Prototype Theory and Translation Equivalent Selection: The Case of Motion Verbs

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Abstract: The paper aims to investigate whether prototypicality effects (e.g., Rosch 1973a, b; Lakoff 1987) correlate with selecting Serbian translation equivalents of English motion verbs in cases in which we have no context determined (one-word translation). By applying three empirical stages, we have generated a potential prototypicality list for English motion verbs. We have then tested 60 translators in another procedure, so as to check whether there were statistically valid links between a verb's typicality and the choice of a translation equivalent. The results indicate that a higher degree of prototypicality positively correlates with a more consistent choice of a translation equivalent. At the same time, there is a negative correlation between the determined prototypicality and the diversity of translation equivalents offered for the verb in question. These results may reveal certain psychological aspects of translation, while simultaneously corroborating the tenets of prototype theory.

Key words: prototypicality, one-word translation, equivalence, motion, verb.

1. Introduction

The main aim of this study is to investigate whether there are links between verbs' prototypicality and the choice of appropriate translation equivalents. The study will employ motion verbs, the group of verbs highly relevant to our everyday experience, and it will focus on one-word translation. The theoretical framework of the study is composed of (1) the basic tenets of prototype theory, (2) the existing application of the theory to the study of verbs, (3) the aspects of translation equivalence and formal correspondence, and (4) the classification of motion verbs. We have performed four empirical procedures described in the main section of the study – the first three of them were dedicated to evaluating the levels of typicality of English motion verbs, whereas the last one dealt with translating English motion verbs into Serbian. The results were used to show that there indeed are statistically significant relations between a verb's prototypicality and the choice of its translation equivalents.

2. Theoretical Framework

2.1 Prototype Theory of Categorization

Prototype theory of categorization developed in cognitive psychology in the 1970s and states that categorization is graded – some members of a category are more central than others. It stands in contrast to classical categorization or Aristotelian logic, which relies on necessary and sufficient features in categorization. This implies that all categories have clear boundaries, and that all members of a category have the same features or groups of features, and consequently the same status within a category.

The major twentieth century precursor of prototype theory was the philosopher Ludwig Wittgenstein (1953: 31–33) and his notion of 'family resemblances' on which he relied when defining the term *game*. He claimed that the boundaries of this category are fuzzy, and that the category is not based on shared necessary and sufficient features or conditions as there are no attributes common to all the games. Alternatively, the notion of 'family resemblances' can be defined as follows:

> A set of items of the form AB, BC, CD, DE. That is, each item has at least one, and probably several, elements in common with one or more other items, but no, or few elements are common to all items (Rosch and Mervis 1975: 575).

From the early 1960s to the early 1980s, these insights about the asymmetrical structure of categories influenced the way both linguistic categories (*noun*, *verb*, etc.) and extralinguistic ones (*cup*, *color*, etc.) came to be viewed. In the given period, the new approach to the former category type can be seen in Dwight Bolinger's view of gradation in linguistic categories, George Lakoff's view that category membership is a matter of degree, John Robert Ross's standpoint that that some nouns are 'nounier' than others, as well as, for example, in the works by David Crystal, Jiří Neustupný, Paul Hopper, and Sandra Thompson. In the same period, those insights were also corroborated through experiments related to extralinguistic categories performed by William Labov, Willett Kempton, Roger Brown, Brent Berlin, Paul Kay, and Eleanor Rosch, among others.

In a series of papers from the 1970s, summarized in Rosch 1978, this author (and associates) demonstrated that the categories designated by words such as *color*, *fruit*, *furniture*, and others, may indeed be understood in terms of 'good examples' or 'prototypes'. Thereby, entities are assimilated to the category on the basis of their similarity to the prototype, rather than through their sharing of a set of common, defining features. This led to the conclusion that categories have 'a prototypical centre and the periphery', i.e., that some members of a category are more privileged than others. For example, Rosch asked her respondents to rate, on a scale of 1 to 7, whether they regarded a number of items as good examples of the category *furniture*. These ranged from *chair* and *sofa*, ranked number 1, to a *love seat* (number 10), to a *lamp* (number 31), all the way to a *telephone*, ranked number 60 (Rosch 1975a). While the membership of a particular item in a category, and its ranking in a category, may differ culturally, such a graded categorization is taken to be present in all or nearly all cultures (Rosch 1973a). This author also proposed *the principle of cognitive economy* and *the principle of the perceived world structure*, as two basic principles of creating categories at the cognitive level, and tried to define exactly what prototypes are and what they are not (Rosch 1978).

