Lexicalization of Pulling and Pushing Events in Polish and English

Joanna Lozinska [a]
joanna.lozinska@uwm.edu.pl
University of Warmia and Mazury, Poland

Henriette Hendriks
hpjmh2@cam.ac.uk
University of Cambridge, United Kingdom

ABSTRACT

This study examines and compares the lexicalization patterns of pulling and pushing events in two satellite-framed languages: Polish and English. On the basis of the descriptions of pulling and pushing events in two novels and their translations from Polish into English and English into Polish, four main differences between the lexicalisation of caused motion in Polish and English were found. First, with regards to our token analysis, Polish data includes more manner verbs (e.g. *pchać* 'push' and *ciągnąć* 'pull') than English. English, instead, uses generic verbs (such as *put*, *get, take, remove*). In this respect patterns of caused motion expression appear to be similar to those described for voluntary motion in previous literature. Second, and in terms of types, however, Polish and English data included similar number of motion verbs. Third, the obligatory use of perfectivizing prefixes in Polish necessitates the expression of Path, which is less frequent in the English data. Finally, our analysis also points to a higher frequency of pulling events when compared with pushing events for both languages, which is explained by the object's becoming available to the agent as a result of this action. The present study contributes to the understanding of the expression of caused motion in the category of satellite-languages and points to the influence of morpho-syntactic characteristics of a given language on the sematic content of the descriptions of motion events.

Keywords: space; caused motion; satellite-framed languages; Polish; English

INTRODUCTION

This study investigates how Polish and English, as satellite-framed languages, differ in their lexicalization of pulling and pushing events, and whether these patterns conform to the known lexicalization of voluntary motion in these languages. This research is significant as it fills a gap in our understanding of lexicalization of caused motion within the category of satellite-framed languages and points to the significance of morpho-syntactic characteristics of a given language.

Caused motion is typically expressed by means of placement verbs such as *put*, *move* (and their equivalents in other languages) and verbs that also carry additional information about the Manner such as *push* or *roll*. In this study we will focus on just two events eliciting such verbs, i.e., push and pull events, which are likely to elicit *pull* and *push* in English, and their Polish equivalents *ciągnąć* and *pchać*. The main aim of the research is to compare the expression of caused motion events in two satellite-framed languages: Polish and English, as well as to check

[a] *Main & corresponding author*

eISSN: 2550-2131
ISSN: 1675-8021

whether the patterns of expressing voluntary motion reported in previous studies (e.g. Kopecka 2010; Lewandowski 2021; Łozińska 2019) are parallel to these caused-motion data.

Talmy (2000) distinguishes the following basic components of a motion event: Motion, Figure (a moving entity), Ground (an object in respect to which the Figure moves) and Path (the trajectory of the Figure's motion). Voluntary motion events include an additional component which is Manner (expressing the way the Figure moves) while caused-motion events include Cause of motion. Cause of motion expressions can further refer to Manner of cause, which is the way a certain object is displaced (e.g., by pushing or pulling) or Manner of object, which is the way the displaced object moves (e.g., sliding or rolling). Within the Talmyan framework (Talmy 2000), both English and Polish are included in the satellite-framed category of languages. In such languages (hereafter *S-languages*) the roots of motion verbs typically code Manner and/ or Cause of motion while Path is rendered by means of satellites (i.e. verbal prefixes or particles). In contrast, in verb-framed languages (hereafter *V-languages*) verb roots tend to encode Path while Manner is rendered peripherally. Sentences (1) and (2) illustrate the expression of caused motion in an S- and V-language respectively.

(1) *I kicked the ball into the box*. [English]

(2)

Metí	*la*	*pelota*	*a*	*la*	*caja*	*de*	*una*	*patada.*
I inserted	the	ball	to	the	box	from (by)	a	kick. [Spanish]

(after Talmy, 2000, p. 228)

Polish and English belong to the same typological category of S-languages, but they are not genetically related. Intra-typological comparative studies of genetically non-related languages are valuable for two major reasons.

First, research of the lexicalization of motion events within the same typological group is less common[b] than across groups and the results of such comparisons are less predictable than between languages belonging to different typological categories (e.g., between English and Spanish). Thus, comparing languages from the same typological group may reveal more subtle and at the same time less obvious differences as well as similarities (cf. Hendriks et al., 2021). Cross-linguistic studies within the same typological group can encompass both genetically related (e.g., German and English) and unrelated languages (e.g., Polish and English). The latter comparisons may reveal how the differences in the distribution and/ or density of the semantic content within a clause may emerge from semantic and morpho-syntactic characteristics of a given language, and how such differences can further affect the lexicalization patterns. We believe the present research, which compares the patterns of expressing caused motion within the domain of genetically unrelated satellite-framed languages, will corroborate the existing findings.

Both in the domains of voluntary as well as caused motion, the comparison between non-genetically related S-languages is scarce. In the domain of voluntary motion comparative studies between genetically unrelated *S-languages* were carried out by, for example, Hendriks et al. (2021), Slobin (2006), Ibarretxe-Antuñano (2009), Lewandowski and Mateu (2016), Lewandowski (2021) and Łozińska (2018, 2019). Cross-linguistic intra-typological studies in the

[b] Among cross-linguistic studies contrasting two languages reported in 'A bibliography of linguistic expressions for Motion Events' by Matsumoto and Slobin (https://www.yumpu.com/en/document/read/34478082/a-bibliography-of-linguistic-expressions-for-motion-events-part-i-yo-), there are roughly 27 comparative inter-typological comparisons of the lexicalisation of motion (including 12 between English and Spanish), and 7 intra-typological analyses.

eISSN: 2550-2131
ISSN: 1675-8021

domain of caused motion are even less common (but see Hickmann et al., 2018 for the comparison of English and German and Lewandowski 2021 for the comparison of Polish and German).

DIFFERENCES IN THE EXPRESSION OF MOTION BETWEEN POLISH AND ENGLISH

Languages of the world do not necessarily fall into one of the two extreme categories distinguished by Talmy (2000) but instead have been proposed to form a continuum of Manner (or Path) saliency ranging from those that (almost) always code the Manner of motion in the verb to those that (almost) always code the Path in the verb (cf. Ibarretxe-Antuñano, 2009; Łozińska, 2019; Slobin, 2004).

