

Denominal Prefixed Verbs and Their Valency Structure: A Corpus Study on Czech, English, German and Spanish

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Structure of the presentation

1) Theoretical background

2) Research objectives

3) Data

4) Analysis + Results

5) Discussion

Theoretical background

Denominal verb formation

- often **conversion**

- English: *hammer* > *to hammer*
- Czech: *korun-a* 'crown' > *korun-ova-t* 'to crown'
- German: *Puder* 'powder' > *puder-n* 'to powder'
- Spanish: *cepill-o* 'brush' > *cepill-a-r* 'to brush'

→ change of word class without addition of derivational affixes

→ in some languages includes changes in **nominal ending** and **verbal theme + ending**

- also **prefixation**

= prefixation + conversion (Dokulil 1962; Fleischer 2012; Štícha et al. 2018;);
parasyntesis (RAE 2009; Serrano-Dolader 2015), circumfixation (Šimandl 2016)

- English: *horn* > **to horn* > *de-horn*
- Czech: *lod* 'ship' > **lod-i-t* > *na-lod-i-t* 'to put on a ship'
- German: *Sklave* 'slave' > **sklav-en* > *ver-sklav-en* 'to enslave'
- Spanish: *flor* 'flower' > **flor-a-r* > *en-flor-a-r* 'to decorate with flowers'

→ change of word class + addition of prefix in one step

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Denominal prefixed verbs: V-N semantic relations

Denominal prefixed verb

horn > *de-horn*

horn > **PREF**-horn

'horn' > 'remove the horn'

Meaning of base N in relation to the V:

= removed object

lod' > *na-lod'-i-t*

ship > **PREF**-ship-**THEME-INF**

'ship' > 'put on a ship'

= goal, place where sth is put

flor > *en-flor-a-r*

flower > **PREF**-flower-**THEME-INF**

'flower' > 'decorate with flowers'

= added object

Sklave > *ver-sklav-en*

slave > **PREF**-slave-**INF**

'slave' > 'make into a slave'

= result of the action

Denominal prefixed verbs: V-N semantic relations

Denominal prefixed verb

Meaning of base N in relation to the V:

po-mouč-i-t < *mouka*

PREF-flour-THEME-INF < flour

'put on flour' < 'flour'

= added object

po-němč-i-t < *Němec*

PREF-german-THEME-INF < german

'make into a German' < 'German'

= result of the action

→ not one-to-one mapping btw. prefix and V–N relation

Denominal prefixed verbs: valency structure

How to account for the regularities in these verbs' valency structure?

Lexical conceptual structure (LCS) approach

- Lieber & Baayen (2011): Dutch prefixes

ver-

= [_{Event}CAUSE([_{Thing} _], _{Event}GO([_{Thing} _] , _{Path}FROM([_{Place/Thing/Event} _]) TO([_{Place/Thing/Property} _])))]

verpakken 'to wrap up' < *pak* 'package'

= [_{Event}CAUSE([_{Thing} _], _{Event}GO([_{Thing} _] , _{Path}FROM([_{Place} _]) To([_{Thing} *pak*])))]

- Wunderlich (1987), Stiebels (1996): German prefixes
- Labelle (2000): French denominal verbs

Denominal prefixed verbs: valency structure

Cognitive event-schema approach

Baeskow (2022, 2023): German denominal verbs

- denominal verbs evoke an **event-schema** = “frame-like default situation”
- the **base N = participant role** in the situation → V–N semantic relation
- **other participant roles = syntactic arguments**

*be***schottern** ‘cover with gravel’ < *Schotter* ‘gravel’ = CAUSED MOTION, base N = LOCATUM

- prefix = very general meaning – differences in how the situation is profiled
- not a one-to-one relation between a certain type of prefix and certain type of event-schema

Denominal prefixed verbs: valency structure

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- prefix = very general meaning – differences in how the situation is profiled
- not a one-to-one relation between a certain type of prefix and certain type of event-schema

- **??** argument structure connected to the prefix?
 - Lieber & Baayen, Stiebels, Wunderlich: prefix introduces arguments
 - argument structure connected to the V–N relation?
 - Baeskow: type of situation → participants → reflected in syntactic arguments

Research objectives

Research objectives

Valency behaviour of denominal prefixed verbs in Czech, English, German and Spanish.

