

ADVANCED SYNTACTIC PHENOMENA IN THE NOMVALLEX LEXICON

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Abstract: NomVallex 2.5 is a valency lexicon of Czech nouns and adjectives that besides valency of particular noun and adjectival lexical units captures several valency-related syntactic phenomena, namely (i) active and passive syntax, (ii) systemic and non-systemic valency behavior, (iii) reflexivity and reciprocity, and (iv) negation. These phenomena, represented in the lexicon mostly by deverbal and deadjectival derivatives, are described here with respect to the derivational category of denominal adjectives. Though being regarded as less typical representatives of valency bearers in the non-verbal domain, denominal adjectives turned out to be involved in all of the studied syntactic phenomena. Their syntactic behavior thus can be viewed as similar to other derivational categories, especially to deverbal adjectives.

Keywords: denominal adjectives, negation, reciprocity, valency, valency lexicon, syntax

1 INTRODUCTION

Valency, forming the syntactic core of the sentence, is involved in various syntactic phenomena, some of which are specific to the particular parts of speech; e.g. while diatheses (e.g. active and passive voice) are characteristic of verbs (Lopatková et al. 2016), active or passive syntax are typical of nouns and adjectives (Kolářová 2024). In this paper, we focus on valency-related syntactic phenomena in which nouns or adjectives are involved.

Valency properties of Czech nouns and adjectives are covered in several Czech valency lexicons, namely in a printed dictionary by Svozilová, Prouzová and Jirsová (2005), and in two electronic valency lexicons, PDT-Vallex (Urešová et al. 2024) and NomVallex (Kolářová and Vernerová 2022). While the former two lexical

resources only describe the valency of particular nouns and adjectives, NomVallex (Section 2) aims to provide users with further valency-related syntactic phenomena relevant to these parts of speech (Section 3).

In this paper, we focus on denominal adjectives; compared to deverbal or deadjectival derivatives, denominal adjectives are regarded as less typical representatives of valency bearers in the non-verbal domain, and it is thus worth investigating whether the syntactic phenomena studied here are also relevant to them. Though this derivational category is only marginally represented in NomVallex 2.5 (Tab. 1), it will be, besides denominal nouns, the category focused on in the next version of the lexicon (Section 3.5).¹

2 THE NOMVALLEX LEXICON

NomVallex is a manually created valency lexicon of Czech nouns and adjectives, adopting the Functional Generative Description (FGD) as its theoretical basis. Its newest version, NomVallex 2.5 (available as publicly accessible web-pages² and as downloadable and machine readable data; Kolářová et al. 2024), comprises 1,337 lexical units contained in 730 lexemes. As for derivational categories, it covers deverbal, deadjectival and denominal nouns, and deverbal, denominal, deadjectival and primary adjectives (Tab. 1).

Part-of-speech category	Derivational category	Lexical units	Lexemes
Nouns	deverbal	682	328
	deadjectival	301	197
	denominal	9	3
Adjectives	deverbal	244	151
	denominal	31	15
	deadjectival	8	8
	primary	62	28
Total		1,337	730

Tab. 1. The structure of the NomVallex 2.5 lexicon

NomVallex adopts and further modifies, where necessary, the annotation scheme of the valency lexicon of Czech verbs, VALLEX (Lopatková et al. 2022) (Fig. 1). The lexicon entry contains a lexeme, an abstract unit associating lexical forms with their lexical units (LUs), i.e., word senses. NomVallex applies the valency theory of the FGD (Panevová 1980): Valency properties of a lexical unit

¹ However, in some cases, it is not clear whether the adjective is motivated by a noun, or by a verb, cf. *podobný* ‘similar, resembling’ < *podoba* ‘similarity’ / *podobat se* ‘resemble’.

