

What You Think Ain't What You Get: Highly polysemous verbs in mind and language

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Abstract

Starting from the observation that the concept of prototypicality in linguistics covers many different meanings, this article examines two definitions of the prototype often equated with each other, namely the most frequent item in language and the most salient item in the mind. On the basis of empirical data (corpora for linguistic frequency and elicitation tests for cognitive salience), it seeks to identify the prototypes of the highly polysemous verbs *give* and *take*. The analysis reveals that linguistic frequency and cognitive salience do not necessarily coincide. It also shows that the prototypes presented in the cognitive literature may turn out to be invalid when confronted with empirical evidence. These results emphasise the need for a clearer definition of prototypicality in linguistics.

Résumé

Partant du constat que le concept de prototypicalité en linguistique recouvre de nombreuses significations, cet article examine deux définitions du prototype souvent assimilées l'une à l'autre, l'item le plus fréquent dans la langue et l'item le plus saillant dans l'esprit. Sur base de données empiriques (corpus pour la fréquence linguistique et tests d'élicitation pour la saillance cognitive), il cherche à identifier les prototypes des verbes hautement polysémiques *give* et *take*. L'analyse révèle que la fréquence linguistique et la saillance cognitive ne coïncident pas nécessairement. Elle montre aussi que les prototypes présentés dans la littérature cognitive peuvent s'avérer invalides lorsqu'ils sont confrontés à des preuves empiriques. Ces résultats soulignent le besoin d'une définition plus claire de la prototypicalité en linguistique.

1. Introduction

Mind and language have often been associated, and it is one of the aims of cognitive linguistics to investigate the relation between the two – how conceptualisation is encoded in language ('construal', see e.g. Langacker 1997), what metaphors reveal about the mind (Lakoff & Johnson 1980), etc. In this paper, the relation between mind and language will be discussed through the perspective of prototypicality, according to which categories contain good and less good examples. When this concept is used in the linguistic literature, it is usually with either of two senses, namely to refer to salience in the mind (the prototype is the most cognitively salient item) or frequency in language (the prototype is the most frequent item), the assumption being that these two senses overlap and are just two different indicators of the same phenomenon.

Using the verbs *give* and *take* as an illustration, it will be demonstrated that salience in the mind does not necessarily coincide with frequency in language, and that the notion of prototypicality in linguistics is therefore 'less clear than one might have wished' (Tsohatzidis 1990: 8). After showing how prototypicality has been transferred from psychology to linguistics, the article reviews the main uses of the term "prototype" in the linguistic field. It then briefly examines the relation (and possible discrepancy) between two of these uses, namely salience and frequency. This relation is shown in action for the verbs *give* and *take*, by comparing the most salient uses of these two verbs, as evidenced by elicitation experiments, with their most frequent uses, as attested in corpus data. The article ends with some concluding remarks on the status of prototypicality in linguistics.

2. Prototypicality: from psychology to linguistics

The concept of prototypicality originated in the field of psychology, especially with the work of Eleanor Rosch (e.g. Rosch 1973, 1975), who showed that categories are organised around good and less good examples. Within the category of furniture, for instance, a table is more representative, hence closer to the prototype, than a piano or a telephone. Linguists saw the relevance of the notion to their field and applied it, first to the meaning of words (cf. Fillmore's [1977] analysis of the word 'bachelor') and then to linguistic categories themselves (e.g. Hopper & Thompson's [1980] study of transitivity and their claim that transitivity is the result of the combination of a number of features; the more features a clause

has, the more transitive it is and the closer it is to what Hopper & Thompson call ‘cardinal Transitivity’).

During this transfer from psychology to linguistics, however, the notion has come to be used more loosely. First, linguists have often relied on their intuition to establish prototypes, unlike psychologists, who have always been very careful to provide empirical evidence to prove the existence of prototypes. Second, prototypicality has become, as Wierzbicka (1985: 343) puts it, a ‘catch-all-notion’ (see also Geeraerts 1989: 606), with linguists using the term to describe different phenomena – and not always making it clear what they have in mind. It is this second, theoretical issue that I would like to address, showing the variety of senses with which the term ‘prototype’ has been used in linguistics, and focusing on two of them to investigate how they relate to each other.

