

# Talking about emotions in Czech

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# Overview

- **Psychology of emotions:**
  - Distribution via valence and activation
- **Linguistic profiles:**
  - Constructional profiles: Russian 'happiness' and 'sadness'
  - Grammatical profiles of Russian nouns
- **GramatiKat:**
  - Resource for grammatical profiles
- **Distribution of Czech emotion nouns:**
  - Synonyms and disparate emotions
- **Metaphorical implications of case**
- **Case study of ANGER**
- **Conclusions and future plans**



# Preview of findings

- **Psychology vs. grammar:**
  - semantic similarity vs. metaphorical substances, agents, locations, etc.
  - loss of agency, bodily manifestation, regulation
- **Implications for lexicography:**
  - typical grammatical constructions
  - structure of semantic fields
  - applicable to other fields such as color, body parts, time, evaluation, size, quantity, modality, or verbs of motion, speaking and thinking
- **Implications for pedagogy**



# Psychology of emotions



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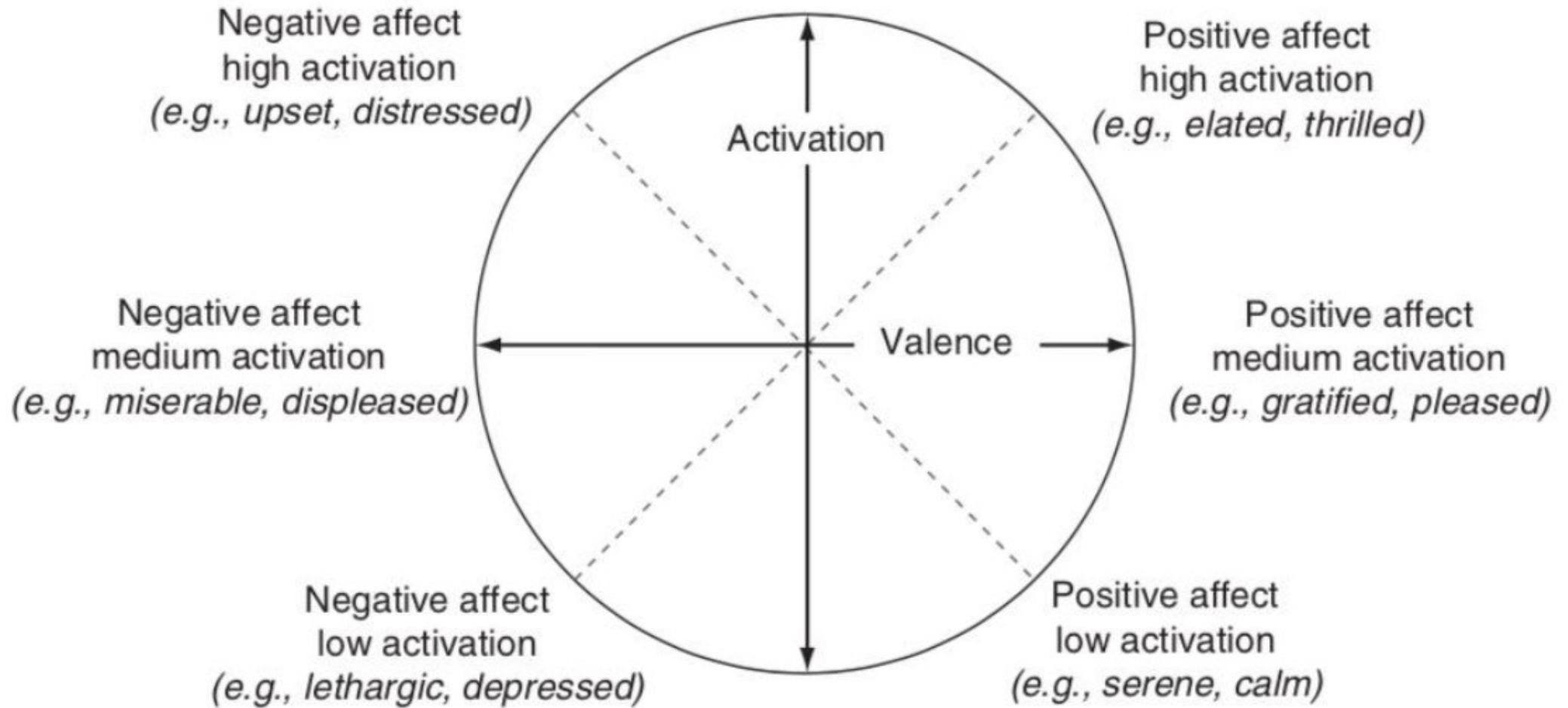
  
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# Two approaches in psychology

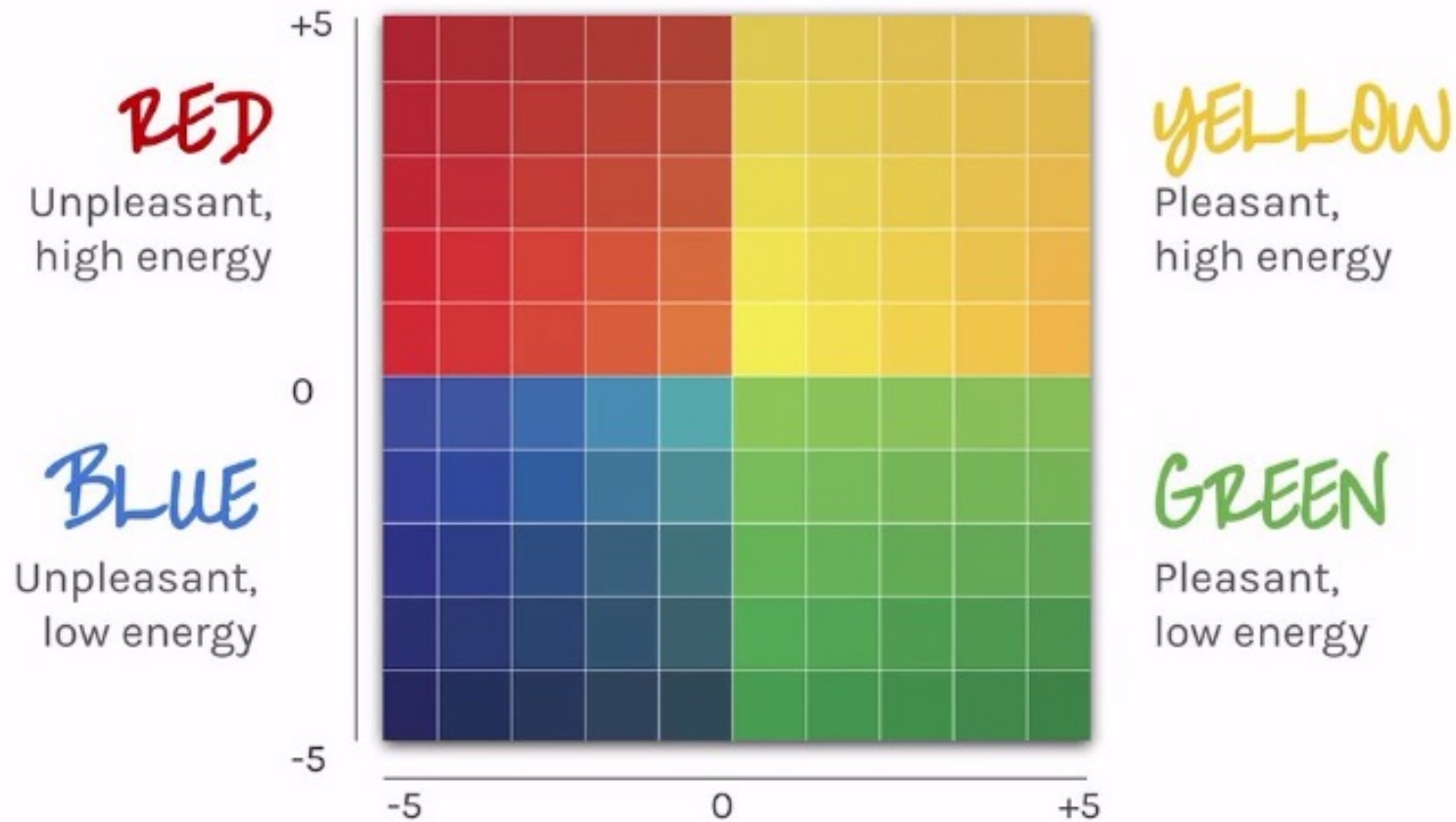
- An ongoing controversy...
- Each emotion is a discrete vector (Eckman 1992, Keltner & Oatley 2022)
  - No coherence as a semantic field  $\approx$  a null hypothesis
  - A minority opinion
- “Circumplex” distribution (Ross 1938, Russell 1980, Aydede 2018, Brackett 2019)
  - based on sorting and classification tasks
  - two dimensions:
    - “valence” (x-axis) = positive vs. negative
    - “activation” (y-axis) = low vs. high intensity