² <https://ufal.mff.cuni.cz/nomvallex/2.5/>

are captured in a valency frame, a sequence of valency slots, each supplemented with a list of morphemic forms. The following types of complements may be a part of valency frames: obligatory or optional actants (i.e., ACTor, PATient, ADDRessee, EFFect, and ORIGin, e.g. *Petrův*_{ACT} *smysl pro humor*_{PAT} ‘Peter’s sense of humor’, *výrobek prodejný mládeži*_{ADDR} ‘product marketable to young people’, *vyhláška pochybná svou legalitou*_{EFF} ‘regulation questionable as to its legality’), and obligatory free modifications (e.g. *muž povoláný do armády*_{DIR3} ‘a man drafted into the army’). In NomVallex, valency properties of a lexical unit are illustrated with examples from the Czech National Corpus (corpora SYNv12 and Araneum Bohemicum Maximum).³

It is typical of adjectival valency structures, unlike the verbal and noun ones, that one valency complement of the adjective is systematically elided from the surface and thus cannot be expressed on the surface as a modification of the adjective. Instead, it refers to its antecedent expressed outside the adjectival structure either as the noun governing the adjective, see (2–3) for constructions with the deverbal adjectives *snášelivý* ‘tolerant’ and *snesitelný* ‘tolerable’, or as the subject of the copula verb that the adjective forms a predicate with, see (1), cf. also Kettnerová and Kolářová (2023). In the valency frames of adjectives, this valency complement is marked by an upward arrow (4–5); this sign is also used in (1–3) to pinpoint the antecedents of the systematically elided adjectival valency complements.

- (1) *plodina*_↑ *je snášelivá vůči suchu*_{PAT-vůči ‘to’+Dat}
‘the crop is tolerant of drought’
- (2) *plodina*_↑ *snášelivá vůči suchu*_{PAT-vůči ‘to’+Dat}
‘the crop tolerant of drought’
- (3) *podnebí*_↑ *snesitelné pro Evropany*_{ACT-pro ‘for’+Acc}
‘climate tolerable to Europeans’
- (4) *snášelivý* ‘tolerant’ ACT_↑ PAT_{k ‘to’+Dat}
- (5) *snesitelný* ‘tolerable’ ACT_{Ins,pro ‘for’+Acc} PAT_↑

³ Accessible at: <https://www.korpus.cz/>.

NOMVALLEX 2.5

DATA | GUIDE | THEORY | ABOUT

frames | lexemes | POS | derivational category | valency behavior | syntax | reflexivity & reciprocity | negation | class | semantic category | derived from || [advanced search](#)

hide

pozorný

Q

pozorný

požadavek

požadování, požádání

prodejnost

prohlásování, prohlášení

proba

proslulost

proslulý

prostota

prostý

prošení

prošení se

protest

protestování

protivnost

protivný

prozkoumávání,

prozkoumání

průzkum

přání

přání si

přecitlivělost

2

plný zájmu, ochoty; všímavý

[blu-a-pozorný-2]

frame

ACT₁ PAT_{kk3}

example

PAT:

Je **pozorná** k cizincům.PAT a váží si cestovního ruchu. • Tito ptáci jsou velmi **pozorní** vůči potomkům.PAT a jsou vynikajícími otci • Byly tak **pozorné** vůči mému postavení.PAT odbornice, že mě zasypávaly otázkami

reflex

ACT-PAT Je **pozorný** sám k sobě.PAT. Sebevědomí je středem jeho zájmů.

recipr

ACT-PAT Přemýšlejí o vztazích, nejsou tak hierarchičtí, jsou k sobě.PAT navzájem **pozorní**

type

A-DN

neg-lemmas

no-aspect: nepozorný [blu-a-pozorný-2:neg]

neg-commonness

standard

neg-type

direct negation

neg-example

PAT:

Nemyslím, že by je rozbíjela schválně, prostě k nim.PAT byla **nepozorná**, jako jsme **nepozorní** k ženě.PAT, na které nám nezáleží. • I k Polině.PAT je **nepozorný** až hrubý. • Nedomnívám se, že Litoměřice by byly **nepozorné** k rodinám.PAT, ale určitě máme co zlepšovat. • Jen jsem se omluvil za to, jak jsem byl vůči ní.PAT **nepozorný** a necitlivý. • Jsou tak lhotežní, **nepozorní** vůči mým pocitům.PAT

less of

2

^

Fig. 1. The NomVallex entry for the adjective *pozorný* ‘thoughtful/attentive’