3. The different uses of prototypicality in linguistics

The first use of the word ‘prototype’, and the one which is probably the closest to the original notion as used in psychology, has to do with salience, as exemplified by William’s (1992: 208) description of the prototype of *run*: ‘a polysemous word like *run* has one central or “prototypical” use which is the most cognitively salient’. The same idea is expressed by Radden (1992: 519-520) when he defines the prototype as ‘the best, clearest and *most salient exemplar* among the members of a category and [serving] as a kind of cognitive reference point with respect to which the surrounding, “poorer” instances of the category are defined’ (emphasis added). Here, prototypicality is viewed as an essentially cognitive phenomenon, which could be established by unravelling the workings of the mind.

The prototype can also be defined as the most central item, cf. Viberg’s (2002: 676) remark that ‘[w]hat motivates regarding a certain meaning as prototypical is its centrality and the possibility to derive the other meanings from it in a principled way’. It is this use that lies at the basis of radial networks in cognitive linguistics, where extended meanings are derived from the prototype by means of relations such as metaphor or metonymy.

Third, the prototype can be described as the primary item, appearing first in language (diachronic approach) or in individuals (acquisitional approach). The former is at work in some dictionaries, which arrange the different senses of words according to their date of origin in the language (even though they may not call it the prototype), while the latter can be

illustrated by Sassoan's (2005) learning models, according to which the prototype is the member of a category that is learnt earliest by children.

In the next two uses, prototypicality is seen as a basically linguistic phenomenon. In Ross's 'squishes' (see especially Ross 1973a, 1973b, 1975), the most representative item is the one that can undergo the highest number of processes that are generally seen as characteristic of the category. Thus, within the noun phrase category, animates are better examples than events because the former can, among others, be raised more easily than the latter – compare *John is likely to be shown to have cheated* and *?The performance is likely to be shown to have begun late* (Ross 1973a). More common, however, is the criterion of frequency to determine prototypicality, which is typical of corpus linguistics. The prototype is regarded as the most frequent item in language, as illustrated by Stubbs's (2004) explicit equation of prototypicality and high frequency.

Finally, the term 'prototypical' can be used in an apparently atheoretical way as a synonym of 'typical', as in the following quotation, taken from Kilgariff (1997: 104):

[...] the lexical unit *dance round your handbag*, a pejorative phrase for the behaviour of certain exclusively female groups at discotheques and dances where – prototypically – they dance in a circle with their handbags on the floor in the middle.

Note that these uses are not necessarily mutually exclusive (see e.g. William's description, above, which combines the idea of salience and that of centrality). In fact, as will appear from the next section, the two uses which will be focused on, salience and frequency, are often assumed to coincide with each other.

4. Relation between salience and frequency

While salience and frequency are different in nature (the former has to do with mind, whereas the latter is more specifically related to language), very often the unspoken assumption is that these two definitions of prototypicality coincide with one another, in other words, that the most salient exemplar in the mind is also the most frequent one in language. This belief has even been elevated to the status of principle, in the form of Schmid's (2000: 39) 'From-Corpus-to-Cognition Principle', according to which 'frequency in text instantiates entrenchment in the cognitive system'. Both salience and frequency are also mentioned by

Winters (1990) as evidence for prototypicality. And Geeraerts (1988), in his study of the two Dutch verbs *vernietigen* and *vernietigen*, shows that the facts of language use, as attested in corpus data, confirm cognitive salience, as evidenced in synonym dictionaries.¹

Yet, several recent studies have demonstrated that the link between salience and frequency is not so obvious and that the two do not necessarily point in the same direction when it comes to language. This seems to be the case for linguistic phenomena such as verb complementation (Roland & Jurafsky 2002), periphrastic causative constructions (Gilquin 2004), items such as *I* or *small* (Nordquist 2004), or *there*-constructions (Shortall, in preparation). Thus, Shortall has shown that while in elicitation data (cognitive salience), about 60% of respondents produce a construction with a concrete noun, e.g. *There is a book on the table*, in the British spoken section of the Bank of English (linguistic frequency), abstract nouns are predominant, with a percentage of 59%. The following quotation, taken from Sinclair (1991: 112-113), also illustrates this discrepancy between salience and frequency:

The commonest meanings of the commonest words are not the meanings supplied by introspection; for example, the meaning of *back* as “the posterior part of the human body, extending from the neck to the pelvis” (*Collins English Dictionary (CED)* 2nd edition 1986 sense 1) is not a very common meaning. Not until sense 47, the second adverbial sense, do we come to “in, to, towards the original starting point, place or condition”, which is closer to the commonest usage in our evidence. [...] The commonest meanings of many less common words are not those supplied by introspection. Sense 1 offered in the *CED* for *pursue* is “to follow (a fugitive etc.) in order to capture or overtake”, yet by far the commonest meaning is sense 5, “to apply oneself to (one’s studies, hobbies, interests etc.)”.