Method: Data-based approach using annotated corpus data.

Questions:

- To what degree are the **types of valency patterns** connected to:
 - the **verb's prefix**
 - vs.
 - the **V–N semantic relation?**
- What are the **prominent patterns** in the different languages?
- Do the languages have the prominent patterns **in common** (despite differences in structure and productivity of the denominal prefixed verbs?)

Data

Data: compilation of the data set

- 1) **Prefixed verbs** where **unprefixed V not attested** and **base word is a N** from a list of verbal lemmas annotated for their morphemic structure (extracted from comparable corpora)

pře-mostit 'to bridge' < **mostit* < *most* 'bridge'

- 2) **V–N relation** annotation (semantic relation btw. the V and motivating N)

přemostit 'to bridge' < *most* 'bridge' = "to provide with N, to add N somewhere" = **ADD**

- 3) 20 (or all if freq < 20) concordances annotated for the **type of valency pattern** the V occurs with

Přemostil vedení kouskem drátu = (Actor) Patient Means

'He bridged the *circuit with a piece of wire*'

<i>Language</i>	<i>Corpus</i>	<i>Size</i>	<i>Time period</i>	<i>Genres</i>
Czech	SYN2000 (Čermák et al. 2000)	100 mil.	1990–1999	fiction: 33% non-fiction: 33% newspaper: 33%
English	BNC (BNC Consortium 2007)	100 mil.	1960s–1993	written: 90% – imaginative: 19% – informative: 81% spoken: 10%
German	DWDS (Geyken 2007)	120 mil.	1900–1999	fiction: 26.35 % newspaper: 27.29 % academic: 24.59 % non-fiction: 21.77 %
Spanish	CREA (RAE 2014)	120 mil.	1975–2000	fiction: 25 % academic + newspaper: 75 %

<i>Language</i>	<i>Corpus</i>	<i>Size</i>	<i>Time period</i>	<i>Genres</i>	<i>Verb lemmas</i>	<i>Annotated concordances</i>
Czech	SYN2000 (Čermák et al. 2000)	100 mil.	1990–1999	fiction: 33% non-fiction: 33% newspaper: 33%	240	3 494
English	BNC (BNC Consortium 2007)	100 mil.	1960s–1993	written: 90% – imaginative: 19% – informative: 81% spoken: 10%	82	887
German	DWDS (Geyken 2007)	120 mil.	1900–1999	fiction: 26.35 % newspaper: 27.29 % academic: 24.59 % non-fiction: 21.77 %	211	2 133
Spanish	CREA (RAE 2014)	120 mil.	1975–2000	fiction: 25 % academic + newspaper: 75 %	810	7 524

Data: V-N semantic relation annotation

<i>Label</i>	<i>Explanation</i>	<i>Example</i>
ACTION	“to carry out the action denoted by N”	<i>verabschieden</i> ‘say goodbye’ < <i>Abschied</i> ‘act of saying goodbye, farewell’
ADD	“to add/put N somewhere“	<i>přemostit</i> ‘bridge’ < <i>most</i> ‘bridge’
AFFECT	“to affect/manipulate/hurt the N”	<i>deslomar</i> ‘hurt sb’s back’ < <i>lomo</i> ‘back’
AGENT	“to do what N does”	<i>bemuttern</i> ‘act, take care of like a mother’ < <i>Mutter</i> ‘mother’
ANIMAL	“to act like an animal denoted by the N”	<i>vyslepičit</i> ‘act like a hen (tell a secret)’ < <i>slepice</i> ‘hen’
GOAL	“to put something (in)to N“ / “to move to N“	<i>nalodit</i> ‘put on a ship’ < <i>lod</i> ‘ship’
INSTR	“to use N as an instrument“	<i>odpálkovat</i> ‘bat away, blow off’ < <i>pálka</i> ‘bat’
LOC	“to do sth in the place denoted by the N“	<i>acampar</i> ‘camp’ < <i>campo</i> ‘camp’
PATH	“to move through/along/over N”	<i>überborden</i> ‘overflow the bank’ < <i>Bord</i> ‘edge, bank’
REMOV	“to remove N from somewhere / to destroy N”	<i>odčervit</i> ‘deworm’ < <i>červ</i> ‘worm’
RES	“to create/make/cause N“	<i>ožebračit</i> ‘make into a beggar’ < <i>žebrák</i> ‘beggar’
SOURCE	“to remove something from N“	<i>vyložit</i> ‘take out of a ship’ < <i>lod</i> ‘ship’
STATE	“to be in a state denoted by N”	<i>emperezar</i> ‘be lazy’ < <i>pereza</i> ‘laziness’
TIME	“to do sth for the period of time denoted by the N”	<i>übernachten</i> ‘spend the night’ < <i>Nacht</i> ‘night’