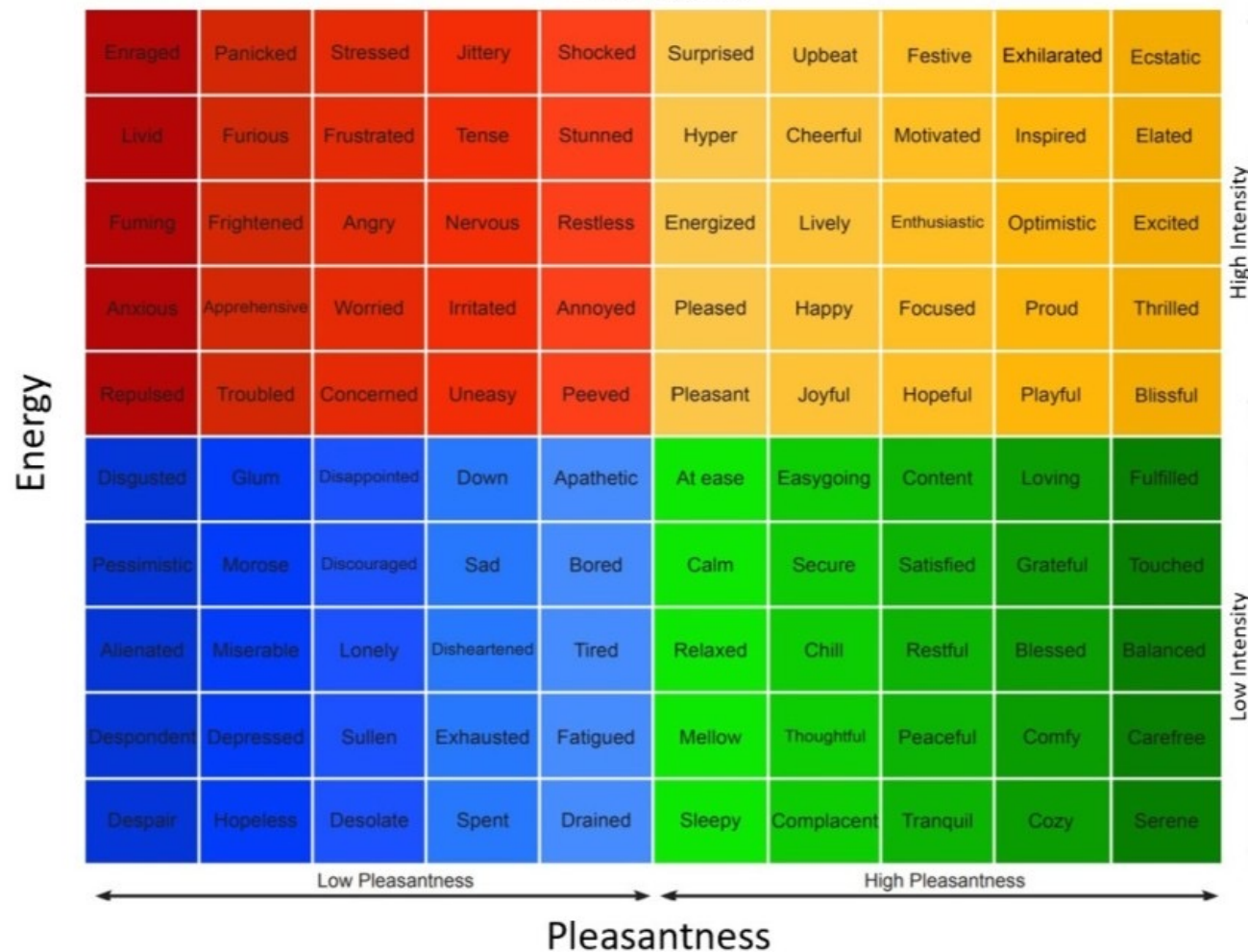
# The affective circumplex according to many psychologists



# Brackett's (2019) "mood meter"



## Emotions



[adjectives]

# Linguistic profiles



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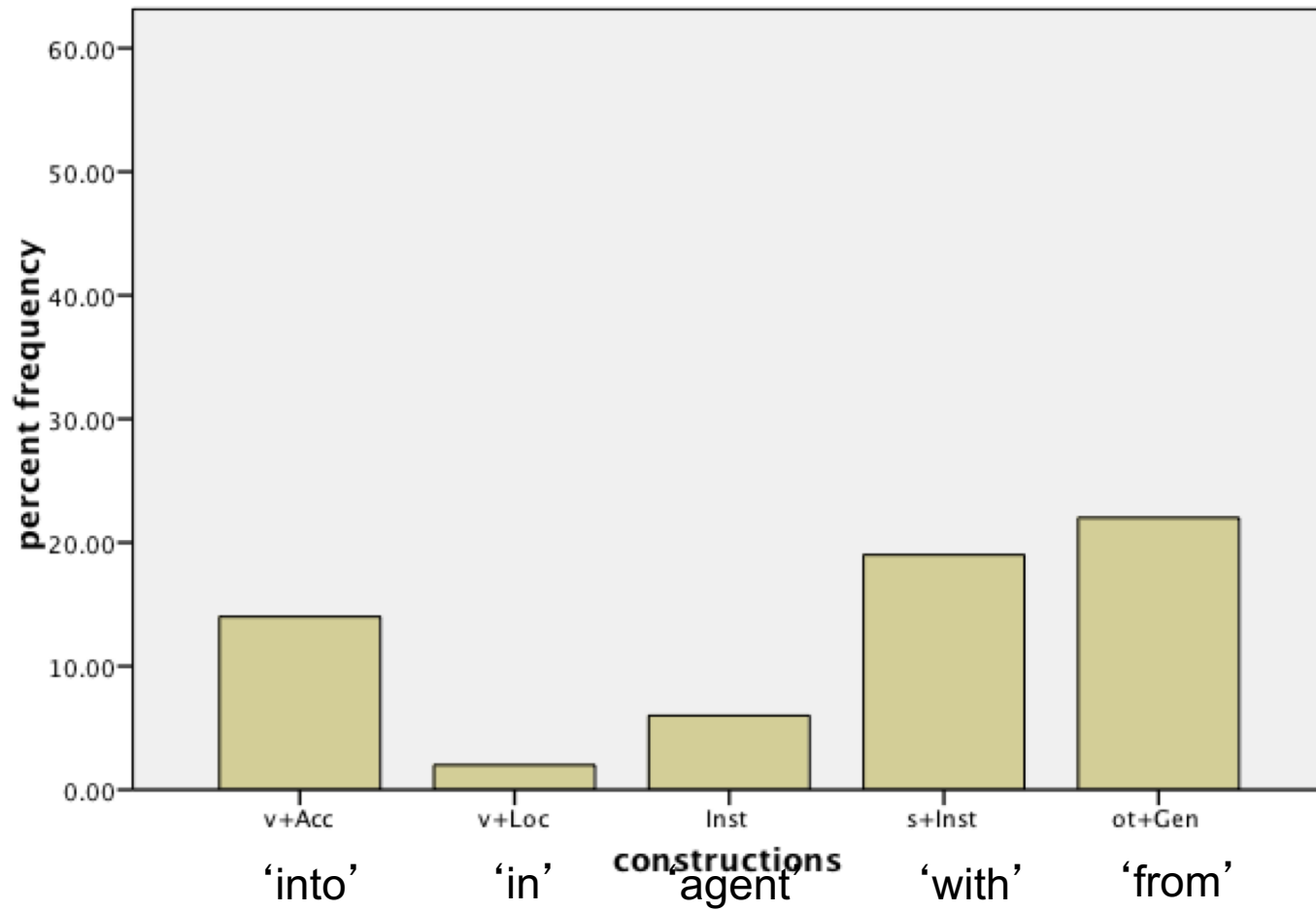
  
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# Constructional profiles : Russian 'happiness' and 'sadness' (Janda & Solovyev 2009)

- Constructional profile = “the distribution of relative frequencies of constructions associated with a given word”
- ≈ 70 constructions of the form “*[(preposition) [noun]<sub>case</sub>]*” in Russian
- But only about 6 (or fewer) constructions are needed to characterize a given noun (cf. similar findings by Karlsson 1985, 1986 and Arppe 2001, 2005)
- Data from Russian National Corpus (<http://www.ruscorpora.ru>) >120M words and Biblioteka Maksima Moškova (<http://lib.ru/>) >600M words
- 500 sentences each extracted and manually coded for use of preposition & case, hierarchical cluster analysis
- Example of constructional profile of *восторг* 'ecstasy'



### vostorg 'ecstasy'



# 'Sadness' in Russian



- *грусть, меланхолия, печаль, тоска, уныние, хандра*
- The constructions they appear in:

- ***в* + Acc 'into'**
- ***в* + Loc 'in'**
- **Inst: Agent**
- ***с* + Inst 'with'**
- ***от* + Gen 'from'**

- **(Direct Object)**
- **(Other Constructions)**

Graphs will show only these five,  
as percentages

Hierarchical Cluster Analysis  
is computed from all data

## The 'sadness' nouns

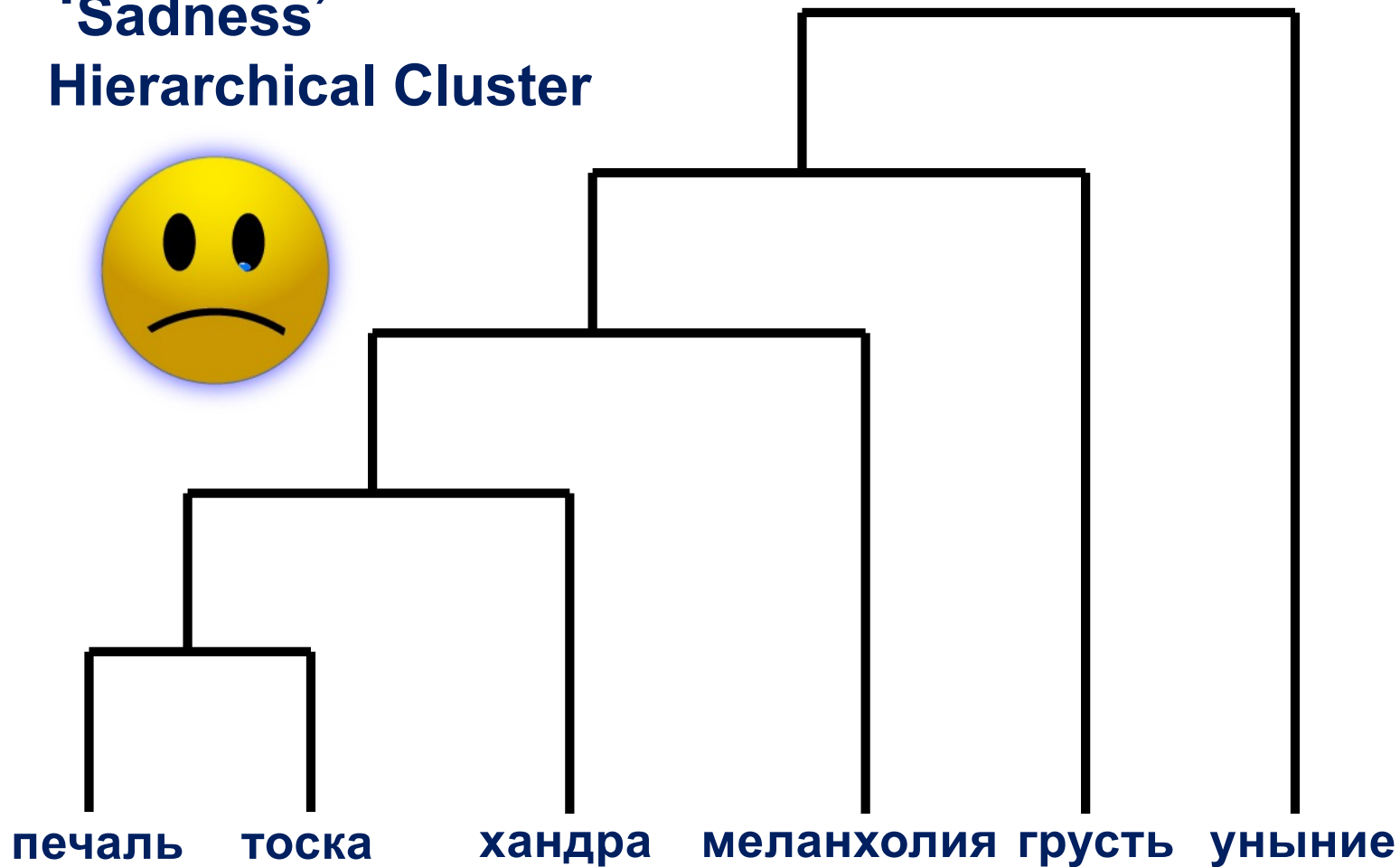
- They can't all be the same:

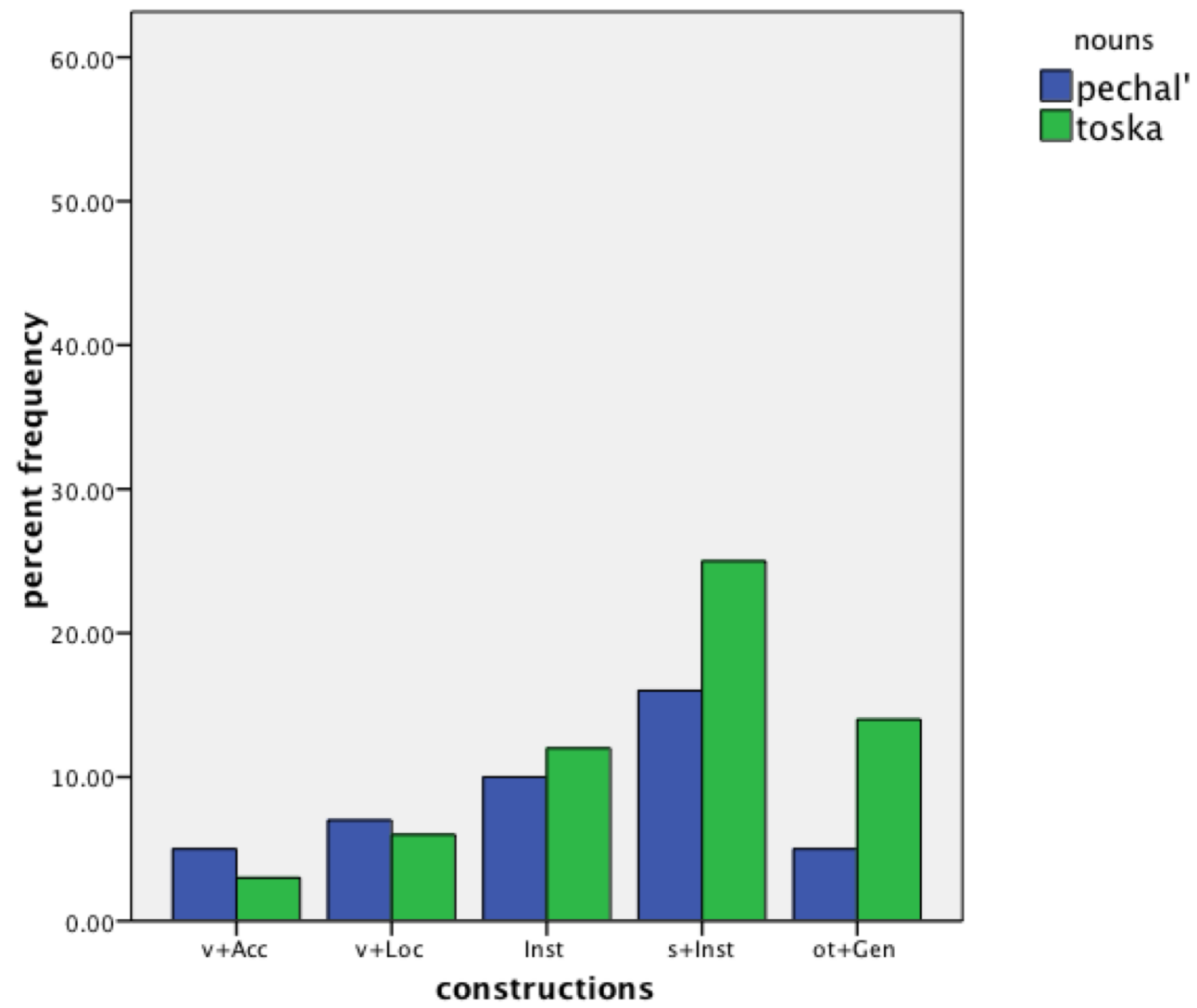
Уходишь, и я гляжу вслед тебе с грустью, но без тоски.

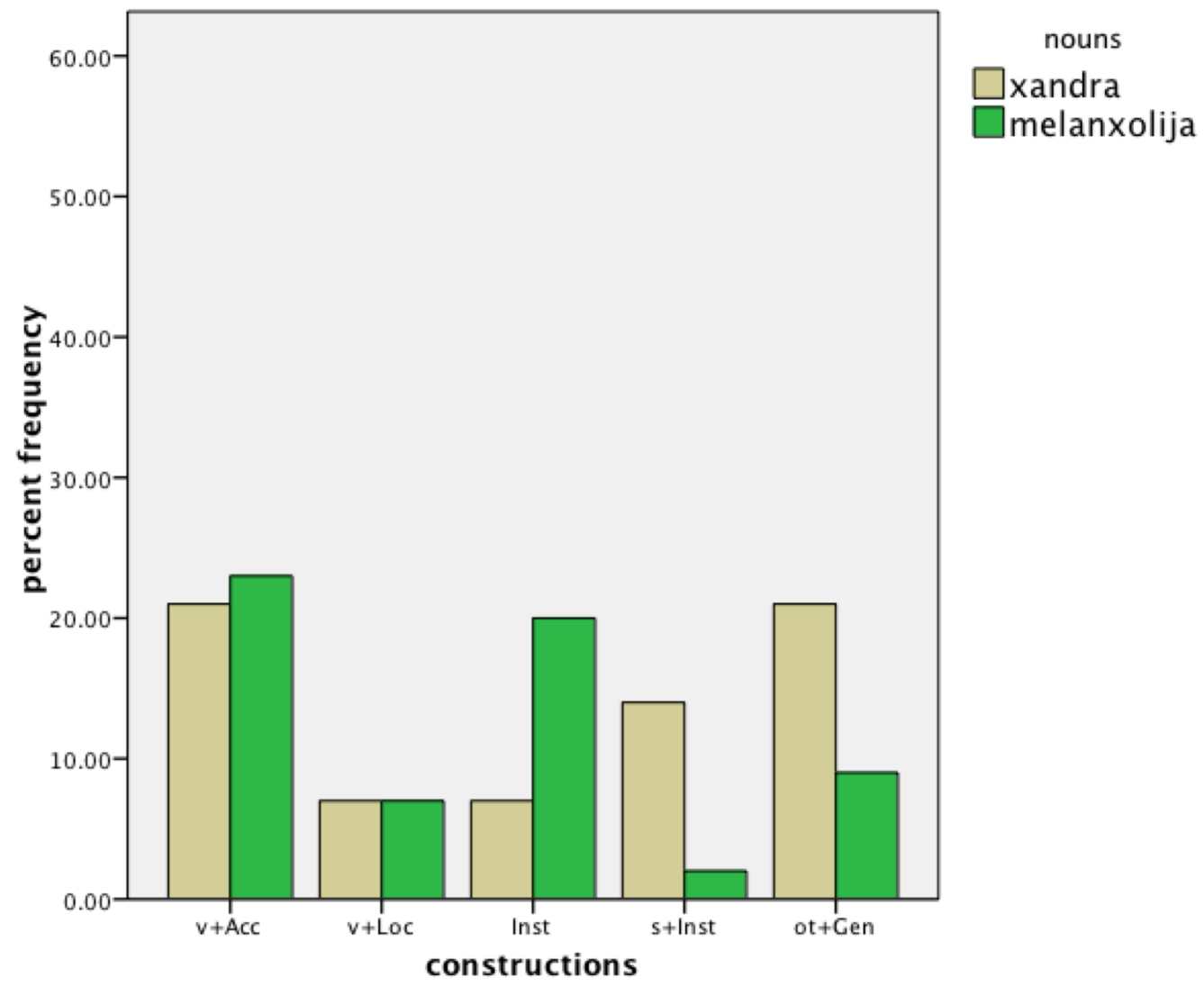
'You leave and I watch you go with sadness<sub>грусть</sub>, but without sadness<sub>тоска</sub>.'