3 VALENCY-RELATED SYNTACTIC PHENOMENA

Though primarily focused on valency, NomVallex aims to provide language material and lexicographic software, allowing for linguistic research of various language phenomena, including derivational relations, lexical semantics (e.g. semantic classes, semantic categories and various semantic shifts reflected in different lexical units), or valency-related syntactic behavior. In this section, we present four advanced syntactic phenomena treated in NomVallex that are closely related to valency of Czech nouns or adjectives, namely (i) active- and passive-like syntax (Section 3.1), (ii) systemic and non-systemic valency behavior (Section 3.2), (iii) reciprocity and reflexivity (Section 3.3), and (iv) negation (Section 3.4). These phenomena can be searched for or filtered using the lexicon’s web pages (see Fig. 1 capturing the entry for the denominal adjective *pozorný* ‘thoughtful/attentive’).

3.1 Active- and passive-like syntax

Kolářová (2024) deals with the way verbal active and passive constructions are reflected in the syntactic structures of adjectives and nouns and shows that the type of syntax a verbal or non-verbal predicate can use (i.e., both active and passive syntax, or only one of these) represents a notable difference between verbs and

deverbal nouns on the one hand and adjectives and deadjectival nouns on the other: While nouns directly derived from transitive verbs usually display both active and passive syntax (cf. *snášet útrapy* ‘endure hardships’ > *Petrovo snášení útrap* ‘Peter’s enduring of hardships’ vs. *snášení útrap Petrem* ‘enduring of hardships by Peter’), adjectives and deadjectival nouns (even those motivated by a transitive verb) use either active or passive syntax only; for example, the adjective *snášenlivý* ‘tolerant’ can only use the active syntax, cf. (6) and (8). Typically, while in active-like adjectival constructions Actor is systematically elided from their surface valency structure, cf. (6), in passive-like adjectival constructions, Actor is one of the valency complements expressed on the surface, modifying the given adjective, in which case one of the forms of Actor usually is the prepositionless instrumental, see (9) for the adjective *snesitelný* ‘tolerable’.⁴

(6) *plodina*_↑ (je) *snášenlivá vůči suchu*_{PAT-vůči ‘to’+Dat}
‘the crop (is) tolerant of drought’

(7) *plodina, která*_{ACT} *snáší sucho*_{PAT}
‘the crop that is able to endure drought’

(8) **sucho*_↑ *snášenlivé plodinou*_{ACT-Ins}
‘drought tolerant of by the crop’

(9) *podnebí*_↑ *snesitelné Evropany*_{ACT-Ins}
‘climate tolerable by Europeans’

(10) *podnebí, které*_{PAT} *Evropané*_{ACT-Nom} *mohou snést*
‘climate that Europeans are able to tolerate’

Unlike verbal constructions, adjectives are predetermined to arrange their complements by adopting either the active or the passive syntax of their base predicates, not both, according to whether they systematically elide Actor (6) or Patient (9) / Addressee (see Section 2). Concerning deverbal adjectives, active and passive syntax usually depends on their derivational type (Kolářová 2024).

As for denominal adjectives, the research question is what type of syntax this derivational category may display. In order to determine valency characteristics of denominal adjectives, including ‘N+A’ compounds such as *pozoruhodný* ‘noteworthy’, we analyze the adjectival constructions paraphrasing them with an attributive clause, see (11) and (14) for the adjectives *pozorný* ‘thoughtful’ and

⁴ Alternative forms are *pro* ‘for’+Acc and prepositionless dative, characteristic of Czech *-able* adjectives.