Such ideas have since been given much attention and have contributed much to the development of cognitive linguistics (in which the use of the concept of prototypes differs from that in the field of cognitive psychology that Rosch comes from – for details see Malt 1996). In the field of cognitive linguistics, the authors such as George Lakoff, Ronald Langacker, John Taylor, and Dirk Geeraerts, among others, dealt with the following issues related to prototype theory: (1) its application to various linguistic categories (phonemes, syllables, word classes,

syntactic constructions, etc.), (2) explaining why certain members of a category should have privileged status, (3) distinguishing goodness-of-example ratings from the fuzziness of category boundaries, (4) explaining the differences in the application of the concept of prototype to folk as opposed to expert categories, (5) the development of the network model of categorization, which includes the prototype model of categorization, (6) the development of the notion of the continuum of symbolic structures (morpho-syntactic and semantic ones) and the refusal to make sharp distinctions between synchrony and diachrony, derivational and inflectional morphology, semantics and pragmatics, and other dichotomies commonly used in linguistics, (7) explaining how prototype theory and the change of the very concept of a category has also changed the concept of what the human mind and human reason are like (i.e., those came to be no longer viewed as disembodied but as dependent on the sensorimotor system and emotions, Lakoff 1987), (8) developing the concept of *Idealized Cognitive Models*, which represent stable and complex gestalt structures that are essential in the process of conceptualization and which are at the root of the appearance of prototype effects themselves (Lakoff 1987), (9) explaining the relation of prototype effects to polysemy, metonymy and metaphor (Lakoff 1987; Taylor 1989), (10) introducing the notions of membership and centrality gradience (Lakoff 1987), (11) explaining the fact that prototypicality itself is a prototype category, and similar related issues. This last point was further developed by Barbara Lewandowska-Tomaszczyk, who claimed that the concept of prototypicality "is itself a prototypically clustered one in which the concepts of nondiscreteness and nonequality [...] play a major distinctive role", where nondiscreteness involves the demarcation problems and the flexible applicability of categories, while nonequality refers to the fact that categories are internally structured (Lewandowska-Tomaszczyk 2007: 150–151).

Eventually, prototype theory, and the related notions of fuzziness and the like, have also received criticism from various authors, notably Martin Joos, Denis Bouchard, Frederick Newmeyer, and Anna Wierzbicka. For example, contrary to Wittgenstein, Wierzbicka (1990) states that it is indeed possible to establish the necessary and sufficient features when defining the category of *games*.

2.2 Verbs and Prototypicality

In *Word Meaning and Belief*, S.G. Pulman (1983: 107–136) performed a thorough analysis so as to show that there are aspects of verb meaning that can be studied by means of prototype theory. He found graded membership and prototypicality effects in the categories represented by the verbs *kill, speak, look, walk, deceive, rub, hold,* and *burn*. Pulman wanted to check whether prototypicality effects can be obtained for verbs, and in order to do so he tried to replicate one of Rosch's original experiments − Pulman's subjects were asked to decide which members of a given category were more representative of the category in question, using a 7-point scale (the lower the figure, the more prototypical the verb). He selected eight hyponymy sets: *kill, speak, look, walk, deceive, rub, hold,* and *burn* and, for each of them, he selected a range of six hyponyms to cover the largest part of the generic verbs' meanings. The results that emerged from this experiment are presented in table 1.

Table 1. An excerpt from the results of Pulman's (1983: 113) prototypicality test.

	1	2	3	4	5	6
look	*survey*	*stare*	*glance*	*scan*	*peer*	*squint*
	2.05	2.80	2.87	3.25	3.91	6.05
kill	*murder*	*assassinate*	*execute*	*massacre*	*sacrifice*	*commit suicide*
	1.10	2.05	2.82	3.28	5.22	5.33
speak	*recite*	*mumble*	*shout*	*whisper*	*drone*	*stutter*
	2.57	3.46	3.51	3.64	3.98	5.35
walk	*stride*	*pace*	*saunter*	*march*	*stumble*	*limp*
	1.86	2.05	2.41	3.01	5.31	5.37

