ческа
3047-	халинка	3099-	ценка	3152-	чесночка
3048-	ханка	3100-	цешка	3153-	Чесноковка
3049-	хапка	3101-	цецка	3154-	четка
3050-	харька	3102-	цибулка	3155-	четвертинка
3051-	характеристка	3103-	циганка	3156-	четырехстенка
3052-	харинка	3104-	цикадка	3157-	Чеховка
3053-	Харловка	3105-	цилиндровка	3158-	чимпионка
3054-	Харьковка	3106-	цифорка	3159-	чишовка
3055-	харьковчанка	3107-	Цицка	3160-	читска
3056-	хаска	3108-	цыгановка	3161-	читалочка
3057-	хвастушка	3109-	цыпка	3162-	читинка
3058-	хваталка	3110-	чаадаевка	3163-	чихуашка
3059-	хватовка	3111-	чаганка	3164-	чокка
3060-	хворостянка	3112-	чаечка	3165-	чрезвычайка
3061-	хвощёвка	3113-	чайничка	3166-	чубайка
3062-	хеленка	3114-	чакка	3167-	чувачка
3063-	хёрка	3115-	чалдонка	3168-	чудинка

3169-	чужестранка	3216-	шоколадочка	3263-	эпоксидка
3170-	чукка	3217-	шонька	3264-	эрitemка
3171-	чукотка	3218-	шонка	3265-	эсэмэска
3172-	чуларка	3219-	Шостка	3266-	этажка
3173-	чумка	3220-	шошка	3267-	эшафотка
3174-	чуприяновка	3221-	шпажистка	3268-	ювелирка
3175-	Чуровка	3222-	шпаргалочка	3269-	ювеналка
3176-	чутка	3223-	шпенька	3270-	юдановка
3177-	Чухлинка	3224-	шпонька	3271-	юдинка
3178-	Шайтанка	3225-	шпорка	3272-	южка
3179-	шакка	3226-	штабка	3273-	юленька
3180-	шалавка	3227-	штарка	3274-	юлька
3181-	шампунька	3228-	штыречка	3275-	юматовка
3182-	шанинка	3229-	Шубинка	3276-	юморка
3183-	шаповаловка	3230-	шуваловка	3277-	юниорка
3184-	шапорка	3231-	Шуйка	3278-	юристка
3185-	шарка	3232-	шульгинка	3279-	юрковка
3186-	шарапка	3233-	шумка	3280-	Юрманка
3187-	Шараповка	3234-	шунька	3281-	Юровка
3188-	шарашка	3235-	шурка	3282-	юромка
3189-	шатка	3236-	щекатурка	3283-	Юрьевка
3190-	шаталовка	3237-	щелканка	3284-	юська
3191-	шахидка	3238-	щелочка	3285-	яблонка
3192-	шашлычка	3239-	щемиловка	3286-	ягодинка
3193-	шевеленка	3240-	щеночка	3287-	ягодичка
3194-	шепталка	3241-	щербаковка	3288-	Язвенка
3195-	шереметьевка	3242-	щеточка	3289-	язычка
3196-	шестка	3243-	щитовидка	3290-	якиманка
3197-	шестаковка	3244-	щукинка	3291-	якимушка
3198-	шестерочка	3245-	эдичка	3292-	Яковка
3199-	шестилетка	3246-	экранка	3293-	Яковлевка
3200-	шестисотка	3247-	эксгибиционистка	3294-	якутянка
3201-	шестнадцатиэтажка	3248-	экскурсионка	3295-	ялтинка
3202-	Шилка	3249-	экстремалка	3296-	янка
3203-	Шиловка	3250-	экстремалка	3297-	Яновка
3204-	шинка	3251-	электродуховка	3298-	янтарка
3205-	шиномонтажка	3252-	электромашинка	3299-	японочка
3206-	Шипка	3253-	электронка	3300-	яринка
3207-	ширка	3254-	электропечка	3301-	ярополка
3208-	широколобка	3255-	электрощитка	3302-	ярославка
3209-	шишковка	3256-	элинка	3303-	ясногорка
3210-	шишовка	3257-	элитка	3304-	ястребовка
3211-	Шлинка	3258-	эллиночка	3305-	яхтсменка
3212-	шлифмашинка	3259-	элька	3306-	ячеечка
3213-	Шмаковка	3260-	эмка	3307-	Яченка
3214-	шмотка	3261-	эмблемка	3308-	ячка
3215-	шнырька	3262-	эпидуралка	3309-	яшка