pozoruhodný ‘noteworthy’, respectively, both motivated by the noun *pozor* ‘attention’. Comparing these paraphrases with those of deverbal adjectives, cf. *snášenlivý* ‘tolerant’ (7) and *snesitelný* ‘tolerable’ (10), we suppose that while most of denominal adjectives display active syntax, cf. the adjective *pozorný* ‘thoughtful’ in (12) and its valency frame in (13), in isolated cases even denominal adjectives display passive syntax, see the adjective *pozoruhodný* ‘noteworthy’ in (15) and its valency frame in (16).⁵

(11) *pozorný člověk*_↑ ‘thoughtful man’:
‘a man who shows consideration for the needs of other people’

(12) *člověk*_↑ *pozorný k cizincům*_{PAT}
‘a man thoughtful to foreigners’

(13) *pozorný* ‘thoughtful’ ACT_↑ PAT_k ‘to’+Dat

(14) *pozoruhodný nález*_↑ ‘noteworthy find’:
‘a find that is worthy of notice/to be noticed’

(15) *nález*_↑ *pozoruhodný pro vědce*_{ACT-pro ‘for’+Acc}
‘a find noteworthy/interesting for scientists’

(16) *pozoruhodný* ‘noteworthy’ ACT_{pro ‘for’+Acc} PAT_↑ EFF_{Ins}

3.2 Systemic and non-systemic valency behavior

One of the main goals of the NomVallex lexicon is to make it possible to study changes in valency across part-of-speech categories and derivational types, with emphasis on their systemic and non-systemic valency behavior (see below).

To enable analysis of the relationship between the valency behavior of base words and their derivatives, lexical units of nouns and adjectives in NomVallex are linked to their respective base lexical units (contained either in NomVallex itself or, in the case of verbs, in the VALLEX lexicon) by two attributes, namely (i) the attribute *derivedFrom* (providing a link from a particular LU to its base LU), and (ii) the attribute *derivedLUs* (capturing a set of links to all LUs derived from the base LU). Each lexical unit of an adjective or a noun with a link to its respective base LU is automatically supplemented with information on differences between the valency frames of the two LUs; namely, the number and types of valency complements and

⁵ Adjectives corresponding to verbs with non-prototypical frames (containing ACT in a form other than Nom, e.g. *Jana*_{ACT+Acc} *dojala vzpomínka*_{PAT-Nom} *na matku* ‘Jan was touched by the memory of his mother’ ~ *pro Jana*_{ACT} *dojemná vzpomínka* ‘a touching memory for Jan’) are to be examined in future research.

their morphemic forms are automatically compared. The changes (if any) are specified in the *valdiff* attribute.

As a result, with all the derived lexical units, systemic and non-systemic valency behavior can be distinguished (e.g. for deverbal adjectives, see Kolářová et al. 2021). Nouns or adjectives displaying systemic valency behavior inherit all valency complements from their base words and their morphemic forms do not change or result from regular changes. Non-systemic valency behavior involves changes in the number and type of valency complements, and non-systemic morphemic forms, i.e., forms that cannot be regularly derived from the forms of complements of the base word.

For example, there are two lexical units of the denominal adjective *žádostivý* (< *žádost* ‘desire’, see its valency frame in (17)), namely *žádostivý*₁ ‘desirous, eager’, and *žádostivý*₂ ‘curious’, see their valency frames in (18) and (20), respectively. While the adjective *žádostivý*₁ ‘desirous, eager’ displays systemic valency behavior, see (19), the adjective *žádostivý*₂ ‘curious’ undergoes both a shift in meaning and non-systemic forms of its Patient, e.g. the prepositional phrase introduced by *na* ‘on’ in (21), thus showing non-systemic behavior.