Besides this, Pulman attempted to acquire more data related to the prototype effect by performing a test which would give him some sort of a 'family resemblance' measure, so he also edited some of the data to reach better consistency in the analysis, i.e., he deleted a number of attributes which seemed to be unrelated to certain verbs and amended others in order to make them more uniform. On the whole, Pulman concluded that verbs, just like nouns, can be regarded as more or less prominent, prototypical or representative members of their semantic categories and that prototypicality probably derives from semantic closeness between a member and a category. Pulman's experiments, though mainly planned as pilot studies, showed us that there are aspects of verb meaning that can be approached by means of prototype theory. Taylor (1989:

105–109) was the second one to study prototypicality as related to verbs. He investigated the polysemy of the verb *climb* in order to explain the contrast between *the family resemblance approach* and *the core meaning approach*. The main problem of the core meaning approach stems from the fact that it is close to the classical approach to categories, as it implicitly demands that there is a set of necessary and sufficient conditions which govern the existence or stability of a category. Various senses of *climb* prove that there is no possibility to subsume them all under a general core sense. Taylor notes that these "different senses cannot be unified on the basis of a common semantic denominator […] the different meanings are related through 'meaning chains'" (Taylor 1989: 108). In this way any "node in a meaning chain can be the source of any number of meaning extensions" (Taylor 1989: 109). Patrick Hanks (2013: 101–104) has also approached the verb *climb* using a framework related to prototypicality – in his analysis he managed to notice four main patterns: (1) the prototypical use of the verb climb is the one in which the subject is human and the direct object is a thing; (2) the protypical subject is animate, the verb is intransitive, and there is an adverbial of direction; (3) if the subject is inanimate, then the meaning is 'go up'; (4) when the subject is something abstract, the meaning is 'become greater' or 'rise on a scale'.

2.3 Translation Equivalence and Formal Correspondence

The term 'equivalence' in this study should be understood in the sense of 'formal correspondence' or 'translation equivalence', as linked by Vladimir Ivir (1981: 51), who noted that these two concepts belong to two different activities, as formal correspondence is a term used in contrastive analysis, whereas translation equivalence belongs to the metalanguage of translation. First introduced by Roman Jakobson in 1959, 'equivalence' was examined as one of the key issues of interlingual translation. Eugene Nida (1964: 159) moved further to set up 'two basic orientations' or 'types of equivalence': (1) formal equivalence and (2) dynamic equivalence. According to him, "[f]ormal equivalence focuses attention on the message itself, in both form and content [...] [and o]ne is concerned that the message in the receptor language should match as closely as possible the different elements in the source language [, meaning] that the message in the receptor culture is constantly compared with the message in the source culture to determine standards of accuracy and correctness" (Nida 1964: 159). Contrary to this, Nida states that dynamic equivalence is based on the principle of equivalent effect where

one is not so concerned with matching the receptor-language message with the source-language message but with the dynamic relationship, that the relationship between receptor and message should be substantially the same as that which existed between the original receptors and the message (Nida 1964: 159).

As Jeremy Munday (2008: 43) notes, Nida's principle of equivalent effect and concept of equivalence have been criticized by various authors in the years to come. He particularly emphasizes the work of Peter Newmark and Werner Koller. Newmark (1981: 38) claims that the success of equivalent effect is illusory and that the gap between emphasis on source and target language will undoubtedly remain as the major translation problem. So as to narrow this gap, Newmark offered to replace Nida's terms 'formal' and 'dynamic equivalence' with 'semantic' and 'communicative' translation, respectively. Newmark (1981) elaborates on his terminology:

Communicative translation attempts to produce on its readers an effect as close as possible to that obtained on the readers of the original. Semantic translation attempts to render, as closely as the semantic and syntactic structures of the second language allow, the exact contextual meaning of the original (Newmark 1981: 39).

On the other hand, Koller (as cited in Munday 2008) attempts to expand on Nida's work by differentiating between 'equivalence' and 'correspondence.' As already mentioned above in Ivir's explanation, according to Koller, 'correspondence' is a matter of contrastive linguistics and its parameters belong to Ferdinand de Saussure's *langue*, while 'equivalence' deals with equivalent items in source and target language pairs and contexts, i.e., belong to what Saussure would call *parole*. Furthermore, Koller describes five different types of equivalence and these are: denotative, connotative, text-normative, pragmatic, and formal. As Munday (2008: 47) reports, "Koller points out that, while knowledge of correspondences is indicative of competence in the foreign language, it is knowledge and ability in equivalences that are indicative of competence in translation." The notion of correspondence has been practically revamped with the emergence of multilungual translation corpora, which have given a more detailed insight into the matter – among other things, potential correspondences can be classified in accordance with the direction of translation (translations vs. sources), expression (overt or zero), and congruence (divergent or congruent) (Johansson 2007: 24).