In the next section, the relation between salience and frequency as evidence for prototypicality will be tackled with respect to the highly polysemous verbs *give* and *take*. In order to avoid the methodological problem mentioned in Section 2, both salience and frequency will be investigated empirically, by means of elicitation tests and corpus data respectively. It will be shown that the two criteria provide divergent results and can therefore not be seen as different indicators of the same phenomenon.

¹ The suitability (or otherwise) of synonym dictionaries as a means of measuring cognitive salience will not be discussed here.

5. Prototypicality of *give* and *take*

5.1. Prototypical *give* and *take* in the literature

Let us start with the descriptions of prototypical *give* and *take* found in the cognitive literature. The prototype of *give* can be described as follows (based on Newman 1993: 437, 2005: 150):²

Give = to use one's hand to pass something over to another person who receives it with his/her hands.

Example: *The teacher gave the books to the students.*

This is illustrated by Figure 1, taken from Newman (1993). For *take*, the situation is reversed, as appears from Figure 2, and the prototype can be described as follows (based on Norvig 1986; Norvig & Lakoff 1987):

Take = to use one's hand to grasp a relatively small, light-weight physical object that is close to oneself so that one comes to receive it.

Example: *The baby took the toy from its mother.*

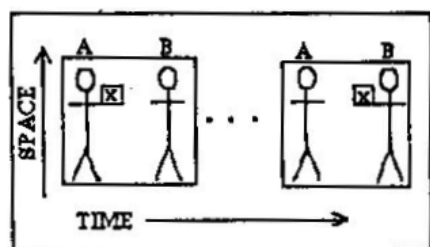


Figure 1. Schematic representation of prototypical *give* (Newman 1993: 438)

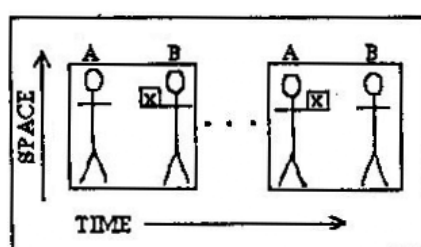


Figure 2. Schematic representation of prototypical *take* (based on Newman 1993:

² I am not concerned with the question of whether the recipient should be expressed as a dative or a *to*-complement.

Although these prototypes do not seem to have been established in any empirical way, as is typical of much of the cognitive literature, they constitute a good starting point because they arguably correspond to the most basic and concrete senses of the verbs and, given the primacy of the concrete over the abstract in neural representations (cf. MacLennan 1998), they are likely to be the senses most readily accessible in the mind and, consequently, most frequently elicited. And if, as assumed by several linguists, the most cognitively salient item is the most frequent one in language, these senses should also correspond to the most quantitatively prominent ones in corpus data.

5.2. *Data and methodology*

In order to test salience, I designed an online sentence production experiment by means of the software *WebExpI* (Keller et al. 1998). A total of twenty stimuli were presented on the screen, one at a time and in random order, in a box such as the one shown in Figure 3.³ For each stimulus, the subjects, forty native speakers of American English, were asked to type the very first sentence they could think of including the word. The list of stimuli comprised two occurrences of the target verbs *give* and *take*, nine other highly polysemous verbs (*do*, *get*, *have*, *make*, *put*, *be*, *set*, *look*, *keep*), and seven fillers (the grammatical words *that*, *with*, *who*, *so*, *or*, *I*, and *there*). In the analysis, only the replies to the first occurrence of each target verb will be taken into account, on the assumption that the first sentence produced for a word reflects cognitive salience better than the second sentence.