(17) *žádost* ‘desire’ ACT_{Gen,poss} PAT_{Gen,po ‘for’+Loc,inf}

(18) *žádostivý*₁ ‘desirous, eager’ ACT_↑ PAT_{Gen,po ‘for’+Loc,inf}

(19) *Lidé_↑, žádostiví nových bytů_{PAT-Gen} si začali rezidence na Palmovce rezervovat*
‘People, eager for new apartments, have started to reserve residences in Palmovka’

(20) *žádostivý*₂ ‘curious’ ACT_↑ PAT_{na ‘on’+Acc,zda ‘if’,cont}

(21) *Já_↑ budu velmi žádostivý na důvody_{PAT-na ‘on’+Acc} ministerstva obrany*
‘I will be very curious about the reasons of the Ministry of Defense’

3.3 Reflexivity and reciprocity

While reflexivity and reciprocity of verbs belong to intensively studied language phenomena, reflexivity and reciprocity of nouns and adjectives still call for a systematic analysis (Kettnerová and Kolářová 2023). Reflexivity refers to the situation where two valency complements of a noun or an adjective have the same referent, such as ACT and PAT of the denominal adjective *pozorný* ‘attentive’, which share the referent *Peter*, an antecedent of ACT, see (22). Reciprocity involves two complements that share two referents, see (23) for the reciprocal structure of the adjective *pozorný* ‘attentive’, in which both PAT and elided ACT have two referents, *Peter* and *Jane*.

(22) *Petr_↑ je pozorný sám k sobě_{PAT}*
 ‘Peter is attentive to himself’

(23) *(Petr a Jana)_↑ jsou k sobě_{PAT} navzájem pozorní*
 ‘Peter and Jane are attentive to each other’

NomVallex, following the representation of these phenomena proposed in VALLEX, captures the information on reflexivity and reciprocity in the attributes *reflex* and *recipr*, respectively, assigned to those lexical units of nouns and adjectives that allow for reflexive and reciprocal structures. These attributes contain the pair of the complements (only actants and obligatory free modifications are covered) involved in reflexivity and reciprocity, respectively (e.g. the ACT-PAT pair in the case of the adjective *pozorný* ‘attentive’ in Fig. 1). If more than one pair of complements can be affected, the lexical unit is assigned more than one attribute, distinguished by Arabic numerals, each comprising different pairs of complements. The attributes then provide corpus evidence of reflexive and reciprocal constructions of the involved lexical units.

Inherently reciprocal nouns or adjectives, e.g. *společný* ‘common’ in (24), are captured in the attribute *reciprnoun* or *recipradj*, respectively, containing the value inherent.

(24) *témata společná konzervativcům a liberálům*
 ‘topics common to conservatives and liberals’

Moreover, the representation of reflexivity and reciprocity makes it possible to identify ambiguous reflexive and reciprocal constructions. For example, the adjective *pozorný* ‘attentive’ features both attributes *reflex* and *recipr*, containing the same pair of complements, namely ACT and PAT. This adjective can thus form ambiguous constructions that are either reflexive or reciprocal, see the construction in (25), which has two meanings.

(25) *(Petr a Jana)_↑ jsou k sobě_{PAT} pozorní*
 ‘Peter and Jane are attentive to themselves’ or
 ‘Peter and Jane are attentive to each other’

3.4 Negation

In Czech, the universal exponent of word-level (lexical) negation is the morpheme *ne-* (Pavlovič 2015; e.g. *neprodejný* ‘unmarketable’), used with autosemantic word classes. When the negative prefix *ne-* is combined with verbs, it typically only denies the affirmative content, i.e., the original predication, without specifying new features (Lotko 1975; cf. *prodat* ‘to sell’ vs. *neprodat* ‘not to sell’).

In contrast, with nouns and adjectives, the situation is more complex: in addition to direct negation, e.g. *(ne)pohodlí* ‘(dis)comfort’ and *(ne)prodejný* ‘(un)marketable’, the prefix *ne-* may lead to a semantic shift (Pavlovič 2015; cf. *smysl* ‘sense’ vs. *nesmysl* ‘nonsense’, *pohodlný* ‘comfortable’ vs. *nepohodlný* ‘unwanted’), referred to here as lexicalized negation. The difference in meaning can be accompanied by a difference in valency, e.g. *nedůtklivost* ‘touchiness’ has two complements, see (26), whereas *důtklivost* ‘urgency’ only has one, see (27).