As we are concerned here with one-word translation, what we deal with can easily be defined by two traditional definitions of translation: "the replacement of textual material in one language (SL) by equivalent textual material in another language (TL)" (Catford 1965: 20), and

"the rendition of a text from one language to another" (Bolinger 1966: 130). The fact that there was no context involved in our procedures, and that our respondents were asked to provide verbs that would cover the meanings of English motion verbs as closely as possible, the search for a suitable *tertium comparationis* in our design was rather simplified. However, as Munday (2008: 49) states, the issue of *tertium comparationis* carries along the problem of the inevitable subjectivity causing equivalence to "remain central to the practice of translation."

2.4 Motion Verbs

The English motion verbs were chosen as a cognitively relevant instrument in the study due to the facts that motion itself lies in the basis of our conceptualization (Johnson 2007), and that it frequently serves as a starting point in the process of meaning construction (Sheets-Johnstone 1999). Motion is frequently lexicalized by means of motion verbs, and for the purpose of this study, we have adopted Beth Levin's (1993: 263–270) motion verb classification, limiting our verb corpus to those expressing (1) natural ways of motion, and (2) ways of motion that can horizontally move an agent from one point to another. The final list contained the following 116 verbs: *abandon, advance, amble, arrive, ascend, bound, canter, cavort, charge, clamber, climb, clump, coast, come, crawl, creep, cross, dart, dash, depart, descend, desert, dodder, drift, escape, exit, flee, float, gallop, gambol, go, goosestep, hasten, hike, hobble, hop, hurry, inch, jog, journey, jump, leap, leave, limp, lollop, lope, lumber, lurch, march, meander, mosey, move, pad, parade, perambulate, plod, plunge, prance, promenade, prowl, race, ramble, return, rise, roam, rove, run, rush, sashay, saunter, scamper, scoot, scram, scud, scurry/scutter/scuttle, shamble, shuffle, sidle, skedaddle, skip, skitter, sleepwalk, slink, slither, slog, slouch, sneak, somersault, speed, spin, stagger, stray, streak, stride, stroll, strut, swagger, swim, tiptoe, toddle, totter, traipse, tramp, travel, trek, troop, trot, trudge, trundle, vault, waddle, wade, walk, wander, whiz, zigzag, zoom.*

3. Determining Motion Verbs' Typicality

3.1 Procedure and Methodology

In order to propose a potential list of motion verb prototypicality, we have employed a three-step procedure, due to a number of interpenetrating factors which seem to determine prototypicality. Our empirical procedures in this part of the study involved 45 respondents and a

word frequency list. The first two were based on procedures suggested in Eleanor Rosch's experimental work in the field of psychology (e.g., Rosch 1975a, b; Rosch and Mervis 1975, 1981), adapted for our current purpose in line with the experiments on verb prototypicality introduced by Pulman (1983). First of all, our 45 respondents (native speakers of English, general population adults, aged between 25 and 50) were asked to provide as many verbs of natural human motion as they could think of in 3 minutes. They were asked to note them in the order they appeared in their minds (the procedure was based on associations). In this step, the respondents listed the total of 68 different verbs, 4 of which have not been included in Levin's classification (*sprint*, *step*, *pace*, and *moonwalk*). The most frequent verbs in the list were graded with a 5, whereas the least frequent were graded with a 1. All the verbs in between got 2-decimal grades ranging from 1.01 to 4.99. There were three interesting tendencies in the way in which our respondents ordered the verbs during this task. The first of them, particularly observable in the English-speaking part of our respondents, was the impact of alliteration – some of the respondents were likely to list verbs starting with the same letter one after another (e.g., *strut* after *stagger* and *stroll*). The second and the third pattern were present in both groups of respondents. The respondents would mention troponyms directly after having mentioned the more generic verb (e.g., *stroll* or *wade* after *walk*). They were also prone to listing verbs involving some sort of impediment one after another (e.g., *hobble* after *stagger* or *limp*).