³ The three dots before and after the stimulus act as a deterrent against the use of the word at the beginning of the sentence (and consequently, the use of an imperative form for verbs). I would like to thank Frédérique Passot for suggesting this idea.

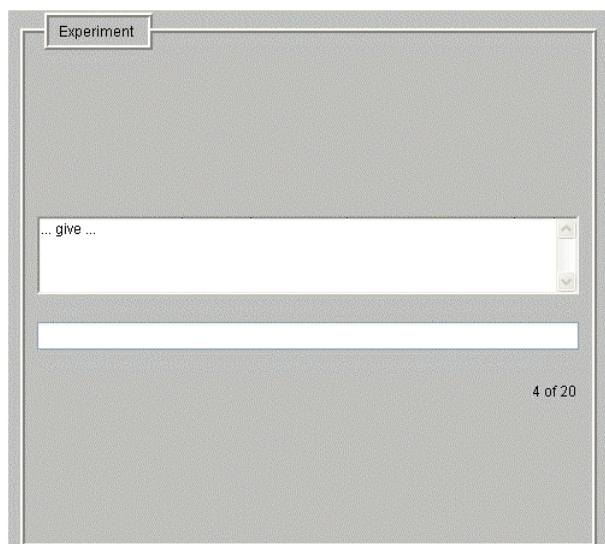


Figure 3. Online sentence production experiment (*WebExp1*)

As a measure of frequency, I used data from two corpora of American English from the 1990s, namely Frown (corpus containing various written genres) and Switchboard (corpus of telephone conversations between strangers). Five hundred occurrences of *take* and five hundred occurrences of *give* were extracted from each of these two corpora. The difference between speech and writing will not be commented on here, but let us note that, although as a rule the spoken data come slightly closer to the elicitation data than the written data, considering the spoken data only still results in a discrepancy between frequency and elicitation, as described below for the combined spoken and written data.

The material used in this study, both for frequency and elicitation, are summarised in Table 1.

Type	Description	<i>GIVE</i> (n)	<i>TAKE</i> (n)
Elicitation	online experiment	40	40
Corpus	writing (Frown)	500	500
	speech (Switchboard)	500	500

Table 1. Summary of elicitation and corpus data

All the data (elicitation and corpus) were classified according to the sense of *give* or *take* they exemplified. The semantic classification was based on five learner's dictionaries – *Oxford Advanced Learner's Dictionary* (Wehmeier 2000), *Collins Cobuild English Dictionary for Advanced Learners* (Sinclair 2001), *Longman Dictionary of Contemporary*

English (Summers 2001), *Macmillan English Dictionary for Advanced Learners* (Rundell 2002) and *Cambridge Advanced Learner's Dictionary* (Gillard 2003) – and comprised 15 senses for *give* and 18 for *take*. These senses are shown and illustrated in Tables 2 and 3.⁴

	Sense	Example
1	Hand	<i>He pulled a handkerchief from his pocket and gave it to him.</i>
2	Provide	<i>Please give your seat to an elderly or disabled.</i>
3	Communicate	<i>Would you like to give me your name?</i>
4	Cause	<i>All that driving has given me a headache.</i>
5	Do (delexical sense)	<i>He turned to us and gave a big smile.</i>
6	Use	<i>Give your time to the community.</i>
7	Administer	<i>Can't you give her anything for the pain?</i>
8	Allow	<i>The draft would give him the power to appoint the bank's chairman.</i>
9	Job	<i>My algebra teacher always gives us a lot of homework.</i>
10	Organise	<i>The ambassador is giving a banquet for the visiting president.</i>
11	No longer resist pressure	<i>The branch suddenly gave beneath him.</i>
12	Decide	<i>The judge gave him a nine-month suspended sentence.</i>
13	Idioms	<i>You have to give way to traffic coming from the right.</i>
14	Phrasal verbs	<i>We're going to give up our sports club membership after this year.</i>
15	Other	