SOME RESULTS REGARDING VERBS EXPRESSING VOLUNTARY MOTION

Previous cross-linguistic studies on the lexicalization patterns of voluntary motion show that Germanic languages display a greater variety of types of manner verbs than Slavic languages (see the comparison of Polish and German by Lewandowski 2021, Lewandowski & Mateu 2016, and Polish and English by Łozińska 2019). However, Jarvis and Pavlenko (2008:146) rightly point out that in English, Manner is an optional category due to the existence of high-frequency neutral and path verbs (e.g. *come* and *go* or *enter* and *exit*) while in some of the Slavic languages, like Polish or Russian, there are no frequent motion verbs that would code these semantic distinctions without specifying Manner.

Nevertheless, although Slavic languages use more tokens of manner verbs, Lewandowski's study (2021) shows that these verbs include fewer semantic components when compared with Germanic ones. In oral narratives adult native speakers of German produced a greater diversity of types of manner verbs than Polish speakers. This intra-typological difference is mainly assigned to the constraints on Manner encoding imposed by verbal prefixes, which do not occur with many highly specific manner verbs (cf. Lewandowski, 2021 for the analysis of the morpho-syntactic constraints in Polish, Filipović 2007 for a similar phenomenon in Serbo-Croatian). To illustrate, in Polish many semantically more-granular motion verbs cannot be used with the whole range of prefixes obligatory in the perfective aspect, which automatically eliminates their use from some contexts (e.g. **wy-kuśtykać* 'out-limp', **w-mknąć* 'in-shoot', **wy-raczkować* 'out-crawl'). This limits the number of types (i.e. the variety of motion verbs) in the studied corpora but, what is important, not the number of tokens (i.e. instances of motion verbs).

As a consequence, Slavic verbs (in particular those appearing with a wide range of prefixes) tend to be first-tier verbs (according to Slobin's terminology, 1997) with general manner information rather than second-tier verbs conflating more specific Manner components. At the same time, however, when the number of tokens produced in oral narratives is taken into consideration, Polish native speakers display greater reliance on Manner verbs when compared with German (Lewandowski 2021) and with English (Łozińska, 2019) respondents.

eISSN: 2550-2131
ISSN: 1675-8021

VERBS EXPRESSING CAUSED MOTION

Caused motion verbs include such verbs as 'push' and 'pull' – describing a specific Manner of cause – and 'roll' and 'slide' – coding Manner of object. They conflate Cause with Manner. Placement events, on the other hand, may elicit semantically light verbs, such as *put, get or make move* or more specific position verbs in Polish (such as *stawiać* 'to put in a standing position'). Both types may be used, often interchangeably, in the same context and both express causation.

As far as the semantic categories conflated in caused-motion verbs are concerned, in Polish and English, both S-languages, Manner of motion as well as Cause of motion are typically coded in motion verbs while the Path is coded in satellites. As mentioned, both Polish and English use other than S-framed strategies for expressing motion, which emerge from both semantic as well as morpho-syntactic characteristics. The expression of Manner of object or Manner of cause by means of motion verbs is not obligatory. In English, placement and removal may be lexicalized by means of frequent generic verbs such as *put* and *get*. Polish also has at its disposal placement verbs which code neither Manner of object nor Manner of cause, such as *umieścić coś* 'to place something', *lokować coś* 'to locate something' and *wydobyć coś z czegoś* 'to get something out of something', however, they are less frequent than the English equivalents, and their use is restricted. Contrary to the English verbs *put* and *get*, Polish semantically light verbs are relatively infrequent (e.g. *lokować coś* 'to locate something') and do not belong to the colloquial style, which is considered to be a "characteristic expression of motion" in a given language (Talmy 1985:62).

What is more, both languages under study have in their lexicon verbs conflating the Path component (with or without the component of Manner), which denotes the direction of motion. In English these are either verbs of Romance origin (e.g. *ascend*) or of Germanic origin (e.g. *drop, raise, lift*). In turn, most of the Polish verbs of this type, such as *(u)puścić* 'to drop' or *(u)nieść* 'to raise', belong to the group of motion verbs created in the process of fossilization of prefix-verb combinations, which has been noted in all Balto-Slavic languages (cf. Filipović, 2007; Kopecka, 2010; Speed, 2015; Verkerk, 2014, 2015).

Finally, unlike English, Polish has at its disposal transitive positional verbs expressing caused motion which code the position of the Figure's final or resulting position in relation to the Ground, i.e. *stawiać* 'to put in a standing position' and *kłaść* 'to put in a lying position'. These verbs code the position of the object at the end of caused motion, in such phrases as *wystawiać filiżanki* 'to take cups out and place them on a surface in vertically elongated position' and *wykładać książki* 'to take books out and place them in horizontally elongated position'. Let us now turn to morpho-syntactic characteristics of Polish and English which turn out to be significant for the type of the lexicalization patterns of caused-motion events.

MORPHO-SYNTACTIC DIFFERENCES INFLUENCING THE EXPRESSION OF MOTION

Satellites, defined as "the grammatical category of any constituent other than a noun-phrase complement that is in a sister relation to the verb root" (Talmy, 2000, p. 102), in Polish and other Slavic languages are bound prefixes to the verb and in combination with prepositional phrases render Path of motion. Note however, that such verbal prefixes convey both Path as well as aspectual information and that aspect is an obligatory category to be marked on the verb by means of such prefixes.

As the aspectual marking is obligatory in the Polish language and aspectual markers are often spatial satellites, this may lead to a greater frequency of coding of spatial relations. Even

eISSN: 2550-2131
ISSN: 1675-8021

though English satellites may also have implications for the aspectual reading of the predicate, aspectual marking is not obligatory in the syntactic structure of the English sentence.

Linked to the need for obligatory aspectual marking, Polish allows for coding the same Path by means of both a prefix (for aspectual reasons) and a prepositional expression (which cannot mark aspect) in the description of the same motion event (e.g. ***przep****chnać wózek* ***przez*** *ulicę* 'to across-push a cart across a street'), which may additionally focus the speakers' attention on Path (a linguistic phenomenon noted also in German, see Hickmann et al., 2018) since the same spatial relation is expressed by two lexical items.