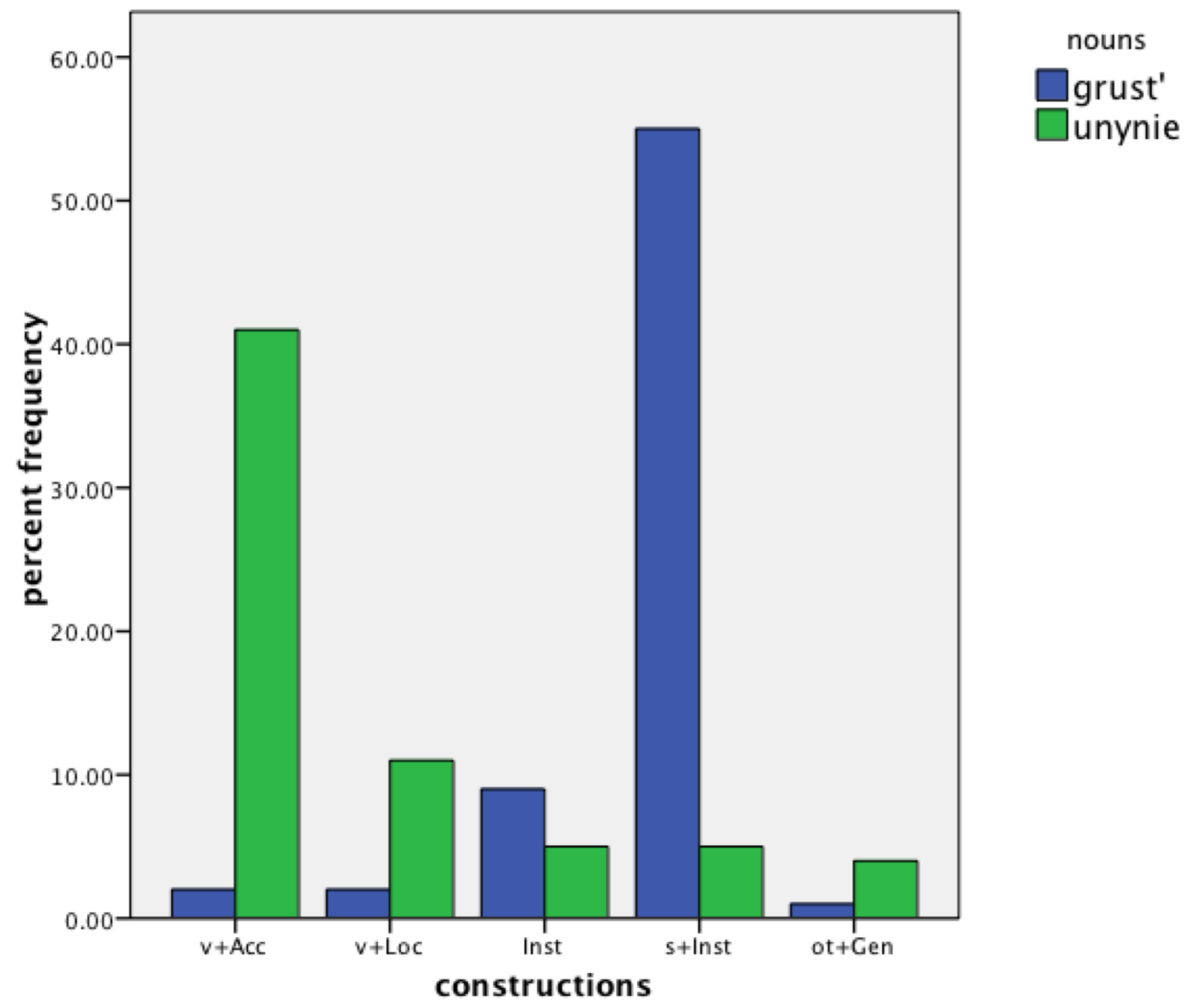
- Dictionaries differ on how synonyms are grouped