Table 2. Semantic classification of *give*

	Sense	Example
1	Grab	<i>Let me take your coats.</i>
2	Move	<i>Our guide took us around the cathedral.</i>
3	Buy	<i>What newspaper do you take?</i>
4	Ingest	<i>Take two aspirins and go to bed.</i>
5	Require	<i>It takes strength and stamina to be a long-distance runner.</i>
6	Do (delexical sense)	<i>Let's take a walk down the river.</i>
7	Record	<i>A nurse took his temperature every hour.</i>
8	Engage in	<i>Shelley is taking economics at university.</i>
9	Consider	<i>She took his remarks as a compliment.</i>
10	Accept	<i>Do they take credit cards in this shop?</i>
11	Assume	<i>I did all the work, but Gill took all the credit.</i>
12	Experience	<i>The school took the full force of the explosion.</i>
13	Use	<i>It's more interesting to take the coast road.</i>
14	Capture	<i>The rebels succeeded in taking the town.</i>
15	Work	<i>If the cortisone doesn't take, I may have to have surgery.</i>
16	Idioms	<i>The Olympics take place every four years.</i>
17	Phrasal verbs	<i>The plane should take off on time.</i>
18	Other	

Table 3. Semantic classification of *take*

5.3. Results and discussion

⁴ Note that the senses in Tables 1 and 2 are not ordered in any particular way, except for the first sense, which is the one described as prototypical in the literature.

A comparison of the distribution of the different senses of *give* and *take* in the elicitation and corpus data reveals important differences. Figures 4 and 5 illustrate all of these differences, but for lack of space, only the major divergences will be discussed here.

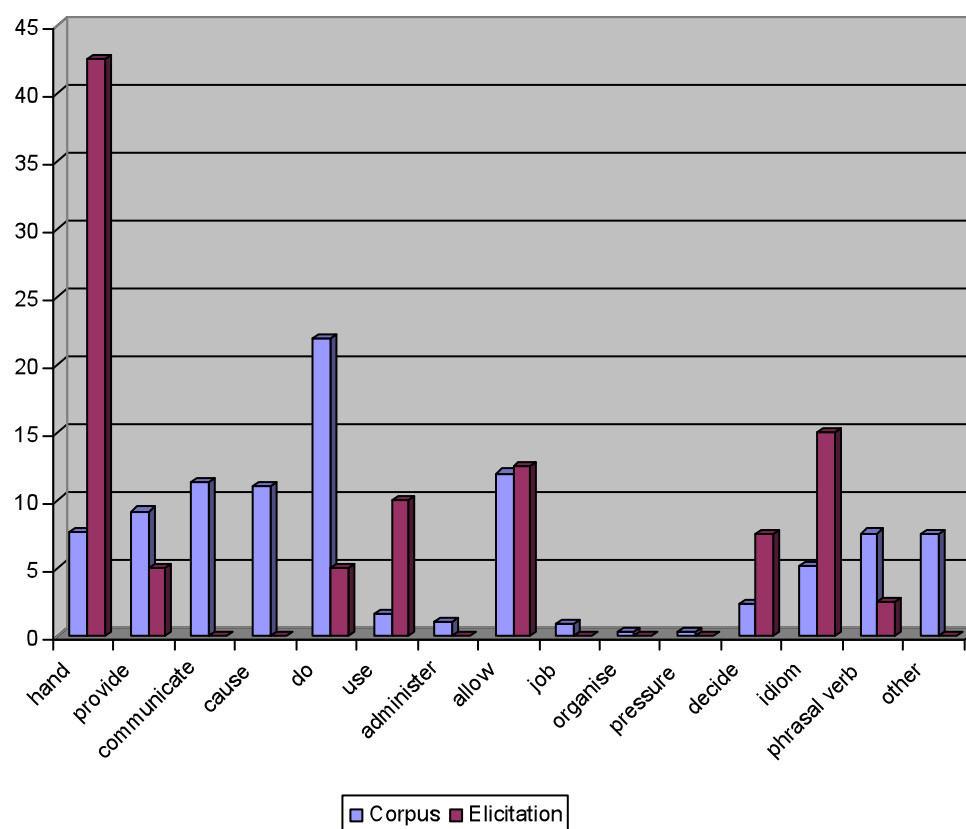


Figure 4. Distribution of the senses of *give* in corpus and elicitation data (%)

With respect to the verb *give* (Figure 4), the most striking difference lies in the large proportion of the sense of ‘handing’ in the elicitation data (42.5%), cf. (1) and (2),⁵ a sense which is relatively uncommon in the corpus data (7.7%).