COGNITIVE FACTORS INFLUENCING THE EXPRESSION OF MOTION

Besides semantic and morpho-syntactic differences between languages, there are also cognitive factors which may influence the expression of motion. Such factors are thought to be non-linguistic and universal. First of all, let us note an important cognitive factor in this respect, namely an asymmetry in coding goal vs. source, which has been reported in previous studies of encoding placement versus removal events (Kopecka & Narasimhan 2012; Lakusta & Landau 2005; Regier & Zheng 2007; Stefanowitsch & Rohde 2004). For example, Lakusta and Landau (2005) showed the predominance of a goal-based perspective. The subjects in their experiments when using manner verbs like *run*, *hop* or *roll*, with no syntactic or semantic constraints on coding source or goal, more frequently chose expressions denoting goals. It is assumed that goal bias is non-linguistic since the endpoints of motion are perceptually more salient than the sources of motion.

Yet studies of placement and removal events in a number of languages give more detailed and less obvious results concerning goal bias (cf. Ishibashi 2012; Kopecka 2012; Petersen 2012). For instance, the analysis of the descriptions of putting and taking events in Polish (Kopecka 2012) reveals that the elicited data included more verbs (when it comes both to types and tokens), verbal prefixes and prepositional phrases for placement than removal events. What is more, there is a larger set of finely-grained verb types when compared with descriptions of removal situations. Similarly, Swedish respondents also use more verbs with finer-grained semantic distinctions for coding placement than verbs coding removal (Gullberg & Burenhult 2012).

Interestingly, Kopecka (2012: 334) reports that "[w]hile in the expression of placement Polish speakers provide detailed information about the Figure properties (liquid or granular) and/or the configuration of the Figure with respect to the Ground (its posture or a relationship such as tight-fit containment), in the expression of removal, they focus more on the way the removal of the Figure is performed (by pulling, grasping, or carrying)". In other words, in Polish placement verbs tend to convey the information about the Figure and its position while removal verbs include information about the Manner of agent.

This leads us to the second non-linguistic factor that may compete with the goal/ source asymmetry, which is the human tendency to pay attention to objects which are in the viewpoint-defined region of interactive focus (Lindner 1983). This is described as the region within which objects are (or become) visible, available or manipulable to the agent. In the present study the region of interactive focus is understood as the space within which the moved object, as a result of this motion, becomes visible, available or manipulable to the agent causing this motion, as in (3).

eISSN: 2550-2131
ISSN: 1675-8021

(3) *Wyciągnął chusteczkę z kieszeni.*
(He) out-pulled a handkerchief from pocket.
'He took a handkerchief from his pocket.'

It is possible that motion of Figures which come into this region is described more often and with more detail than motion of Figures leaving it.

PREDICTIONS

Predictions concerning the differences in the expression of caused motion in Polish and English are based on the premise that the patterns of lexicalization of caused motion are consistent to a certain degree with the ones revealed in previous studies for voluntary motion. This assumption has been confirmed by the empirical studies carried out by Hendriks et al. (2008), Hendriks and Hickmann (2015) as well as Lewandowski (2021), which point to a symmetry in the expression of voluntary and caused motion. This means that the typical S- and V-language patterns of expressing motion are preserved in the expression of both voluntary and caused motion. In particular, in English the strategies of expressing voluntary motion are close to the patterns of lexicalization of caused motion. It should be noted, however, that previous studies also show some important discrepancies between the description of the two types of motion in, for example in French (Hendriks & Hickmann, 2015) and Chinese (Ji et al., 2011). The intra-typological studies comparing Polish and German (Lewandowski, 2021) confirm the compatibility of the lexicalization of these two types of motion also within the category of S-languages.

Let us recall that in the domain of voluntary motion, when compared with Polish, the English lexicon is richer in types of manner verbs, which code the way in which voluntary motion proceeds in a more fine-grained manner, however the frequency of the use of such verbs (tokens) is lower than the frequency of use of Polish manner verbs. The lower number of types of manner verbs in Polish may be due to constraints on Manner/ Path compatibility and/ or a smaller repertoire of motion verbs. On this basis it is predicted (**P1**) that in the analysed corpus of the descriptions of caused motion events in English there will be a greater number of types of verbs used. However, overall there will be fewer tokens of manner verbs when compared with Polish.

Furthermore, the obligatoriness of marking aspect on Polish verbs, which is rendered by means of prefixes also expressing spatial meanings, will entail more frequent coding of Path information when compared with English. Thus, due to the linguistic features of the studied languages it is predicted (**P2**) that in the descriptions of caused motion events in Polish, the Path will be coded more often than in English.

What is more, the natural human tendency to concentrate on the region of interactive focus will naturally result in coding relations where the Figure enters this region, that is where it becomes visible and accessible to the agent. On this basis, we expect (**P3**) more descriptions of the Figure's motion with the force directed towards than away from the agent. Given the events we are focussing on in this study, and typical uses, we would expect there to be more expression of pulling events (pulling involving object's motion towards the speaker) versus pushing events (typically motion away from the speaker).[c] Finally, on the basis of well-documented goal-bias, it is predicted (**P4**) that in the analysed corpus of the descriptions of caused motion (by means of caused-motion as well as placement verbs) there will also be an asymmetry between goal and source encoding

[c] It is not excluded to pull things away from yourself (as when using a pulley, for example). Similarly, one could think of situations in which one pushes towards oneself. These situations are much less typical and not noted in our corpus.

eISSN: 2550-2131
ISSN: 1675-8021

with more frequent goal coding. Since the latter two discussed tendencies are non-linguistic and, consequently universal for all languages, we expect them to be noted both for Polish and English.

THE STUDY

METHOD

To obtain an unbiased corpus of data for the analysis of the domain of caused motion in the two languages (both for quantitative as well as qualitative analysis), two novels (one originally written in Polish and the other in English) and their translations have been selected for analysis. Corpora created on the basis of translation are particularly valuable since they allow for the comparison of the same content in different languages (cf. Waldenfels, 2012 for advantages and disadvantages of using a parallel corpus in linguistic studies).