In the second step, which involved a more common procedure of grading, the respondents evaluated the 116 verbs of natural human motion (mentioned in section 2. 3.) according to the verbs' relevance to their everyday experience. Circling the grade 1 meant that the verb was irrelevant, whereas the grade 7 meant that the verb was exceptionally relevant. All the grades in-between (2, 3, 4, 5, 6) served to express subtle differences in the relevance of various verbs. The mean grade was calculated for each of the 116 verbs and they were listed in accordance with their own mean grade. The grades obtained in these two steps were added in order to comprise a joint grade, which was then used to propose a potential list of motion verb prototypicality. The final mean grade ranged from 2 to 12 (the maximum of 5 coming from the first step, and the maximum of 7 coming from the second step), and the list included the total of 120 verbs (116 from our selection of Levin's motion verbs and 4 from our respondents). The top 80 verbs are presented in table 2.

Table 2. English motion typicality according to grading and associations

Rank	Verb	Mean Grade	Rank	Verb	Mean Grade
1	walk	11.82	41	prowl	5.76
2	move	11.56	42	flee	5.68
3	run	11.11	43	creep	5.67
4	jump	9.63	44	march	5.65
5	skip	8.82	45	shuffle	5.58
6	climb	8.45	46	ascend	5.58
7	swim	8.20	47	slither	5.57
8	go	7.98	48	journey	5.38
9	jog	7.98	49	trudge	5.37
10	come	7.98	50	slouch	5.35
11	leave	7.93	51	ramble	5.34
12	crawl	7.68	52	meander	5.33
13	travel	7.64	53	stray	5.29
14	hurry	7.49	54	limp	5.25
15	leap	7.43	55	trot	5.24
16	race	7.38	56	coast	5.24
17	arrive	7.29	57	gallop	5.23
18	depart	7.09	58	zoom	5.23
19	hop	7.04	59	bound	5.20
20	tiptoe	6.83	60	roam	5.13
21	dash	6.81	61	tramp	5.13
22	stroll	6.75	62	saunter	5.13
23	return	6.64	63	hasten	5.11
24	rush	6.60	64	dart	5.01
25	cross	6.47	65	zigzag	5.00
26	speed	6.44	66	scamper	4.88
27	exit	6.42	67	charge	4.87
28	strut	6.40	68	swagger	4.87
29	advance	6.40	69	drift	4.78
30	wander	6.34	70	totter	4.71
31	stagger	6.21	71	streak	4.69
32	escape	6.07	72	hobble	4.69
33	rise	6.05	73	scurry/scutter	4.67
34	sneak	6.03	74	mosey	4.64
35	wade	5.98	75	parade	4.62
36	float	5.97	76	plunge	4.54

Rank	Verb	Mean Grade	Rank	Verb	Mean Grade
37	descend	5.85	77	lurch	4.53
38	stride	5.84	78	skedaddle	4.49
39	hike	5.84	79	slink	4.47
40	abandon	5.84	80	whiz	4.29

In the third step, we wanted to introduce another degree of differentiation among the 35 verbs from the previous two empirical procedures which proved to be most relevant or typical. In order to do so, we examined them against the word frequency list based on *The Corpus of Contemporary American English* (Davies 2014), using the methodology we had applied in our previous studies (Stamenković 2011; Stamenković 2013; Stamenković and Tasić 2013a). We counted all instances of the following tags for each verb: VV0 base form of lexical verb (e.g., *give, work*), VVD past tense of lexical verb (e.g., *gave, worked*), VVG *-ing* participle of lexical verb (e.g., *giving, working*), VVI infinitive (e.g., *to give... It will work...*), VVN past participle of lexical verb (e.g., *given, worked*), and VVZ *-s* form of lexical verb (e.g., *gives, works*). In order to make the frequency scale compatible with the existing scales from the previous two procedures, we introduced the following grade ranges: the verbs with 0-10,000 instances shared the grade range from 1 to 2; the verbs with 10,001-20,000 instances shared the grade range from 2 to 3; the verbs with 20,001-40,000 instances shared the grade range from 3 to 4; the verbs with 40,001-100,000 instances shared the grade range from 4 to 5; the verbs with 100,001-900,000 instances shared the grade range from 5 to 7. The newly formed grades were then added to the existing ones in order to form a new, more precise set of rankings for the top 35 verbs.