Data: valency pattern annotation

<i>Valency slot</i>	<i>VALLEX label</i>	<i>Example</i>
<i>Actor</i>	ACT	<i>the Poles will endanger Taylor in the World Cup qualifiers; the car derailed</i>
<i>Patient</i>	PAT	<i>the Poles will endanger Taylor in the World Cup qualifiers</i>
<i>Addresse</i>	ADDR	<i>I entrust her safety to you</i>
<i>Means</i>	MEANS	<i>he was seeking to overpower them with his presence; you should interleave it with tissue paper</i>
<i>Effective</i>	EFF	<i>I wan to turn my childhood room into a gym</i>
<i>Source</i>	DIR1, ORIG	<i>drive home from school through the forest</i>
<i>Path</i>	DIR2	<i>drive home from school through the forest</i>
<i>Goal</i>	DIR3	<i>drive home from school through the forest</i>
<i>Removed</i>	-	<i>I cleared the table of the dirty dishes</i>

Lopatková et al. (2016)

Analysis + Results

Valency structure: Prefix vs. V-N relation

To what degree are the types of valency patterns connected to the verb's prefix vs. the V-N relation?

Valency structure: Prefix vs. V-N relation

To what degree are the types of valency patterns connected to the verb's prefix vs. the V-N relation?

Mutual Information (MI)

- = how much information does knowing one variable give us about another variable
- measured in bits
- zero when the variables are independent

$$\sum_{x \in X} \sum_{y \in Y} p(x, y) \log \frac{p(x, y)}{p(x) p(y)}$$

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	MI	
	V-N relation	prefix
Czech	0.477	0.445
English	0.340	0.305
German	0.235	0.221
Spanish	0.156	0.078

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V-N relations: percentages in the sample

	Czech	English	German	Spanish
ACTION	0.0	0.0	4.3	1.2
ADD	21.1	7.2	21.3	16.8
AFFECT	0.0	0.0	0.0	1.9
AGENT	0.0	0.0	0.9	1.4
ANIMAL	3.8	0.0	0.5	2.0
CAUSE	0.4	0.0	0.5	1.0
GOAL	11.8	19.3	7.1	13.7
INSTR	11.8	4.8	7.6	13.7
LOC	0.0	0.0	0.0	0.1
PATH	0.0	0.0	0.9	0.9
REMOV	8.4	38.6	13.7	17.5
RES	37.6	15.7	39.8	25.4
SOURCE	4.6	12.0	1.9	3.7
STATE	0.0	0.0	0.5	0.5
TIME	0.4	2.4	0.9	0.2
<i>Total</i>	<i>100.0</i>	<i>100.0</i>	<i>100.0</i>	<i>100.0</i>

přemostit 'bridge' < *most* 'bridge'

nalodit 'put on a ship' < *lod'* 'ship'

odpálkovat 'bat away, blow off' < *pálka* 'bat'

odčervit 'deworm' < *červ* 'worm'

ožebračit 'make into a beggar' < *žebrák* 'beggar'

vyložit 'take out of a ship' < *lod'* 'ship'

V-N relation \Leftrightarrow valency patterns: Czech

<u>V-N relation</u>	<u>Valency patterns</u>							
ADD	<i>Actor Patient</i>	69.48%	<i>Actor Patient Means</i>	19.32%	<i>Actor</i>	7.69%	other	3.51%
GOAL	<i>Actor Patient Goal</i>	35.37%	<i>Actor Patient</i>	32.93%	<i>Actor Goal</i>	23.6%	other	8.10%
INSTR	<i>Actor Patient</i>	51.53%	<i>Actor</i>	20.28%	<i>Actor Patient Goal</i>	13.37%	other	14.82%
REMOV	<i>Actor Patient</i>	81.43%	<i>Actor</i>	11.65%	<i>Actor Patient Removed</i>	4.52%	other	2.40%
RES	<i>Actor Patient</i>	53.6%	<i>Actor</i>	35.05%	0	2.71%	other	8.64%
SOURCE	<i>Actor Patient</i>	44.95%	<i>Actor</i>	21.65%	<i>Actor Patient Source</i>	13.21%	other	20.19%

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Tento případ rozvášnil *veřejnost*.
 ‘This case inflamed the public.’