The Polish novel entitled *Sword of Destiny* (further referred to as *The Witcher*) by Andrzej Sapkowski was translated into English by David A. French. The second novel *Harry Potter and the Philosopher's Stone* (further referred to as *Harry Potter*) was written by J.K. Rowling and translated into Polish by Andrzej Polkowski. The books were selected for analysis because both of them are well-known modern novels, rich in lively descriptions of motion events. Since the books in the original languages differ in length (*The Witcher* contains 94 690 words while *Harry Potter* 81 480), the last pages of *The Witcher* (including 13 210 words) were not scrutinized.

All instances of the verbs *pull* and *push* were selected from the book originally written in English and all instances of the verbs *ciągnąć* 'to pull' and *pchać* 'to push' verbs (prefixed or non-prefixed) were selected from the book written originally in Polish. Then the counterparts of these verbs were found in the translated version. Since the counterparts in the translated versions, besides caused-motion verbs, included a variety of placement verbs, the analysis encompasses 'push' and 'pull' verbs as well as placement verbs.

The present study refers solely to actual motion, so all metaphorical uses of these verbs (such as *pull oneself together*), the use of these verbs in the passive including past participles (e.g. *wypchany krokodyl* out-pushed crocodile, 'a stuffed crocodile') as well as common, fixed phrases (such as *push the door open, roll up a sleeve, wyciągnąć rękę* 'stretch out a hand') were excluded from the analysis. In this way two parallel and comparable corpora of the descriptions of actual caused motion events for both languages were created, which allowed for cross-linguistic comparison of the lexicalization of caused motion situations.

We analysed between- and within-language differences in the expression of caused motion by means of motion verbs, satellites and prepositional phrases. The statistical analysis was carried out separately for types and tokens of motion verbs applying chi-square goodness of fit tests (with the use of Statistica 13.3). These tests were performed to determine the significance of the differences between the obtained proportion of Polish and English data and their expected values. The tests were applied with Yates's correction, which is used to adjust the chi-squared test for samples with small sizes. The obtained Polish and English data will be presented in tables below.

eISSN: 2550-2131
ISSN: 1675-8021

RESULTS AND DISCUSSION

QUANTITATIVE ANALYSIS

We expected that in the domain of caused motion English data would include a greater variety of motion verbs (i.e. types) making finer-grained manner distinctions when compared with Polish. However, manner verbs were expected to appear more frequently in the Polish corpus (i.e. tokens). As for the types of motion verbs coding caused motion, prediction (**P1**) was not confirmed. The number of types of motion verbs in the two languages was similar (10 in Polish (Pol) vs. 12 in English (Eng)). What is more, when types of semantically light motion verbs occurring in the translation (i.e. *get*, *take* and *remove*), verbs including Path (*heave,* which in the data always denoted an upward movement and *zadrzeć* 'move up') and verbs which do not denote motion of the object from point A to point B (e.g., *stretch* and *napierać* 'to push forcefully') are excluded from the analysis, the numbers of types in each language are equally similar (9 Pol vs. 7 Eng).

When it comes to the tokens of the selected manner verbs (see Tables 1, 2 and 3 below), as expected, the Polish data included more tokens of manner verbs when compared with English (136 vs. 121), and the difference was statistically significant (chi^2 with Yates' correction =11.3216, p<0.001). The above results therefore partially confirm (**P1**).

TABLE 1. Polish 'push' and 'pull' verbs used in *The Witcher* and their equivalents in the English translation (M – Manner component, P – Path component)

verb type in Polish (no. of tokens)	English translation
ciągnąć 'pull' M (72)	*pull* M (27), *draw* M (20), *get* (7), *take* (5), *lead* M (3), *remove* (3), *drag* M (2), *haul* M (2), *heave* P (1), *stretch* N/A[d] (1), *tug* M (1)
pchać 'push' M (5)	*push* M (5)

TABLE 2. English 'push' and 'pull' verbs used in *Harry Potter* and their equivalents in the Polish translation (M – Manner component, P – Path component)

verb type in English (no. of tokens)	Equivalent in the Polish translation
pull M (51)	*ciągnąć* 'pull' M (39), (-)*łożyć* 'put in a lying position' M (4), (-)*jąć* 'take' M (3), *(-)garnąć* 'move with hands' M (1), *pchać* 'push' M (1), *rzucać* 'throw' M (1), *rwać* 'pull out forcefully' M (1), *zadrzeć* 'move up' P (1),
push M (9)	*pchać* 'push' M (6), *(od)garniać* 'move with hands' M (1), *napierać* 'push forcefully' N/A (1), (-)*ciskać* 'squeeze' M (1)

TABLE 3. No. of tokens of motion verbs conflating Manner component

	Polish no. of tokens	English no. of
Manner verbs	136	121
Path and neutral verbs	1	15

[d] Only verbs describing the object's motion from point A to point B were considered for the analysis.

Furthermore, we wanted to find out whether the necessity of coding specific syntactic categories (i.e. perfective aspect by means of verbal prefixes) entails more frequent and more detailed coding of the Path in Polish when compared with English (**P2**). It was shown that such difference exists both for the number of types as well as the number of tokens of satellites (69 in Pol vs. 35 in Eng). The data show that the types and tokens of satellites in Polish outnumber those included in the English corpus. For tokens, the results are statistically significant (chi^2 with Yates' correction =22.941, $p<0.001$) and confirm (**P2**). Tables 5 and 6 present satellites selected in the descriptions of pulling and pushing events respectively, while Table 7 shows summarized frequencies.