# 'Sadness' Hierarchical Cluster







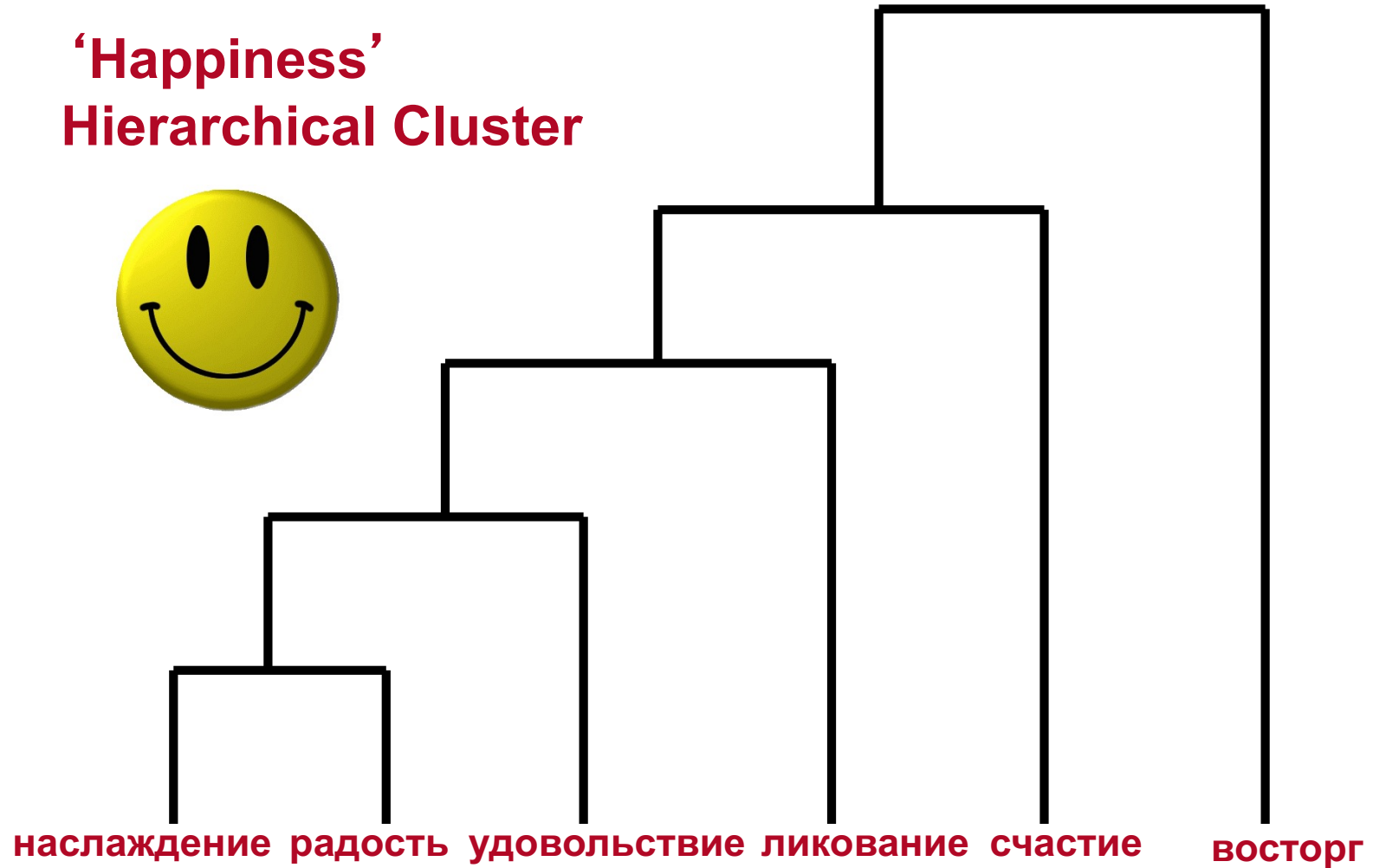


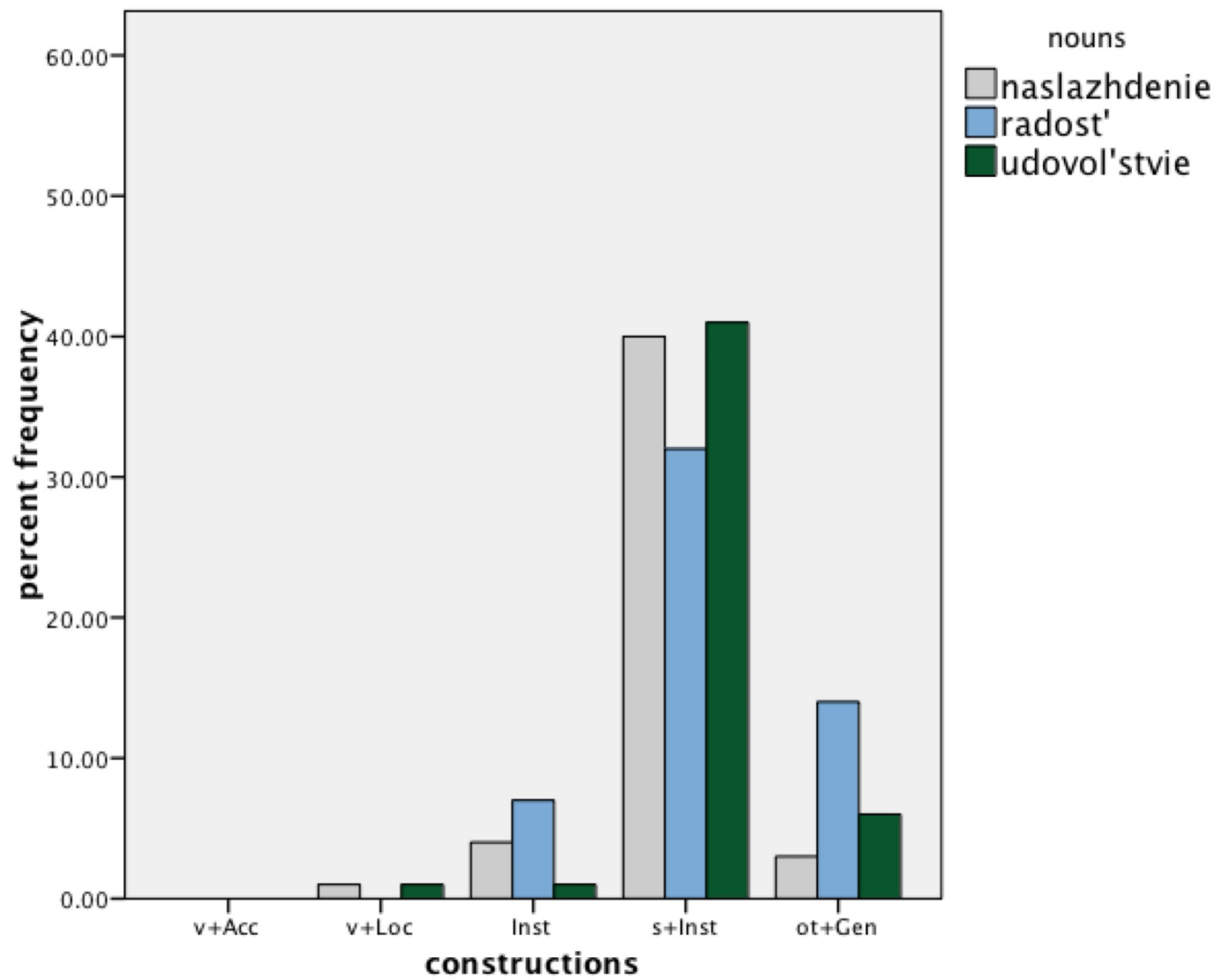
# 'Happiness' in Russian

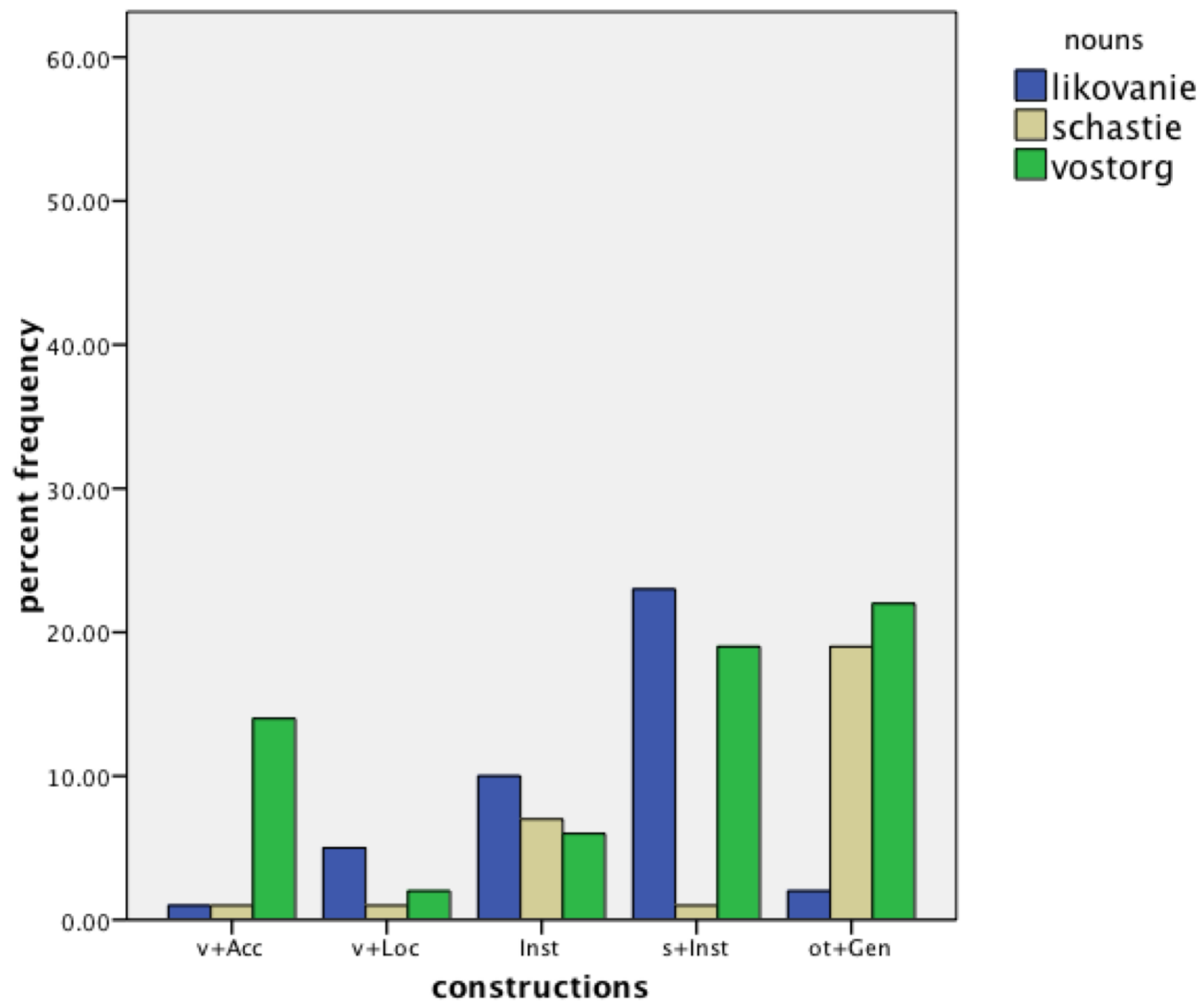


- *ликование, наслаждение, радость, счастье, удовольствие, восторг*
- **Antonyms are words that are virtually identical, but differ in one value**
- **'Happiness' nouns focus on the same constructions in their constructional profiles as 'sadness' nouns**
- **Dictionaries differ widely in grouping of 'happiness' synonyms**

# 'Happiness' Hierarchical Cluster







# About the results...

- The results are statistically significant
- For 'sadness' nouns: chi square = 730.35, and Cramer's V = 0.305 which qualifies as a moderate effect ( $p < 0.0001$ ,  $df = 30$ )
- For 'happiness' nouns: chi square = 774.6, Cramer's V = 0.268 which qualifies as a moderate effect ( $p < 0.0001$ ,  $df = 30$ )

# **The part that didn't get published: Metaphor**

- **Constructional profiles reveal that emotions such as happiness and sadness in Russian are understood as**
  - **metaphorical holes or mires**
  - **metaphorical agents**
  - **metaphorical accessories (gestures)**
  - **metaphorical diseases**
  - **metaphorical sources**

**в + Acc 'into'**



**Я же живой человек и, конечно,  
иногда впадаю в уныние.**

**'I am a living person, and, of course,  
occasionally fall into sadness.'**

## **В + Лос 'in'**



**Ей на ум не придет, что супруг изнывает в тоске о потерянных минутах труда и вдохновения.**

**'It doesn't occur to her that her spouse is suffering in sadness over the minutes of work and inspiration that he has lost.'**

**BUT: You don't crawl out! из + Gen is exceedingly rare**



## **Inst: Agent**

**Кто из живущих, томимый унынием,  
не предавался такому перебору не  
состоявшихся жизненных вариантов?**

**'Who among mortals tormented by  
sadness, has not indulged in an  
inventory of all the things that didn't  
happen in their life?'**

**c + Inst 'with'**  
**(a gesture like a smile)**



**-Кушаешь ты, как свинья, - с грустью  
сказал капитан.**

**'--You eat like a pig'-- said the captain with  
sadness.'**

**от + Gen 'from':  
Healing from disease**



**Самое лучшее лекарство от хандры –  
это чтение.**

**'The best cure for sadness is reading.'**

**от + Gen 'from':  
Cause/Source**

**Подумайте, этот человек  
умер от меланхолии!**

**'Just imagine, that person  
died of sadness!'**



# **Grammatical profiles of Russian nouns (Janda & Tyers 2021)**

- **Grammatical profile = “the distribution of relative frequencies of inflected forms associated with a given word”**
- **Zipf’s law affects distribution of inflected forms**
- **<10% of wordforms are frequent, others rare or unencountered**
- **Each lexeme is common in a subset of wordforms**
- **Wordforms common to a lexeme are motivated by typical collocations and grammatical constructions**



# Examples of high-frequency Russian nouns

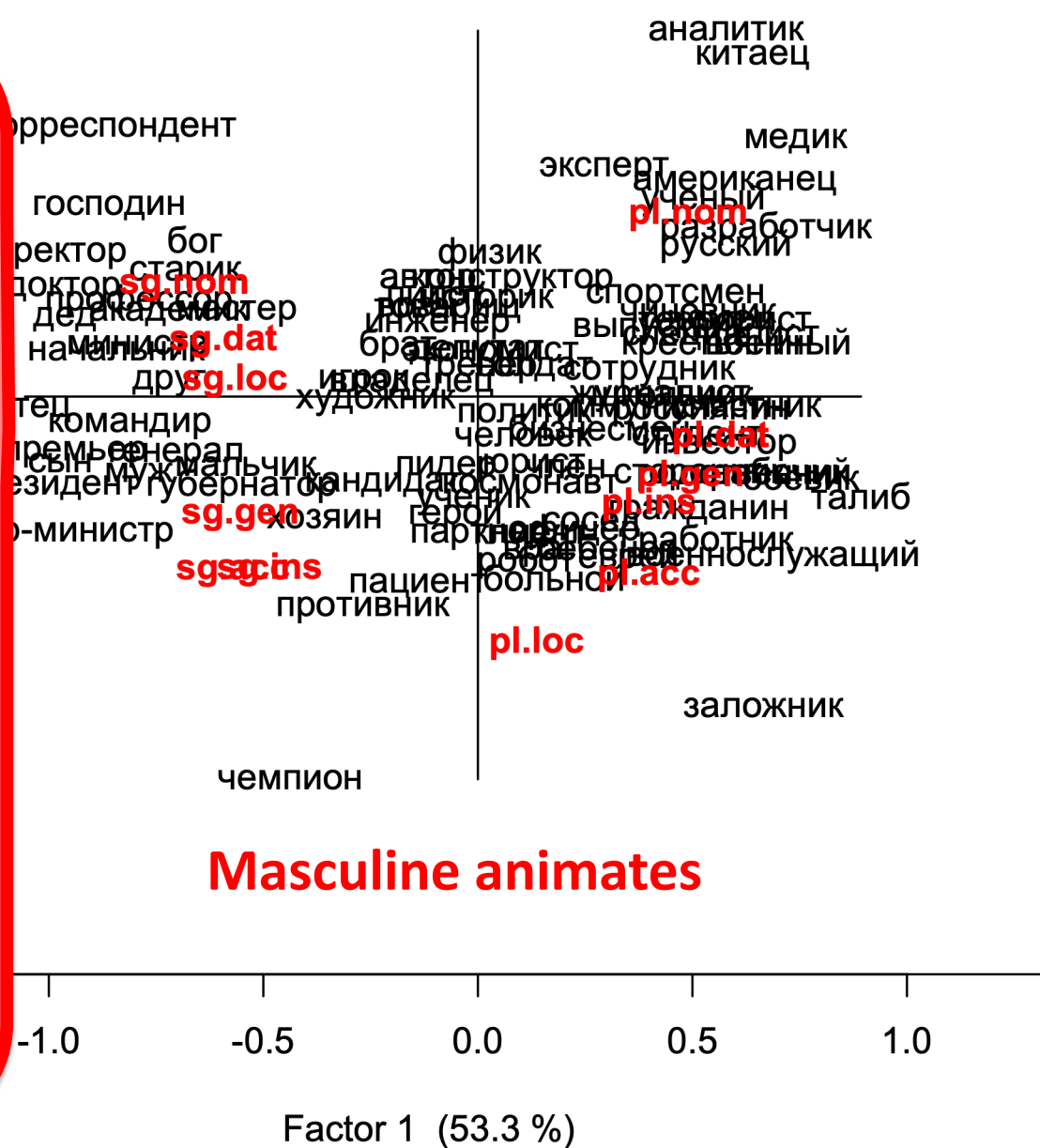
	<i>'fear'</i>	<i>'soldier'</i>	<i>'department'</i>	<i>'concept'</i>	<i>'memory'</i>
Nsg	<b>страх</b>	<b>солдат</b>	<b>отделение</b>	<b>концепция</b>	<b>память</b>
Gsg	<b>страха</b>	солдата	<b>отделения</b>	<b>концепции</b>	<b>памяти</b>
Dsg	страху	солдату	отделению	концепции	памяти
Asg	<b>страх</b>	солдата	<b>отделение</b>	<b>концепцию</b>	<b>память</b>
lsg	<b>страхом</b>	солдатом	отделением	концепцией	памятью
Lsg	страхе		<b>отделении</b>	концепции	<b>памяти</b>
Npl	страхи	<b>солдаты</b>	отделения		
Gpl	страхов	<b>солдат</b>	<b>отделений</b>	концепций	
Dpl		солдатам			
Apl	страхи	солдат	отделения	концепции	
lpl	страхами		отделениями	концепциями	
Lpl	страхах	солдатах	отделениях		

Key: **bold** >20%, plain >10%, grey 1-9%, (blank) unattested





Any single lexeme gives exposure to only a subset of the paradigm. Each lexeme has a different subset of most typical forms. Collectively they populate the entire "space" of case/number combinations.