Actor Patient

Princezna Caroline ovdověla.
 ‘Princess Caroline became a widow.’

Actor

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V-N relation = valency slot

Američané je nalodili na své čluny.
 ‘The Americans on-shipped them onto their boats.’

Actor Patient Goal

V-N relation = Valency slot

V-N relation	Valency pattern	Example
GOAL	<i>Actor Patient Goal</i>	<i>nalodit zboží na loď / na člun</i> 'to on-ship the goods onto a ship / a boat'
ADD	<i>Actor Patient Means</i>	<i>oplotit pozemek plotem / ostnatým drátem</i> 'to around-fence the property with a fence / a barbed wire'
INSTR	<i>Actor Patient Means</i>	<i>odpálkovat něco/někoho pálkou / silnými slovy</i> 'to away-bat sth/sb away with a bat / with strong words'
REMOV	<i>Actor Patient Remov</i>	<i>odbřemenit stát od břemena / od závazků</i> 'to unburden the state from a burden / from its obligations'
RES	<i>Actor Patient Effective</i>	<i>znetvořit někoho v netvora / do podoby opice</i> 'to in-monster sb into a monster / into the image of monkey'
SOURCE	<i>Actor Patient Source</i>	<i>vykolejit něco/někoho z kolejí / z normálního běhu života</i> 'to derail sth/sb from the rails / from the normal course of life'

V-N relation \Leftrightarrow valency patterns: English

<u>V-N</u> <u>relation</u>	<u>Valency patterns</u>							
ADD	<i>Actor Patient</i>	75.63%	<i>Actor Patient Means</i>	23.53%	<i>Actor Patient Goal</i>	0.84%	other	0.00%
GOAL	<i>Actor Patient</i>	55.49%	<i>Actor Patient Goal</i>	36.05%	<i>Actor Patient Addressee</i>	6.27%	other	2.19%
INSTR	<i>Actor Patient</i>	92.5%	<i>Actor</i>	6.25%	<i>Actor Patient Means</i>	1.25%	other	0.00%
REMOV	<i>Actor Patient</i>	91.25%	<i>Actor</i>	4.21%	<i>Actor Patient Effective</i>	3.24%	other	1.30%
RES	<i>Actor Patient</i>	77.22%	<i>Actor</i>	7.72%	<i>Actor Patient Effective</i>	5.41%	other	9.65%
SOURCE	<i>Actor Patient</i>	83.92%	<i>Actor</i>	9.05%	<i>Actor Patient Source</i>	7.04%	other	0.00%

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They were encircling *the building*.

Actor Patient

The larvea are likely to encyst.

Actor

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The other has been enshrined *in the sanctuary.*

(*Actor*) *Patient Goal*

V-N relation \Leftrightarrow valency patterns: German

<u>V-N relation</u>	<u>Valency patterns</u>							
ADD	<i>Actor Patient</i>	79.04%	<i>Actor Patient Means</i>	11.48%	<i>Actor</i>	4.02%	other	5.46%
GOAL	<i>Actor Patient</i>	69.04%	<i>Actor</i>	11.17%	<i>Actor Goal</i>	8.88%	other	10.91%
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Diese Gewaltorganisation versklavt den Menschen. *Actor Patient*

‘This violent organization enslaves the people.’

Wenn *ein Kraftfahrer* verunglückt (...)

Actor

‘When a driver has an accident (...)’