TABLE 5. The use of verbal prefixes in Polish and particles in English in pulling events

	Polish [*The Witcher*]		**English [*Harry Potter*]**	
	Prefix	**no. of tokens**	**particle**	**no. of tokens**
1.	*wy-*	36	*out*	19
2.	*ś-*	8	*on*	6
3.	*w-*	7	*off*	5
4.	*po-*	6	*back*	2
5.	*ob-*	4	*over*	2
6.	*na-*	3	*up*	1
7.	*od-*	2		
8.	*przy-*	2		
9.	*pod-*	1		
	Total	69		35

TABLE 6. The use of verbal prefixes in Polish and particles in English in pushing events

	Polish [*The Witcher*]		**English [*Harry Potter*]**	
	Prefix	**no. of tokens**	**Particle**	**frequency**
1.	*z(e)-*	3	*Off*	2
2.	*od(e)-*	2	*Out*	1
3.	*po-*	2		
4.	*w(e)-*	1		
Total		8		3

TABLE 7. The overall expression of Path by means of prefixes in Polish and particles in English in English and Polish

	No. of selected motion events in each lg.	**No. of satellites**
English	65	38
Polish	84	77

Next, in confirmation of (**P3**) which is anticipating an asymmetry between the frequency of coding of pushing and pulling events, the data within each language evidence unequal representation of these events in the corpora for both languages. The descriptions of pulling events outnumber the descriptions of pushing events (see Table 8) and the results are statistically significant both for Polish (chi^2 for Goodness of Fit =25.9, df=1, $p<0.001$) and for English (chi^2 for Goodness of Fit =52.8, df=1, $p<0.001$). What is more, it should be noted that in both languages under study, the elaboration on the Path by means of satellites is much more developed in the descriptions of pulling than pushing events (compare Tables 6 and 7).

eISSN: 2550-2131
ISSN: 1675-8021

TABLE 8. Comparison of the tokens of *pull/ ciągnąć* 'pull' verbs vs. *push/ pchać* 'push' verbs

***pull/ ciągnąć* 'pull'**		***push/ pchać* 'push'**	
English [*Harry Potter*]	**Polish [*The Witcher*]**	**English [*Harry Potter*]**	**Polish [*The Witcher*]**
82% (53)	89% (75)	18% (12)	11% (9)

Finally, (**P4**) was not confirmed since in the descriptions of pulling events in both languages the description of sources prevailed over references to the goal (see Table 8) (chi^2 for Goodness of Fit =7.475, df=1, $p<0.01$). As for pushing events, too few instances were selected to draw any conclusions.

TABLE 9. Goal and source coding by means of PPs in Polish and English novels

***pull/ ciągnąć* 'pull'**				***push/ pchać* 'push'**			
PPs coding Goal		**PPs coding Source**		**PPs coding Goal**		**PPs coding Source**	
Harry Potter	***The Witcher***	***Harry Potter***	***The Witcher***	***Harry Potter***	***The Witcher***	***Harry Potter***	***The Witcher***
(9)	(10)	(16)	(24)	(3)	(4)	(0)	(2)

QUALITATIVE ANALYSIS

After scrutinizing the data, several important tendencies were noted in the patterns of the lexicalization of caused motion in Polish and English. The qualitative analysis of the results has been divided into the discussion of the lexicalization of caused motion with the force directed towards the agent and away from the agent.

PULLING EVENTS

MOTION VERBS CONFLATING MANNER OF CAUSE

Studies contrasting lexicalisation patterns in Slavic versus Germanic languages note the use of higher numbers of manner verbs (i.e. tokens) in the data for voluntary motion in the former compared to the latter languages (cf. Lewandowski 2021; Lewandowski & Mateu 2016; Łozińska 2019). In the analysed data for caused motion we observe the same pattern in the number of selected tokens of motion verbs expressing Manner (as in the case of voluntary motion), but results concerning verb types are less conclusive (see P1, and Table 1 and Table 2). As in voluntary motion (cf. Kopecka 2010) (with includes frequent light verbs such as *come* and *go*), in the English data for caused motion semantically light verbs were also noted. As mentioned earlier, although Polish has in its repertoire a few semantically poor, generic verbs of caused motion equivalent to English *get* and *take,* they are used infrequently and belong to the rather formal register. As a result, in the analysed Polish data such verbs were not attested. In the case of *get*, *take* and *remove* neither the force instigated by the agent to move the Figure nor the way the Figure moves is expressed, thus they conflate neither Manner of cause nor Manner of object. In the Polish source sentences, these instances are rendered by means of motion verbs conflating more fine-grained semantic components, mainly the verb *ciągnąć* 'to pull' (conflating Manner of cause), as in (4) and (5).

eISSN: 2550-2131
ISSN: 1675-8021

(4) *Geralt, błagam, wyciągnij mnie z tego piekła!* [The Witcher]
Geralt, I beg you, get me out of this hell![e]

(5) *Zdzieblarz, Niszczuka, rozgrużajcie wóz, wyciągajcie sprzęt.* [The Witcher]
Beanpole, Gar, clear the debris off the wagon and get the gear out.

Both Polish and English corpora include caused-motion verbs as well as placement verbs since they may code the same spatial relations. The meanings of Polish and English verbs to some extent overlap but are hardly ever fully equivalent.

Polish caused-motion verbs included in the corpus are not first-tier verbs (as those noted for voluntary motion) and make fine semantic manner distinctions. To illustrate, Polish has at its disposal the verb *(wy)rwać,* which denotes forceful removal of an object from a tight container usually causing some destruction either to the object or to the Ground (or both), as in (6).

(6) *(…) but pulling great tufts out of his moustache at the same time.* [Harry Potter]
(…) ale jednocześnie wyrywając sobie spore kępki wąsów.

Other verbs describing specific manner components include, for example *-garnąć* and *-jąć*, which refer to the use of hands by the agent, or *-łożyć*, which describes the final position of the object.

English, on the other hand, makes fine semantic distinctions in the descriptions of pulling events, for example, by means of such verbs as *heave* (conflating both Manner and Path, i.e. upward movement, as well as exertion by the agent) as in (7). Next, the English frequent verb *draw* (denoting caused motion from a tight container such as a pocket or a sheath, as in (8) and (9)) systematically codes this type of spatial relation in the scrutinized data. In all these cases in the Polish corpus the verb *ciągnąć* 'to pull' is used, which conflates solely the semantic component of motion caused by the force exerted on the object and directed towards the agent.

(7) *W górę ich! Ciągnijcie!* [The Witcher]
Pull them up! Heave!

(8) *I wyciągniemy z tego oceanu wszystko, co tylko da się.* [The Witcher]
We shall draw from the ocean everything we can.

(9) *Rzeźnik też wyciągnął nóż.* [The Witcher]
The butcher also drew a knife.