Table 3. English motion verb typicality according to grading, associations, and frequencies

Rank	Verb	Rel. Grade	Assoc.	Freq.	Total
1	run	6.11	5.00	5.96	17.07
2	walk	6.82	5.00	5.19	17.01
3	move	6.56	5.00	5.41	16.97
4	go	6.62	1.36	6.96	14.95
5	come	6.58	1.40	6.51	14.49
6	leave	6.53	1.40	6.02	13.95
7	jump	5.71	3.92	3.49	13.12
8	climb	5.73	2.72	3.26	11.72

Rank	Verb	Rel. Grade	Assoc.	Freq.	Total
9	**travel**	6.40	1.24	3.88	11.52
10	**return**	5.64	1.00	4.76	11.40
11	**arrive**	6.29	1.00	4.07	11.36
12	**skip**	5.38	3.44	1.60	10.42
13	**rise**	4.89	1.16	4.00	10.05
14	**cross**	5.27	1.20	3.44	9.90
15	**crawl**	4.40	3.28	1.79	9.47
16	**hurry**	6.29	1.20	1.91	9.40
17	**swim**	5.76	2.44	1.18	9.38
18	**leap**	4.87	2.56	1.87	9.30
19	**jog**	4.98	3.00	1.22	9.19
20	**race**	6.02	1.36	1.63	9.01
21	**depart**	6.09	1.00	1.53	8.62
22	**rush**	5.60	1.00	1.94	8.54
23	**hop**	4.36	2.68	1.30	8.34
24	**speed**	5.24	1.20	1.83	8.27
25	**stroll**	4.91	1.84	1.40	8.15
26	**dash**	5.33	1.48	1.28	8.09
27	**exit**	5.22	1.20	1.52	7.94
28	**tiptoe**	5.31	1.52	1.09	7.92
29	**escape**	4.91	1.16	1.79	7.86
30	**sneak**	4.91	1.12	1.52	7.56
31	**advance**	5.20	1.20	1.14	7.54
32	**strut**	4.84	1.56	1.12	7.52
33	**stagger**	4.89	1.32	1.25	7.46
34	**wander**	5.18	1.16	1.02	7.36
35	**wade**	4.62	1.36	1.21	7.19

3. 2. Results

The results of the latter two empirical procedures seemed to have correlated with each other, whereas the association test seemed to measure a slightly different aspect of prototypicality. However, all three approaches were combined in order to assemble a list of what we can dub motion verb prototypicality, and the list itself exhibits certain semantic patterns. The most prominent or salient verbs seem to be placed at its top – these usually express the type of motion that humans tend to experience in their everyday life, while those that describe some

other types of motion fall behind. Besides this, the verbs with a more generic meaning (e. g. *go, move*) also seem to be placed in the upper part of the list, with those which describe a more specific type of motion (e.g., *tiptoe, stroll*) having a tendency to be positioned slightly below. These two categories, however, are not mutually exclusive, as generic verbs are at the same time frequently experienced (so, in fact, these two largely overlap). Towards the bottom we can also find a number of motion verbs expressing motion with impediments or limitations (e.g., *stagger, wade*), as well as verbs with a higher degree of contextual limitations (e.g., *hike*, *flee*). These results go along the lines of Milena Žic-Fuchs's (1991) findings – a less complex main denotation of the verb (the primary action it describes) is likely to make it more useful in different contexts (and therefore more salient and more frequent), as it is bounded by fewer restrictions.

4. Correlating Typicality with Translation Equivalent Selection

4.1 Procedure and Methodology

The next step was to use the obtained results from section 3 in another empirical procedure, i.e., in an attempt to discover whether there were correlations between the verb's prototypicality and selecting appropriate Serbian translation equivalents in the process of translating individual words. In order to do so, we created a questionnaire (the instrument), and tested 60 translators (the respondents).

4.1.1 The instrument. Our instrument consisted of 45 motion verbs from the previous study – the top 35 verbs from the tables 2 and 3 plus 10 verbs placed between positions 55 and 64 in table 3 (in order to check what happens as we move further down the proposed list). The initial list included very many verbs that are rarely used, and that even experienced translators could not translate without a dictionary at hand. Moreover, the final number of verbs in our questionnaire ensured that the procedure could be completed in 30 minutes, which, in turn, facilitated the recruitment of respondents.