V-N relation \Leftrightarrow valency patterns: German

<u>V-N relation</u>	<u>Valency patterns</u>							
ADD	<i>Actor Patient</i>	79.04%	<i>Actor Patient Means</i>	11.48%	<i>Actor</i>	4.02%	other	5.46%
GOAL	<i>Actor Patient</i>	69.04%	<i>Actor</i>	11.17%	<i>Actor Goal</i>	8.88%	other	10.91%
INSTR	<i>Actor Patient</i>	73.55%	<i>Actor Patient Goal</i>	10.08%	<i>Actor Patient Means</i>	6.93%	other	9.44%
REMOV	<i>Actor Patient</i>	81.72%	<i>Actor</i>	8.66%	<i>Actor Patient Means</i>	5.33%	other	4.29%
RES	<i>Actor Patient</i>	56.94%	<i>Actor</i>	25.69%	<i>Actor Patient Means</i>	6.81%	other	10.56%
SOURCE	<i>Actor Patient</i>	37.76%	<i>Actor</i>	23.98%	<i>Actor Effective</i>	22.96%	other	15.30%

Wir müssen *sie in die bestehenden Volksschulen* einschulen.

Actor Patient Goal

'We have to enroll them in the existing primary schools.'

V-N relation \Leftrightarrow valency patterns: Spanish

<u>V-N relation</u>	<u>Valency patterns</u>							
ADD	<i>Actor Patient</i>	69.06%	<i>Actor</i>	16.97%	<i>Actor Patient Means</i>	5.62%	other	8.35%
GOAL	<i>Actor Patient</i>	55.21%	<i>Actor Patient Goal</i>	17.93%	<i>Actor</i>	13.83%	other	13.03%
INSTR	<i>Actor Patient</i>	66.85%	<i>Actor</i>	17.15%	<i>Actor Patient Means</i>	4.96%	other	11.04%
REMOV	<i>Actor Patient</i>	63.81%	<i>Actor</i>	30.33%	<i>Actor Patient Means</i>	2.71%	other	3.15%
RES	<i>Actor Patient</i>	56.62%	<i>Actor</i>	34.37%	<i>Actor Patient Goal</i>	2.47%	other	6.54%
SOURCE	<i>Actor Patient</i>	55.74%	<i>Actor</i>	22.03%	<i>Actor Patient Goal</i>	6.35%	other	15.88%

V-N relation \Leftrightarrow valency patterns: Spanish

<u>V-N relation</u>	<u>Valency patterns</u>							
ADD	<i>Actor Patient</i>	69.06%	<i>Actor</i>	16.97%	<i>Actor Patient Means</i>	5.62%	other	8.35%
GOAL	<i>Actor Patient</i>	55.21%	<i>Actor Patient Goal</i>	17.93%	<i>Actor</i>	13.83%	other	13.03%
INSTR	<i>Actor Patient</i>	66.85%	<i>Actor</i>	17.15%	<i>Actor Patient Means</i>	4.96%	other	11.04%
REMOV	<i>Actor Patient</i>	63.81%	<i>Actor</i>	30.33%	<i>Actor Patient Means</i>	2.71%	other	3.15%
RES	<i>Actor Patient</i>	56.62%	<i>Actor</i>	34.37%	<i>Actor Patient Goal</i>	2.47%	other	6.54%
SOURCE	<i>Actor Patient</i>	55.74%	<i>Actor</i>	22.03%	<i>Actor Patient Goal</i>	6.35%	other	15.88%

Agrupamos las distintas especies siguiendo un criterio racional. (Actor) Patient

'We group the different species following a rational criterion.'

El bolsillo soporta un peso que abulta bastante. Actor

'The pocket supports a weight that bulges quite a bit.'