To summarize, no significant differences in the number of types of motion verbs nor their specificity in caused motion descriptions between Polish and English were observed, which is the tendency noted for voluntary motion (cf. Lewandowski, 2021, Łozińska, 2019). One of the reasons for the difference in this respect between the two types of motion in Polish may be the morpho-syntactic constraints discussed earlier, which seem to limit the number of verb types in the descriptions of voluntary but not caused motion.

Let us note here that while voluntary motion involves only one participant (the moving Figure), caused motion includes also the agent, whose external force causes the Figure's motion.

[e] The first sentence in each pair comes from the book written in the original language and the second from its translated version.

eISSN: 2550-2131
ISSN: 1675-8021

Lewandowski (2021, p. 14) explains that "while self-motion events can only specify the way in which the Figure moves (i.e., Manner of motion, e.g*., He jumped into the water*), caused-motion events are able to specify both the way in which the Figure moves (e.g., *John rolled the ball across the room*) and the way in which the Figure is caused to move (i.e., Manner of causation; e.g., *John kicked the ball across the room*)". This contributes to a higher number of both tokens and types of manner verbs coding caused motion when compared to voluntary motion (cf. Lewandowski 2021). Our assumption is that the availability of a greater variety of manner verbs coding caused motion (when compared with those coding voluntary motion) in Polish diminishes the influence of morpho-syntactic constraints noted for voluntary motion. Actually, the constraints may even contribute to a greater use of verb types in Polish since some spatial situations must be lexicalized by highly specific manner verbs which can only be used with a small number of prefixes. For example, the verb *(wy-)jąć '*(out)take' in its spatial sense describes causing the object's motion out of a container by means of hands or an instrument. The same verb does not appear with other prefixes (**(w)jąć* '(in)take') and may not refer to motion into a container. Coding of other spatial relations necessitates the use of a variety of verb types (e.g. *-łożyć* 'put in a lying position', or *stawiać* 'put in a standing position').

As it comes to the dissimilarities between lexicalization of the two types of motion, the English corpus includes more placement verb types with no Manner or Path component and caused-motion verbs conflating Path when compared with Polish. For this reason, significantly more tokens of verbs expressing Manner of Cause were noted in the Polish corpus.

MOTION VERBS CONFLATING MANNER OF OBJECT

Verbs coding the Manner of object (which is the way the Figure moves) were noted in the Polish corpus more often than in English, however in both languages they were so scarce that we could not measure if differences were statistically significant. Despite the fact that lexical items coding Manner of object were infrequent in our corpus, the results concerning their appearance in the corpus were included in the analysis since Manner of object is distinguished as a separate component of caused motion (Talmy 2000).

The transitive use of the verb *sunąć* 'to slide' is much more frequent in Polish than in English (26 vs. 10 tokens). English additionally has at its disposal the transitive verb *slip* (3 tokens) denoting a similar type of relation between the Figure and the Ground, which is exemplified in (10).

(10) *Hermione muttered as Ron slipped his wand up his sleeve.* [Harry Potter]
(…) mruknęła Hermiona, kiedy Ron wsunął swoją różdżkę w rękaw.

Finally, as already mentioned, in the Polish lexicon there are frequent posture verbs coding the events of caused motion marking the relation between the moved Figure and Ground at the goal. The study of the lexicalization patterns of putting and taking events carried out by Kopecka (2012) shows that in the case of these motion situations the Figure's final position relative to the Ground is lexicalized by means of transitive posture verbs: *stawiać* 'to put in a standing position', *kłaść* 'to lay' and *(w)sadzać* 'to insert in a compact position'. To illustrate, in the Polish sentence in (11) the final position of the cage in relation to the carriage is clearly marked (which even required adding reference to the cage in the Polish translation) while in English the generic placement verb *to put* is used.

eISSN: 2550-2131
ISSN: 1675-8021

(11) *He put Hedwig inside first and then started to shove and heave his trunk toward the train door.*[f] [Harry Potter]

Najpierw	*wstawił*	*klatkę*	*z*	*Hedwigą,*	*a*	*potem*	*zaczął*
First	(he) in-stood	cage	with	Hedwig	and	then	(he) started

ciągnąć	*swój*	*kufer*	*ku*	*drzwiom*	*przedziału.*
to pull	his	trunk	toward door		compartment$_{GEN}$'

'First he put (in a standing position) the cage with Hedwig inside and then started to pull his trunk toward the door of the compartment.'

The use of such verbs contributes to the more frequent coding of Manner of object in Polish when compared with English. As mentioned, however, our results in this respect, are not statistically significant and the lexicalization of Manner of object requires further studies.

PUSHING EVENTS

The Polish verb *pchać* 'to push' typically marks the exertion of force away from the agent and is rarely[g] used for the description of caused motion of small objects which does not require increased force from the agent. In contrast, the corpus data show that the English equivalent *to push* is typically used for rending this type of spatial situations. In (12) moving of the Figure does not require much force since the object (in these cases an empty bowl) in relatively small and easy to move for the agent.

(12) *...odsuwając pustą już miskę* [The Witcher]
... pushing the now empty bowl away ...

SOURCE VS. GOAL ASYMMETRY IN CAUSED MOTION EVENTS

The present analysis of caused motion reveals that a vast majority of the descriptions of pulling events in both languages under study include PPs of source (see Table 9), which implies that verbs like 'pull' evoke frames in which coding of the information about the goal of motion may be less important than the source. It is inferred by the listener that the goal of the Figure's motion is the region accessible to the agent. It is sufficient that the Figure is finally located at any place within the region of interactive focus and the goal does not need to be specified linguistically. To illustrate, in (13) the use of the verbal prefix *wy-* 'out' in Polish and the particle *from* in English appear to be sufficient to mark the object's entering the agent's region of interactive focus, thus the goal is not specified by means of a PP.

(13) *Geralt spokojnie wyciągnął z kieszeni sakiewkę (...)* [The Witcher]
Geralt calmly took from his pocket the purse (...)

Interestingly, the source-goal asymmetry related to both pulling and pushing events thus differs from the findings reported for placement events by Kopecka (2012) or voluntary motion by Lakusta & Landau (2005). In both kinds of events the source of motion was coded more frequently.