- (1) I **gave** him a chocolate. [EL]
- (2) **Give** me the bottle of wine. [EL]

It will be reminded that the sense of ‘handing’ is described in the literature as the prototype of *give* (see Section 5.1), a claim whose cognitive validity therefore turns out to be confirmed

⁵ In these examples and the following, EL refers to the elicitation data, FR to the Frown corpus and SB to the Switchboard corpus.

by the elicitation experiments. The facts of language, by contrast, seem to be guided by different principles, as appears from the predominance of the delexical sense ('light verb' sense), referred to in Figure 4 as 'do' and illustrated by (3) and (4), which represents a percentage of 21.9% in the corpus data, but only 5% in the elicitation data. This result shows that the phenomenon of grammaticalisation, whereby the verb loses some of its meaning and acquires a more grammatical function, is fundamental in natural language, but plays a minor role in elicited language.

(3) And she'll look at me and **give** me this crazy look. [SB]

(4) Mitterrand traveled to Gascony and Aquitaine where he **gave** a speech at Figeac that surprised many. [FR]

Generally speaking, the results for elicitation display much less variety than the results for the corpus data. While in the corpus each of the fifteen senses is represented, in the experiment only eight senses are produced by at least one subject. Notice that, among the seven senses never elicited, some are quite common in language, e.g. the senses of 'communicating' and 'causing', illustrated by (5) and (6) respectively, which represent a proportion of some 11% each in the corpus.

(5) Don't go in there, don't **give** him your name. [SB]

(6) I sure ain't gonna **give** 'er no more trouble. [FR]

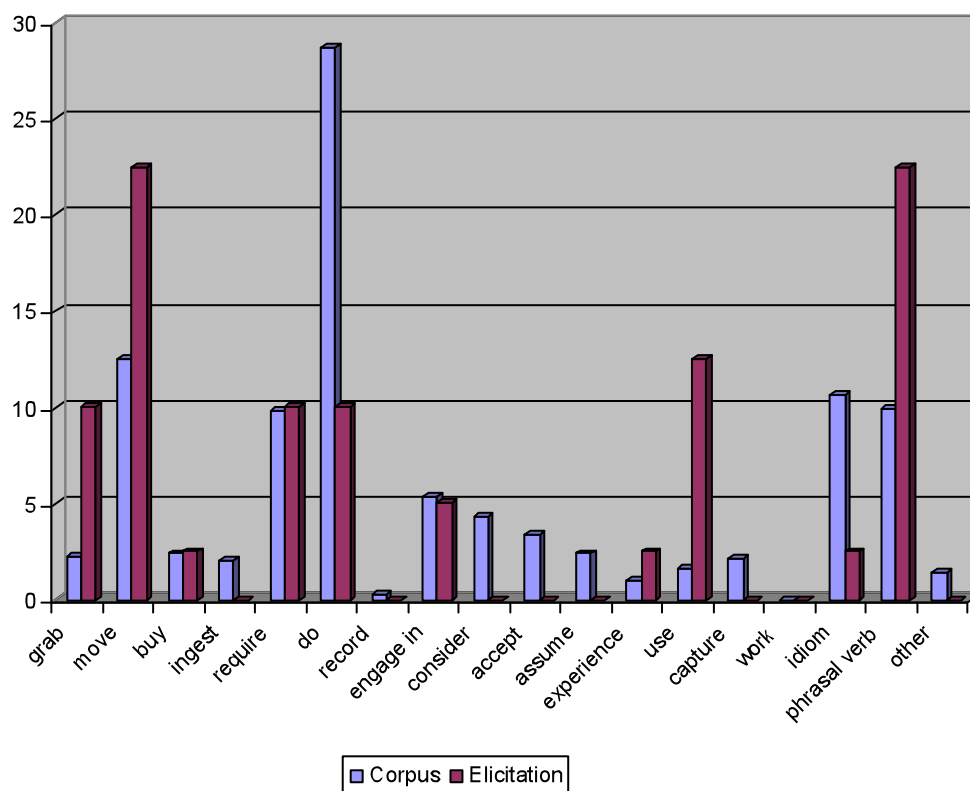


Figure 5. Distribution of the senses of *take* in corpus and elicitation data (%)

Let us now turn to the results for *take*, illustrated in Figure 5. These results, to a large extent, display the same tendencies as with *give*, namely a greater variety in the number of senses represented in the corpus data, and a difference in proportions between the senses elicited and those found in language. By far the most frequent sense in the corpus data is the delexical one, as in (7). While it represents almost 30% in the corpus data, it occurs only four times in the elicitation data, which, again, shows the preference of natural language, as opposed to elicited language, for grammaticalised uses.