**Masculine animates**

# GramatiKat



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# Gramatikat

<https://korpus.cz/gramatikat/>

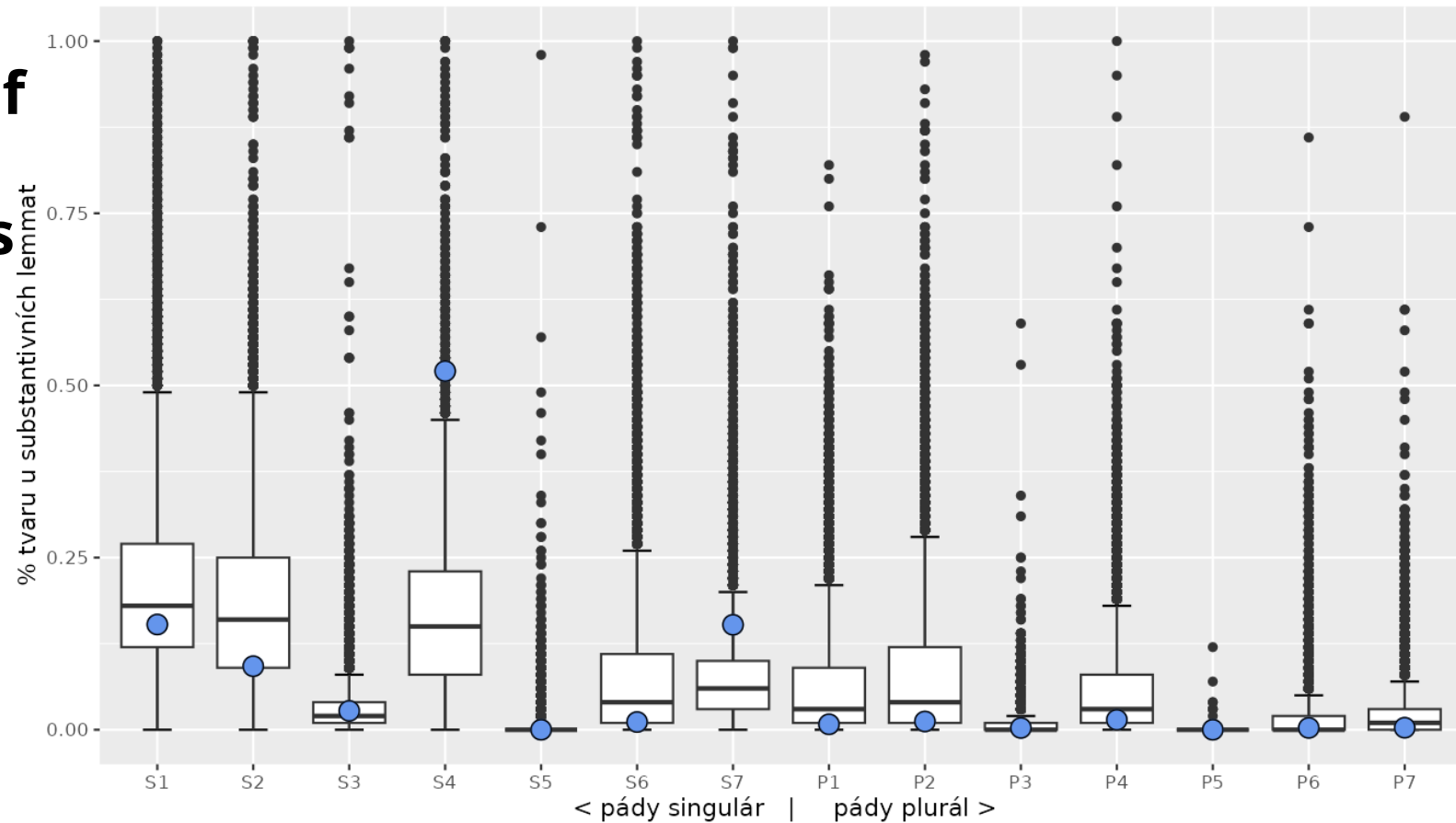
- **Proof-of-concept for grammatical profiling at scale**
- **Based on Czech SYN2015 and [SYN2020](#), two representative reference corpora totaling 200M words**
- **Grammatical profiles for all lemmas attested 100 or more times in the composite corpus belonging to the three major parts of speech: nouns, verbs, and adjectives.**

**Whereas the frequencies of inflected forms are in principle available in digital corpora, baseline grammatical profiles for an entire lexicon are “impossible to acquire ... from a standard corpus interface such as KonText, AntConc, or SketchEngine, at least not without enormous effort” (Kovářiková et al. 2023).**

**Grammatical profile of *radost* 'joy' (blue dots) vs. nouns attested  $\geq$  100 in SYNv11 corpus**

**Case:**

- “backbone” of grammatical constructions
- always obligatory
- marks relationships to prepositions, verbs, other NPs



**Cases: 1 = Nominative, 2 = Genitive, 3 = Dative, 4 = Accusative, 5 = Vocative, 6 = Locative, 7 = Instrumental**

# Grammatical profiles of 65 emotion nouns

	A	B	C	D	E	F	G	H
1	Noun	NOM	GEN	DAT	ACC	LOC	INS	FQ
2	bezmoc	0.23256	0.40116	0.01827	0.20598	0.049	0.08721	1204
3	beznaděj	0.23507	0.37388	0.08657	0.14925	0.06567	0.0806	1340
4	děs	0.38794	0.16254	0.01905	0.16952	0.02984	0.15492	1575
5	dojetí	0.14387	0.20693	0.04174	0.19005	0.0302	0.38188	1126
6	euforie	0.29177	0.21624	0.03932	0.19917	0.19659	0.04294	1933
7	frustrace	0.2546	0.26017	0.06351	0.22284	0.02618	0.05348	1795
8	hanba	0.36226	0.19214	0.03368	0.14119	0.04447	0.21848	2316
9	hněv	0.31132	0.22658	0.0297	0.23697	0.04112	0.1514	4815
10	hrdost	0.21995	0.22506	0.03417	0.29851	0.01885	0.20346	2546
<p><b>This is the input data (relative frequencies) for correspondence analysis</b></p>								
16	nechuť	0.3025	0.08067	0.03964	0.3025	0.01947	0.25313	1438

# Distribution of Czech emotion nouns



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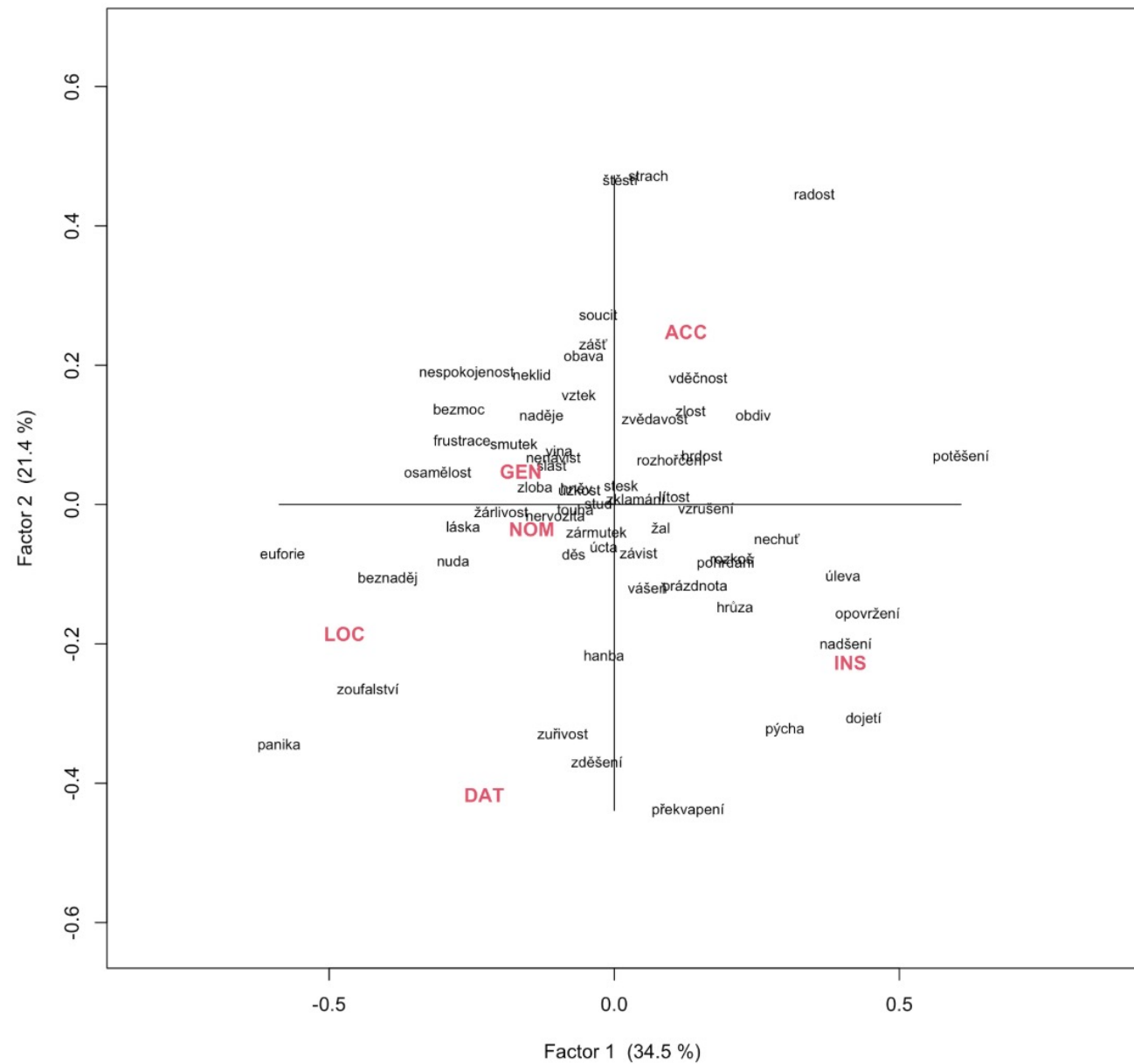
  