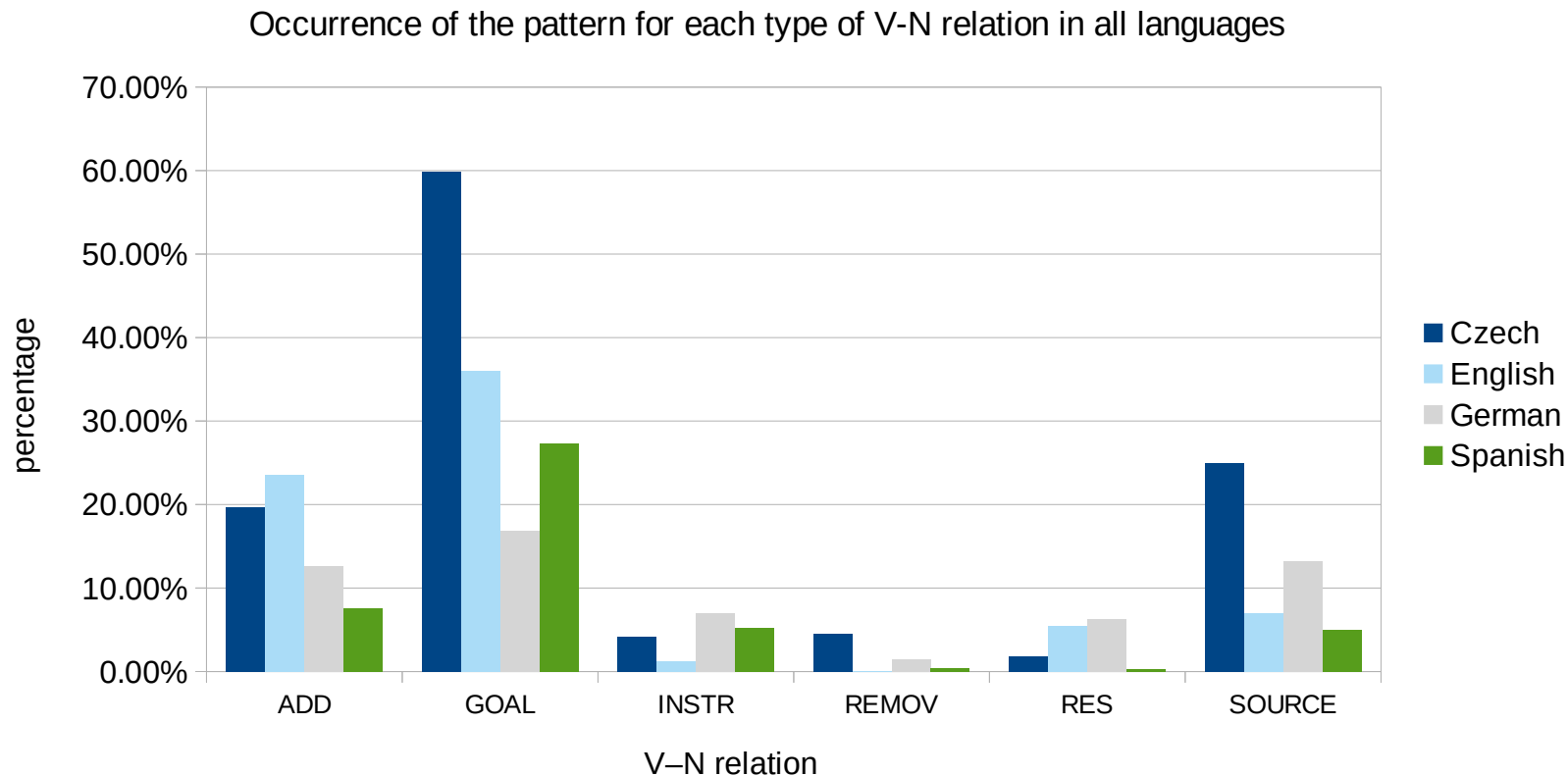
V-N relation \Leftrightarrow valency patterns: Spanish

<u>V-N relation</u>	<u>Valency patterns</u>							
ADD	<i>Actor Patient</i>	69.06%	<i>Actor</i>	16.97%	<i>Actor Patient Means</i>	5.62%	other	8.35%
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SOURCE	<i>Actor Patient</i>	55.74%	<i>Actor</i>	22.03%	<i>Actor Patient Goal</i>	6.35%	other	15.88%

A Lorenza la enclaustraron en una casa de monjas. (Actor) Patient Goal

'They cloistered Lorenza in a nunnery.'

V-N relation = Valency slot: occurrence



Discussion

Discussion

- To what degree are the **types of valency patterns** connected to the **verb's prefix vs. the V–N relation**?
 - Both, but the MI between the **V–N relation** and **type of valency pattern** is higher in all four languages
 - ~ Baeskow's (2022, 2023) account
- **What are the prominent patterns?** Do the languages have them **in common**?
 - ***Actor Patient*** pattern most prominent across semantic types and languages, ***Actor*** pattern occurs less frequently
 - = verbs tend to be transitive, **express some notion of affecting the patient**
 - Pattern where **V–N relation = valency slot** found frequently across languages, most frequently for the **GOAL** V–N relation

For future consideration:

- Functions of the pattern where **V–N relation = valency slot**
- **Other types of prominent patterns** as related to V–N relations
- Relation btw. **prefix** and **type of valency pattern**

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