4.1.2 The respondents. Our respondents were 45 senior Serbian EFL students with at least 3 years of formal translation instruction, and 15 Serbian EFL graduates with 3-10 years of translation experience. They filled in the questionnaires in 3 sessions, their task being to provide

only one Serbian translation equivalent (one verb or verb phrase) for each of the 45 English verbs comprising the questionnaire. The provided response was to remain in the field of motion verbs or verb phrases. They were to write the first solution that came to their mind, and were not allowed to use dictionaries. The results were collected, coded, and analysed.

4.2 Results

In order to test the existence of any relevant patterns as we moved from the top to the bottom of our prototypicality list, we counted (1) the total of different translation equivalents we encountered with each of the verbs and (2) the consistency of the most frequent equivalent, which can be seen in tables 4 and 5:

Table 4. The scale of prototypicality and translation questionnaire results (rank 1–22)

No	Rank	Verb	No. of prov. equiv.	The most frequent equivalent	Equiv. Selection Freq.	Other selected equivalents
1	1	**run**	2	*trčati*	98.33%	
2	2	**walk**	3	*hodati*	71.67%	*šetati* (25%)
3	3	**move**	3	*kretati se*	61.67%	*pomerati se* (35%)
4	4	**go**	2	*ići*	90.00%	*otići* (10%)
5	5	**come**	2	*doći*	86.67%	*stići* (13.33%)
6	6	**leave**	3	*otići*	80.00%	*napustiti* (10%) *izaći* (10%)
7	7	**jump**	2	*skočiti*	78.33%	*skakati* (21.67%)
8	8	**climb**	2	*popeti se*	75.00%	*penjati se* (25%)
9	9	**travel**	2	*putovati*	95.00%	
10	10	**return**	3	*vratiti se*	90.00%	
11	11	**arrive**	3	*stići*	85.00%	
12	12	**skip**	4	*preskočiti*	75.00%	*poskočiti* (13.33%)
13	13	**rise**	6	*podići se*	53.33%	*ustati* (21.67%) *uzdići se* (10%) *dići se* (10%)
14	14	**cross**	4	*preći*	83.33%	
15	15	**crawl**	4	*puziti/puzati*	83.33%	*laziti* (10%)
16	16	**hurry**	4	*žuriti*	60.00%	*požuriti* (36.67%)
17	17	**swim**	2	*plivati*	91.67%	
18	18	**leap**	8	*skočiti*	51.67%	*poskočiti* (31.67%) *preskočiti* (10%)
19	19	**jog**	5	*džogirati*	63.33%	*trčati* (20%)

No	Rank	Verb	No. of prov. equiv.	The most frequent equivalent	Equiv. Selection Freq.	Other selected equivalents
20	20	**race**	5	*trkati se*	70.00%	*juriti* (13.33%) *trčati* (11.67%)
21	21	**depart**	8	*otići*	50.00%	*napustiti* (21.67%)
22	22	**rush**	7	*žuriti se*	56.67%	*požuriti* (10%)

Table 5. The scale of prototypicality and translation questionnaire results (rank 23–45)

No	Rank	Verb	No. of prov. equiv.	The most frequent equivalent	Equiv. Selection Freq.	Other selected equivalents
23	23	**hop**	6	*skočiti*	43.33%	*poskočiti* (30%) *skakutati* (16.67%)
24	24	**speed**	7	*ubrzati (se)*	51.67%	*juriti* (11.67%) *žuriti* (26.67%)
25	25	**stroll**	7	*šetati (se)*	61.67%	*opušteno šetati* (15%)
26	26	**dash**	10	*juriti*	36.67%	/
27	27	**exit**	5	*izaći*	86.67%	/
28	28	**tiptoe**	8	*hodati na prstima*	46.67%	*ići na prstima* (23.33%)
29	29	**escape**	6	*pobeći*	81.67%	/
30	30	**sneak**	8	*šunjati se*	50.00%	*prikradati se* (28.33%)
31	31	**advance**	9	*napredovati*	68.33%	*ići napred* (16.67%)
32	32	**strut**	7	*šepuriti se*	33.33%	/
33	33	**stagger**	9	*teturati se*	41.67%	*teško hodati* (16.67%) *posrtati* (10%)
34	34	**wander**	8	*lutati*	80.00%	/
35	35	**wade**	12	*gacati*	31.67%	/
36	55	**trot**	19	*kasati*	13.33%	/
37	56	**coast**	16	*kotrljati se*	6.67%	/
38	57	**gallop**	11	*galopirati*	68.33%	/
39	58	**zoom**	15	*odjuriti*	10.00%	/
40	59	**bound**	15	*skočiti*	6.67%	/
41	60	**roam**	14	*lutati*	50.00%	/
42	61	**tramp**	15	*lutati*	8.33%	/
43	62	**saunter**	17	*šetati (se)*	15.00%	/
44	63	**hasten**	14	*požuriti*	41.67%	*žuriti* (16.67%)
45	64	**dart**	17	*jurnuti*	15.00%	*odjuriti* (10%)