[f] This particular sentence does not come from the analysed corpus and it is used here for exemplary purpose only.
[g] The first 100 results of *pchać* 'push' in the National Corpus of Polish (NKJP) include two instances of this verb referring to small objects (a box and a salty cellar). The rest involved large objects requiring force and effort to be moved.

The most frequent satellites in both languages under study are those that code the relation of the object's being moved out of a container and usually placed within the agent's region of interactive focus. This spatial situation is coded by the Polish verbal prefix *wy-* ('out') and the English particle *out*. However, there is a crucial difference between the two languages in this respect, which is reflected in the frequency of the appearance of these items in the corpus data. The Polish prefix is more frequent since it is always used whenever the object is moved from some hidden and inaccessible place (usually only conceptualized as a container) and subsequently located within the region of interactive focus. In English, on the other hand, (since the aspect does not need to be marked) the use of the satellite is not obligatory and thus it is used much less frequently (36 tokens in Polish and 19 in English), mostly in reference to real containers.

ASYMMETRY BETWEEN THE FREQUENCY OF PULLING AND PUSHING EVENTS

In both corpora there were significantly more instances of the descriptions of pulling than pushing events (see Table 8). This may have been caused by several factors. First of all, pulling is the canonical way of moving heavy objects by means of instruments (such as lines, cords) or with the use of animals (e.g. horses). Secondly, as a result of pulling objects (usually out of containers) they come within the agent's region of interactive focus while pushing events usually have the opposite effect.

Our research reveals (see Table 8) a statistically larger set of pulling events when compared with pushing events. Let us note that the studies reported for putting and taking events in numerous languages (Kopecka & Narasimhan 2012) show that the events of putting are lexicalized by means of verbs making more fine-grained manner distinctions, more prefixes and satellites than removal events (cf. Kopecka 2012, Petersen 2012, Gullberg & Burenhult 2012). This finding is in accordance with the results of our study, which shows that for both languages under study pulling events are remarkably more frequently described than pushing, with the use of greater number of types of verbs which are accompanied with a larger number of satellites. In the case of most pulling events the Figure becomes accessible, visible and manipulable for the agent in a similar way to an object which is pulled towards the agent (for example out of a container).

Thus, the Figure's entering the agent's region of interactive focus seems to be an important factor contributing to the frequency and richness of the descriptions of both putting and pulling events. Motion events of pushing and removal frequently denote the object's motion away from the agent (e.g. *He pushed him off the cliff*) and in consequence becoming inaccessible. As predicted, since the discussed cognitive factors are non-linguistic and universal, no significant differences were noted between Polish and English in this respect.

CONCLUSION

The comparison of the ways of expressing caused motion in Polish and English carried out in the present study revealed, first of all, that in comparison with English, Polish data includes more tokens of motion verbs, mainly denoting Manner of cause (e.g. *pchać* 'push' and *ciągnąć* 'pull'). English, instead, uses generic verbs (such as *put*, *get, take, remove*) for the description of motion events which were not noted in the Polish data.

As it comes to the types of manner verbs, the study showed that both languages are comparable as far as the number of types of such verbs and their specificity are concerned. The analysis of the descriptions of caused motion events in Polish revealed a vast number of types of verbs, some of which may be accompanied by a limited number of prefixes. To illustrate, the verb

eISSN: 2550-2131
ISSN: 1675-8021

-jąć 'to take with the use of hand or an instrument' in its spatial sense appears only with the prefix *wy-* and denotes a caused motion out of a container. Thus, to express motion into the opposite direction another type is required, e.g. *-łożyć* (with the prefix *w-*). With the greater variety of manner components which need to be expressed to describe caused motion, the morpho-syntactic constraints (which limit the number and specificity of manner verbs used for voluntary motion) do not narrow use of the types of manner verbs and even seem to necessitate the use of a greater number of types "specialized" for the expression of a particular spatial relation.

The results of our study lead to the overall conclusion that the same patterns of Manner and Path saliency of a language manifest themselves in the lexicalization of both voluntary and caused motion. Further cross-linguistic studies of the lexicalization patterns are needed to verify whether languages, in the domain of caused motion, as in the domain of voluntary motion, also form a continuum of Path and Manner saliency. The present study strongly indicates that again as in the case of voluntary motion Polish verbs more frequently mark Manner (both Manner of object and Manner of cause) than English.

The present study has also shown that besides the affinity to a specific typological group the syntactic characteristics of a language determines to some extent not only the ways in which specific meaning is rendered in a clause but potentially also the specific spatial information that is conveyed. In particular, boundary crossings are more frequently lexicalized in Polish descriptions than in English due to the obligatory use of perfectivizing prefixes.

Finally, it should be noted that our study was based solely on data coming from the translation of two novels, and more research is needed to confirm the findings. For example, a study based on linguistic data coming from elicitation tasks would be particularly valuable in this respect.

REFERENCES

Filipović, L. (2007). *Talking about Motion: A Cross-Linguistic Investigation of Lexicalization Patterns*. Amsterdam: John Benjamins.

Gullberg, M. & Burenhult N. (2012). Probing the linguistic encoding of placement and removal events in Swedish. In A. Kopecka & B. Narasimhan (Eds.), *Events of Putting and Taking: A Crosslinguistic Perspective* (pp. 167-182). Amsterdam: John Benjamins.

Hendriks, H. & Hickmann M. (2015). Finding one's path into another language: on the expression of boundary crossing by English learners of French. *Modern Language Journal.* 99(S1), 14–31.

Hendriks, H., Hickmann M. & Demagny A.-C. (2008). How English native speakers learn to express caused motion in English and French. *Acquisition et Interaction en Langue Étrangère.* 27, 15–41.

Hendriks H., Hickmann M., Pastorino-Campos C. (2021). Running or crossing? Children's expression of voluntary motion in English, German, and French. *Journal of Child Language.* 1–24. https:// doi.org/10.1017/S0305000921000271Hickmann, M., Hendriks H., Harr A.-K. & Bonnet P. (2018). Caused Motion across child languages: a comparison of English, German, and French. *Journal of Child Language. 45*(6), 1247–74. doi:10.1017/S0305000918000168.