- (26) *Petrova*_{ACT} *nedůtklivost vůči kritice*_{PAT}
 ‘Peter’s touchiness on criticism’

- (27) *důtklivost jeho výkladu*_{ACT}
 ‘the urgency of his presentation’

In the case of direct negation, negative prefixes do not normally affect the valency of the base (Curiel 2015), however, some exceptions exist, cf. Eng. *dependence on* and *independence off/from*. In NomVallex, all lexical units of nouns and adjectives are examined with respect to whether or not they can be used in negative forms expressing direct negation of the affirmative forms, and whether they keep the same valency (Kolářová and Mírovský 2024). If yes, such as in the case of the affirmative and the negative form of the denominal adjective *(ne)pozorný* ‘(un)thoughtful’ in (28) and (29), the negative form is treated within the entry for the corresponding affirmative form (Fig. 1), and both forms share the same valency frame, cf. (13) in Section 3.1.

- (28) *Navíc byl nebývale pozorný k ženám*_{PAT}
 ‘Moreover, he was extraordinarily thoughtful to women’

- (29) *I k Polině*_{PAT} *je nepozorný až hrubý*.
 ‘He is unthoughtful to Polina too, even rude.’

If the meaning of the negative form of a word shifts away from its affirmative form, it is assigned a separate entry, represented by the negative lemma(s) (e.g. *nepohodlný svědek* ‘unwanted witness’ vs. *(ne)pohodlné cestování* ‘(un)comfortable traveling’).

Further, NomVallex differentiates between the so-called negativum tantum (the term used in Czech terminology for words that start with the string *ne-* but that in present-day Czech have no meaning without the string, e.g. *nenávistný* ‘hateful’) and the words that cannot have the negative forms for various reasons (e.g. *mocný (hlas)* ‘powerful (voice)’; the value inapplicable is used in this case).

3.5 Denominal adjectives in the NomVallex data

In the current working version of the NomVallex data, denominal adjectives are represented by 66 lexical units in 37 lexemes, including 6 lexemes of ‘N+A’ compounds such as *pozoruhodný* ‘noteworthy’. All the adjectives were annotated with respect to the syntactic phenomena described in this paper. The simplified results presented in Tab. 2 show that in many aspects, syntactic behavior of denominal adjectives can be viewed as similar to deverbal adjectives.

Syntactic phenomenon		Number of LUs	Example
syntax	active	47	<i>pozorný</i> ‘thoughtful’
	passive	9	<i>pozoruhodný</i> ‘noteworthy’
	non-prototypical frame	10	<i>dojemný</i> ‘touching’
valency behavior	systemic	4	<i>žádostivý</i> ₁ ‘desirous, eager’
	non-systemic	36	<i>žádostivý</i> ₂ ‘curious’
	NA (the base noun is not present in NomVallex)	26	<i>vlastní</i> ‘own’
reflexivity	reflexive	21	<i>náročný</i> ‘demanding’
	non-reflexive	45	<i>vinný</i> ‘guilty’
reciprocity	inherently reciprocal	1	<i>společný</i> ‘common’
	reciprocal	21	<i>bezcitný</i> ‘heartless’
	non-reciprocal	44	<i>nemocný</i> ‘ill’
negation	direct	41	<i>(ne)pozorný</i> ‘(in)attentive’
	lexicalized	2	<i>neúnavný</i> ‘tireless’
	negativum tantum	1	<i>nenávistný</i> ‘hateful’
	inapplicable	22	<i>bezradný</i> ‘helpless’

Tab. 2. Denominal adjectives in the NomVallex working data

4 CONCLUSION

We have presented the annotation strategies adopted in NomVallex for four advanced valency-related syntactic phenomena, namely (i) active and passive syntax, (ii) systemic and non-systemic valency behavior, (iii) reflexivity and reciprocity, and (iv) negation. We have demonstrated that all the introduced phenomena are also relevant for denominal adjectives, one of the least represented derivational categories in NomVallex so far. A detailed description of valency and syntactic behavior of denominal adjectives, including, for example, forms of their Actor in passive-like constructions, appears to be an interesting area for further research.

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