The table which summarizes our results shows (1) the prototypicality rank of the verb, (2) the verb itself, (3) the total number of provided equivalents by all participants, (4) the most frequent translation equivalent, (5) equivalent selection frequency (consistency), and (6) other selected equivalents (this included all responses with a frequency higher than 10%, and excluded the responses coded with "no answer provided", and the responses which did not reflect motion at all, as the instructions stated that it was required to fill in the questionnaire with an answer that would describe motion).

A bivariate correlation test showed that there was a statistically significant correlation between the level of prototypicality (as determined in the previous procedure, ranging from 1 to 64) and the number of different translation equivalents (ranging from 2 to 19) – the level of correlation was 0.946, and it was significant at p = .01 level. The correlation in this case was inverted – this meant the lower placement of the verb on the prototypicality list, the more diverse set of equivalent responses. The correlation test also showed that there was a positive correlation between the overall level of prototypicality and the consistency of choosing a translation equivalent – the most prototypical motion verbs had a more consistent equivalent (e.g., *trčati* for *run* or *ići* for *go*), whereas it decreased as we moved from the top to the bottom of the list (*teturati se* for *stagger* or *jurnuti* for *dash*). The level of correlation was 0.784, and it was also significant at p = .01 level.

Another notable result was the fact that the number of "no answer provided" responses grew towards the bottom of the list – this was conditioned by the fact that the respondents were not as familiar with less typical examples of motion verbs (e.g., *coast, bound,* or *saunter*). The results thus confirmed our presumption that there are equivalent-related patterns when we move along the proposed list of typicality. Of course, we could note a number of exceptions – for instance, with the verb leap (placed 13th) we encountered as many as 6 different equivalents, and the consistency of 51.67% for the most common one – its high rank on the typicality scale made us expect fewer equivalents and a higher consistency.

5. Conclusions

Although one-word and context-free translation happens quite rarely, it has allowed us to investigate the kind of relations between a verb's prototypicality and the choice of its translation equivalents by yielding statistically valid data. The quantitative analysis has shown that being

closer to the centre of the category of motion verbs will mean having fewer possible translation equivalents, while having a more constant first-choice equivalent at the same time. This result was largely influenced by a verb's salience and usage frequency – the verbs closer to the centre established firmer connections with their translation equivalents – these equivalents also represent Serbian motion verbs that can be considered both salient and frequent (e.g., *run – trčati*, *walk – hodati*, *move – kretati se*, *go – ići*, *come – doći*, *leave – otići*, *jump – skočiti*). If we contrast these results to the results of studies which involved translations of the same verbs in a text-based corpus rather than one-word translation, we can conclude that these are very different, especially when it comes to the correspondent structure. For instance, using an English-Swedish parallel corpus, Åke Viberg (1998; 1999) shows that the Swedish g*å* and the English *go* are translated by their etymological counterpart only in around one third of the cases, mostly due to their highly polysemous nature. Similarly, in a previous study we have shown that the verb *go* was translated with its Serbian counterpart *ići* (including all prefixed forms) in around 40% of the sentences found in a parallel corpus (Stamenković 2014). Another frequently used verb, *walk*, was translated with the two expected Serbian counterparts *šetati* and *hodati* in no more than 19% of all the cases (Stamenković and Tasić 2013b).

As we move towards the periphery of the category of motion verbs, the links between the verbs and their translation equivalents seem to become weaker – there is a lower level of consistency in equivalent selection, an increasing number of different options and a lower degree of acquaintedness with the verbs in question. Including the verbs placed below the last included position would most likely reflect the same trend. Such results may be used to corroborate prototype theory, as they confirm that at least some aspects of the graded typicality of motion verbs are psychologically real, i.e., they are reflected in the corresponding differences when it comes to translation equivalent selection. Finally, these results reveal a psychological facet of the process of translation – more prominent motion verbs seem to have stronger bonds with their counterparts in another language, which makes the process of translating them at least slightly easier.

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