Ibarretxe-Antuñano, I. (2009). Path salience in motion events. In J.Guo, E. Lieven, N. Budwig, S. Ervin-Tripp, K. Nakamura and Ş. Özçalışkan (Eds.), *Crosslinguistic Approaches to the*

Psychology of Language: Research in the Tradition of Dan Isaac Slobin (pp. 403-414). New York: Psychology Press.

Ishibashi, M. (2012). The expression of 'putting' and 'taking' events in Japanese. In A. Kopecka, and B. Narasimhan (Eds.), *Events of Putting and Taking: A Crosslinguistic Perspective* (pp. 253-272), Amsterdam: John Benjamins.

Jarvis, S. & Pavlenko A. (2008). *Crosslinguistic Influence in Language and Cognition*. New York and London: Routledge.

Ji, Y., Hendriks, H. & Hickmann, M. (2011). The expression of caused motion events in Chinese and in English: some typological issues. *Linguistics. 49*(5), 1041–1076.

Kopecka, A. (2010). Motion events in Polish: Lexicalization patterns and the description of Manner. In V. Hasko & R. Perelmutter (Eds.), *New Approaches to Slavic Verbs of Motion* (pp. 225–246). Amsterdam: John Benjamins.

Kopecka, A. (2012). Semantic granularity of placement and removal expressions in Polish. In A. Kopecka & B. Narasimhan (Eds.), *Events of Putting and Taking: A Crosslinguistic Perspective* (pp. 327-348), Amsterdam: John Benjamins.

Kopecka, A. & Narasimhan B. (eds.). (2012). *Events of Putting and Taking: A Crosslinguistic Perspective*. Amsterdam: John Benjamins.

Lakusta, L. & Landau B. (2005). Starting at the end: the importance of goals in spatial language. *Cognition* 96, 1-33.

Lewandowski, W. (2021). Variable motion event encoding within languages and language types: A usage-based perspective. *Language and Cognition*. *13*(1), 34-65. doi:10.1017/langcog.2020.25

Lewandowski, W. & Mateu J. (2016). Thinking for translating and intra-typological variation in satellite-framed languages. *Review of Cognitive Linguistics. 14*(1), 185-208. DOI: 10.1075/bct.99.08lew

Lindner, S. (1983). *A Lexico-Semantic Analysis of English Verb-Particle Constructions with Up and Out*. Indiana University Linguistics Club.

Łozińska, J. (2018). *Path and Manner Saliency in Polish in Contrast with Russian. A Cognitive Linguistic Study*. Leiden: Brill.

Łozińska, J. (2019). The expression of path in three satellite-framed languages. A cognitive study of Polish, Russian, and English, *Jezikoslovlje* 20*,* 31-61.

Petersen, J. H. (2012). How to put and take in Kalasha. In A. Kopecka & B. Narasimhan (Eds.), *Events of Putting and Taking: A Crosslinguistic Perspective* (pp. 349-366). Amsterdam: John Benjamins.

Regier, T. & Zheng M. (2007). Attention to endpoints: A cross-linguistic constraint on spatial meaning. *Cognitive Science* 31, 705–719.

Rowling, J. K.1998. *Harry Potter and the Sorcerer's Stone*. New York: Arthur A. Levine Books. (translated into Polish by Andrzej Polkowski).

Sapkowski A. 1992. "Miecz przeznaczenia", Warszawa: SuperNOWA. (translated by into English by David A. French).

Slobin, D. I. (1997). Mind, code, and text. In J. Bybee, S. A. Thompson & J. Haiman (Eds), *Essays On Language Function and Language Type* (pp. 437–467). Amsterdam: John Benjamins.

Slobin, D. I. (2004). The many ways to search for a frog: linguistic typology and the expression of motion events. In S. Strömqvist & L. Verhoeven (Eds.), *Relating Events in Narrative: Typological and Contextual Perspectives* (pp. 219-257). Mahwah, N.J.: Lawrence Erlbaum Associates.

Slobin, D. I. (2006). What makes manner of motion salient? Explorations in linguistic typology, discourse, and cognition. In M. Hickmann & S. Robert (Eds.), *Space in Languages: Linguistic systems and cognitive* categories (pp. 59–81). Amsterdam: John Benjamins Publishing Company.

Speed, T. (2015). Manner/Path typology of Bulgarian motion verbs. *Journal of Slavic Linguistics. 23*(1), 51-81.

Stefanowitsch, A. & Rohde A. (2004). The goal bias in the encoding of motion events. In G. Radden & K.-U. Panther (Eds.), *Studies in Linguistic Motivation* (pp. 249–268). Berlin and New York: Mouton de Gruyter.

Talmy, L. (1985). Lexicalization patterns: Semantic structure in lexical forms. In T. Shopen, (Ed.), *Language Typology and Semantic Description*, vol. 3: Grammatical Categories and the Lexicon (pp. 36–149). Cambridge: Cambridge University Press.

Talmy, L. (2000). *Toward a Cognitive Semantics*. Vol. II Cambridge, MA: MIT Press.

Verkerk, A. (2014). The evolutionary dynamics of motion event encoding. Doctoral dissertation, Radboud University Nijmegen.

Verkerk, A. (2015). Where do all the motion verbs come from? The speed of development of manner verbs and path verbs in Indo-European. *Diachronica. 32*(1), 69-104.

Waldenfels, R. (2012). Polish tea is Czech coffee: advantages and pitfalls in using a parallel corpus in linguistic research. In A. Ender, A. Leemann & B. Wälchli (Eds.), *Methods in Contemporary Linguistics* (pp. 263-282). Berlin, Boston: De Gruyter Mouton.

ABOUT THE AUTHORS

Joanna Łozińska is an assistant professor at the University of Warmia and Mazury in Olsztyn, Poland. Her research focuses on metaphor and lexicalization of motion.

Professor Hendriks spent her early career at the Max-Planck Institute for Psycholinguistics, cooperating in three international research projects on first and second language acquisition. In 1998 she moved to the University of Cambridge, where she teaches and researches. Her research focuses on language acquisition and the connection between language and cognition.

eISSN: 2550-2131
ISSN: 1675-8021