(7) Stapfer **took** many walks with Hugo. [FR]

As was the case with *give*, the sense of *take* described as prototypical in the literature, that of ‘grabbing’, is infrequent in the corpus data, with a very small proportion of 2.2%. Here, however, it does not correspond to the sense most frequently elicited, since it occurs only four times in the elicitation data. In other words, while the sense of ‘grabbing’ is possible both in corpus and elicitation data, as appears from (8) and (9), it is neither the most frequent

in language, nor the most salient in the mind, which challenges its privileged position in the cognitive literature.

- (8) They beat him up and **took** his gun and shot him. [SB]
- (9) Try not to **take** too many cookies. [EL]

Instead, the most frequent uses in the elicitation data are the ‘move’ sense and phrasal verbs, each with a percentage of 22.5%, e.g. (10) and (11). It should be noted, however, that several of the elicited sentences containing a phrasal verb take the form of (11), the title of a well-known American baseball song, where *take* is semantically close to the ‘move’ sense. Consequently, we can say that the idea of ‘moving’ seems to be quite saliently associated with the verb *take*.

- (10) I will **take** you home. [EL]
- (11) **Take** me out to the ballgame. [EL]

It turns out from the above analysis that, both for *give* and *take*, the senses that are the most salient in the mind do not coincide with the most frequent senses in language as attested in a corpus.⁶ While language shows a strong preference for abstract, grammaticalised senses such as the delexical use, the senses most often elicited are more concrete, cf. ‘hand’ for *give* and ‘move’ for *take*. It should be emphasised that, while in the case of *give* this sense corresponds to the description of the prototype found in the (intuition-based) cognitive literature, in the case of *take* the sense presented as prototypical in the literature does not seem to have any empirical validity, which casts doubt on the reliability of intuition as a tool for establishing prototypicality.

These results confirm the discrepancy between frequency and salience revealed by other studies (see Section 4) and consequently leave us with an important question, namely ‘what is prototypicality’? If the measures that are presented in the literature as indicators of the prototype point (or at least may point) in different directions, prototypicality cannot be the unified phenomenon that some believe it to be and its exact nature within the field of linguistics should therefore receive more attention than it has been given up to now.

⁶ This does not exclude the possibility of an influence of frequency on salience. Thus, the ‘move’ sense of *take*, which is the most salient one according to the elicitation data, comes second in terms of frequency in the corpus data.

6. Conclusion

This article started with the observation that the notion of prototypicality is used with many different senses in the linguistic literature, the unspoken assumption being that these are different facets of one and the same phenomenon. Through the case study of the highly polysemous verbs *give* and *take*, two definitions of prototypicality were compared, namely prototypicality as salience and prototypicality as frequency, and it was demonstrated that, contrary to common belief, the most frequent sense in language does not necessarily coincide with the one that comes first to mind. In fact, it seems as if corpus data and elicitation experiments tap into essentially different things, and which one, if any, gives access to the ‘prototype’, as originally meant in psychology, is a question that remains to be answered.

Another question that would need investigating is that of the relation between production and comprehension with respect to prototypicality. The experiment presented here was designed to test production, but comprehension could be tested, for instance, by presenting subjects with a number of sentences illustrating different senses of *give* and *take*, and measuring their reading times for each of them. The results of such an experiment may be different, with idioms and collocations, for example, perhaps faring better in comprehension tasks than in production tasks. Thus, an expression such as *take advantage* may be very unlikely to be elicited by the stimulus *take*, but it would certainly be recognised quite rapidly in a comprehension task.⁷ Such a discrepancy, if confirmed by further research, would bring us back to the question of the exact nature of prototypicality in linguistics.

Acknowledgements

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⁷ See e.g. Underwood et al.’s (2004) eye-movement study, which demonstrates that words are recognised faster (shorter fixation times) when they are terminal words in a formulaic sequence than when they are embedded in non-formulaic text.

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