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## 4 “deviant” emotions

- *rozpaky* ‘embarrassment’: rarely used in NOM
- *tíseň* ‘distress’: extreme outlier in LOC (= “container”)
- *údiv* ‘astonishment’: outlier in INS and DAT, rarely used in NOM
- *úžas* ‘amazement’: outlier in INS and DAT, rarely used in NOM

**These 4 nouns removed to improve visualization on next slides, but included in analysis.**

# Correspondence analysis of grammatical profiles of 61 Czech emotion nouns





Words with similar meanings behave differently

'HAPPINESS'

*radost*

*nadšení*

*euforie*

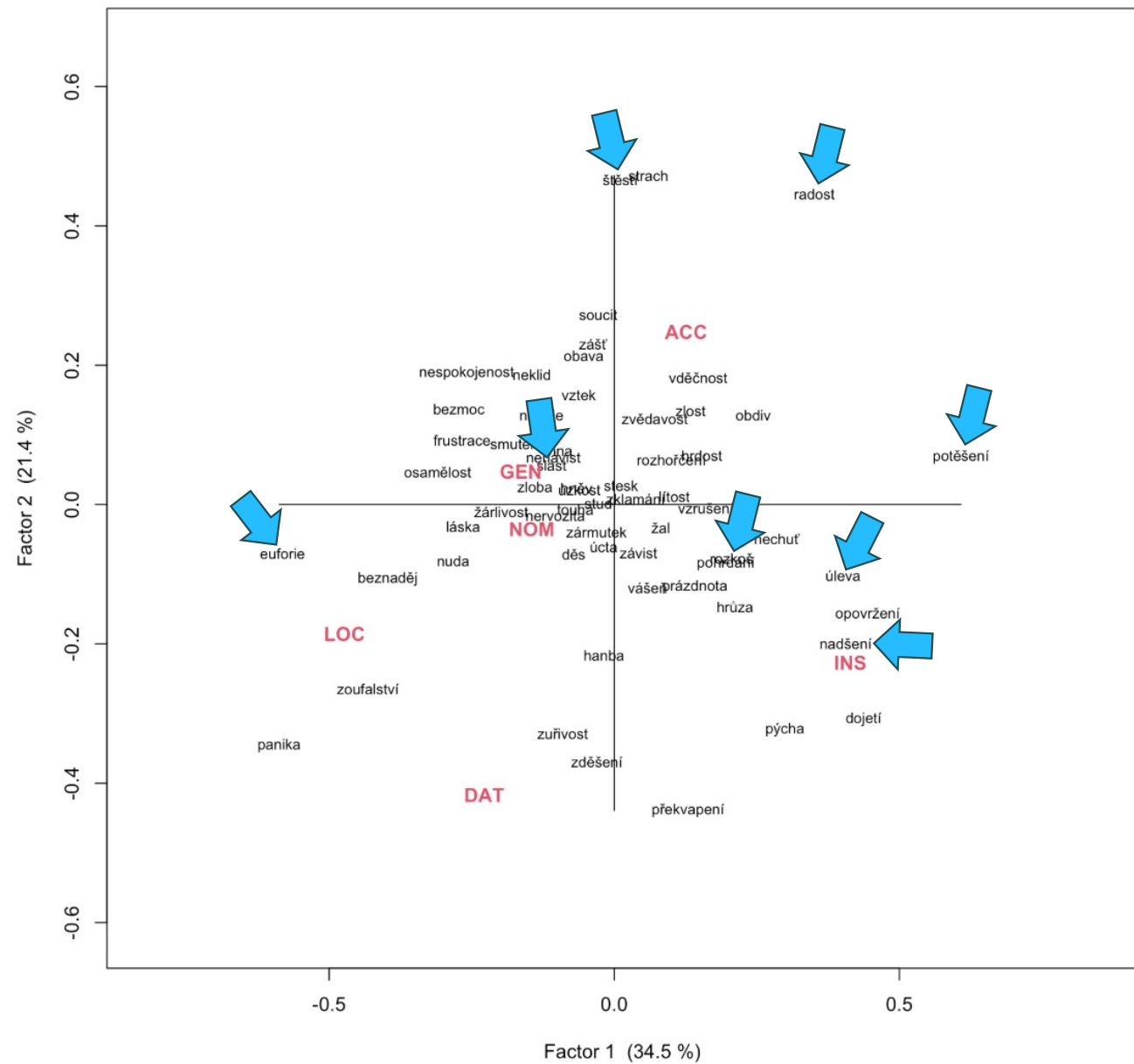
*potěšení*

*úleva*

*rozkoš*

*šťěstí*

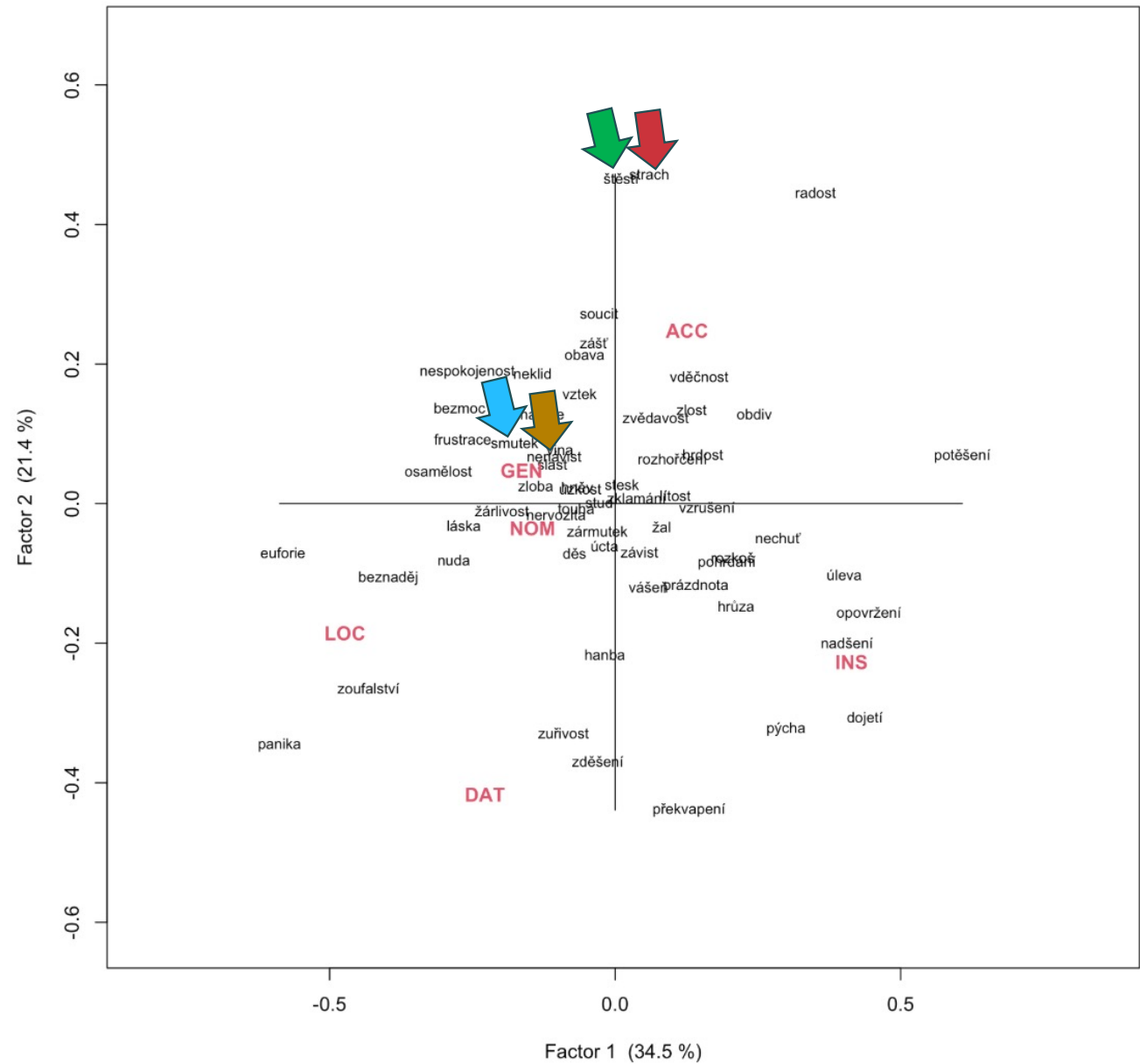
*slast*



Words with very different meanings that behave similarly:

**šťěstí** 'happiness' + **strach** 'fear'

**slast** 'delight' + **smutek** 'sadness'



# Metaphorical implications of case



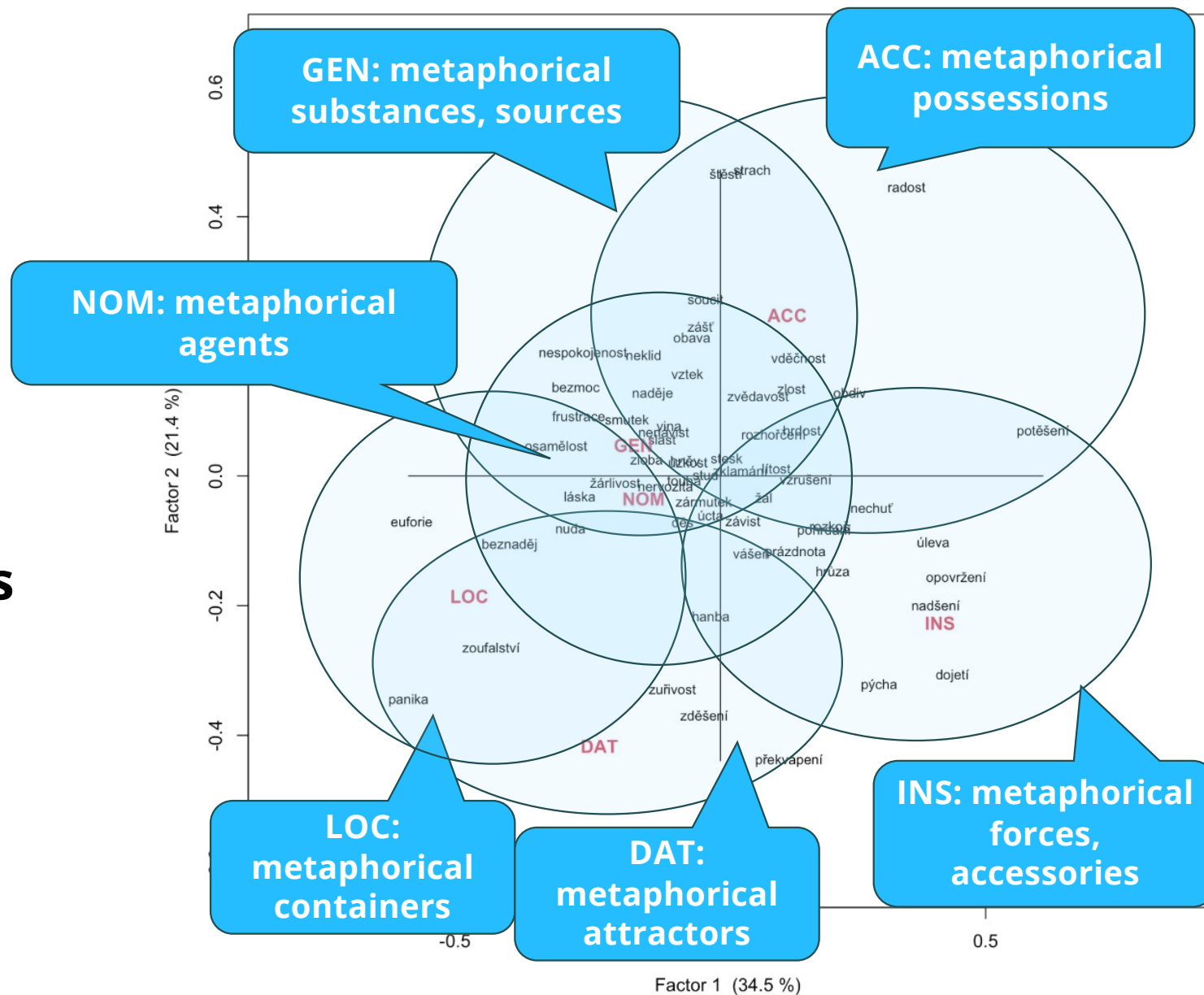
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# Metaphorical implications of case usage and constructions

**NOTE:**  
In following slides  
"E" stands for an  
emotion noun



# Nominative case

- E-NOM VP (verbs: *zmocnit* 'take control of', *zachvátit* 'grab', *narůstat* 'grow')
  - **E is an agent, a living thing**  
E = *nervozita* 'nervousness', *děs* 'horror', *hanba* 'shame', *neklid* 'listlessness', *panika* 'panic'  
*Stála jsem na silnici půl hodiny a moje **nervozita narůstala.***  
'I was standing on the road for a half hour and my **nervousness was growing.**'



# Genitive case - 1

- *plný* E-GEN 'full of E'

- **E is a substance in a person or body parts**

E = almost any emotion, especially *naděje* 'hope', *překvapení* 'surprise', *nenávisť* 'hatred', *láska* 'love'

*Muž se narovnal a ohlédl se na svou ženu, která na něj hleděla očima **plnýma naděje a úžasu**. 'Her husband straightened up and glanced at his wife who was looking at him with eyes **full of hope and amazement**.'*

- NP E-GEN 'NP (consisting) of E'

- **E is a substance measured by a pseudo-quantifier**

E = most emotions

*Zaplavila ho **vlna touhy** 'A **wave of desire** washed over him.'*



# Genitive case - 2

- (VP) z E-GEN '(VP) from/because of E'
  - **E is a source/cause** (cf. E z NP-GEN 'E from/because of NP')
  - E = *vděčnost* 'gratitude', *láska* 'love', *obavy* 'worries'
  - Z *vděčnosti* ho Viktorie políbila na vousatou tvář.** 'From gratitude Viktorie kissed him on his bearded cheek.'
- *bez* E-GEN 'without E'
  - **E is something that can be absent** (cf. s E-INS 'with E')
  - E = *láska* 'love', *lítost* 'regret', *naděje* 'hope'
  - Rodnou zemi opouštěli bez lítosti.* 'They abandoned their homeland **without regret.**'



# Dative case

- NP VP E-DAT (verbs: *propadnout* 'succumb to', *podlehnout* 'succumb to')
  - **E is a powerful force**  
E = *panika* 'panic', *zoufalství* 'despair', *beznaděj* 'hopelessness'  
*Další naděje zhasla a já znovu propadla zoufalství.* 'Further hope was extinguished and once again I **succumbed to despair.**'
- NP *být k* E-DAT 'be the cause of E' /XP *k* E-DAT 'cause E' (*dohánět* 'catch up to', *přivádět* 'lead to', *důvod* ('cause'))
  - **E is an attractor**  
E = *zděšení* 'dismay', *překvapení* 'surprise', *zuřivost* 'fury'  
*K zděšení mých druhů jsem se začal smát.* '**To the dismay** of my companions, I started to laugh.'



# Accusative case - 1

- *mít* E-ACC 'have E' (experience E) (cf. *můj, tvůj* E 'my, your E')
  - **E is a possession**  
E = *radost* 'joy', *strach* 'fear', *štěstí* 'happiness', *potěšení* 'pleasure', *zlost* 'indignation'  
*Myslela jsem, že budeš mít radost* 'I thought you would **be happy**'



# Accusative case - 2

- NP V E-ACC (verbs: *vyvolat* 'provoke', *vzbudit* 'awaken')
  - **E is a creature or force that can be aroused**  
E = *obavy* 'worries', *údiv* 'astonishment', *vášeň* 'passion', *nadšení* 'enthusiasm'  
*Jeho komentář **vyvolal údiv*** 'His comment **provoked astonishment**'
- NP V E-ACC (verbs: *potlačit* 'suppress', *skrýt* 'hide')
  - **E can be suppressed, hidden**  
E = *hněv* 'anger', *zklamání* 'disappointment', *překvapení* 'surprise', *opovržení* 'contempt'  
*Lloyd **potlačil hněv**, který v něm okamžitě vzplanul.* 'Lloyd **suppressed the anger** that immediately flared up inside him.'  
*Isabella se ani nesnažila **skrýt zklamání**.* 'Isabella didn't even try **to hide** [her] **disappointment.**'



# Locative case

- VP v E-LOC 'VP in E'
  - **E is a substance or container that envelops** (cf. hluboký E 'deep E')

E = *zoufalství* 'despair', *panika* 'panic', *beznaděj* 'hopelessness'

*Odvrátila obličej a v zoufalství zavřela oči.* 'She turned her face away and **in despair** closed her eyes.'

*V panice se naklonila přes most a uvažovala, jestli by nebylo lepší vrhnout se dolů.* '**In a panic** she leaned over the bridge and wondered whether it wouldn't be better to throw herself down.'



# Instrumental case - 1

- VP s E-INS 'with E'

- **E is an accessory or gesture**

E = dojetí 'emotion', hrůza 'terror', nadšení 'enthusiasm', opovržení 'contempt', úleva 'relief'

*Kassandra jí s **úlevou** pohlédla do tváře* 'Kassandra looked her in the face **with relief**'



# Instrumental case - 2

- VP E-INS 'VP due to E' (verbs *plakat* 'weep', *brečet* 'cry', *zrudnout* 'blush', *dmout* 'puff up')
  - **E is a force that causes VP**  
E = *dojetí* 'emotion', *pýcha* 'pride', *stud* 'remorse'  
*Samozřejmě, že by se Charlie **dmul pýchou** až k prasknutí.* 'Of course Charlie would **be puffed up** to the bursting point **with pride.**'
- *naplněný* E-INS 'filled with E'
  - **E is a substance that fills people**
  - E = *hrůza* 'terror', *nenávisť* 'hatred', *naděje* 'hope', *touha* 'desire', *pýcha* 'pride'
  - *posadila se vedle mne a pozorovala ho vykulenýma očima **naplněnýma hrůzou*** 'she sat next to me and watched him with bulging eyes **filled with terror**'



# Other common constructions - 1

- E v NP-LOC 'E in one's NP'

(NP: *oči* 'eyes', *tvář* 'face', *hlas* 'voice', *slova* 'words', *srdce* 'heart')

*Ale viděl jsem **smutek v očích** chlapců* 'But I saw **the sorrow in** the boys' **eyes**'

- *pro* E-ACC 'for E'

*Měla by sis koupit něco **pro radost**.* 'You should buy yourself something **to make you happy [for joy].**'



# Other common constructions - 2

- E *k / vůči* NP-DAT 'E toward NP'  
*Úcta k aristokracii byla v Angličanech hluboce zakořeněná* 'Respect for the aristocracy has deep roots among the English'  
*Nepochyboval o tom, že jeho zášť vůči otci slábne* 'He has no doubt that his spite for his father was waning'
- E *z* NP-GEN 'E from/due to NP'  
*Už dávno nemám strach ze smrti* 'It's been a long time since I have been afraid of dying [Already long ago I don't have fear from death]'



# Some less common constructions

- *do* E-GEN 'to E'  
*Přivádělo by ji **do rozpaků**, že vám tohle všechno vykládám* 'It would **embarrass her** [bring her **to embarrassment**] that I am telling you all this'
- E *před* NP-INS 'E before/in the face of NP'  
*Bratr ve **strachu před manželkou** našlapoval po špičkách* 'Brother in **fear of his wife** was walking on tiptoe'
- E *nad* NP-INS 'E above NP'
  - *zuřil jsem **bezmocí nad tím , že** nemám možnost se bránit* 'I was furious from **helplessness due to the fact** that I can't defend myself'
- *udržet* E-ACC *na uzdě*-LOC 'keep E on reins'
  - *Eadulf skřípal zuby, aby **udržel na uzdě svůj hněv*** 'Eadulf clenched his teeth in order to **keep his anger in check [on reins]**'



# Case study of ANGER



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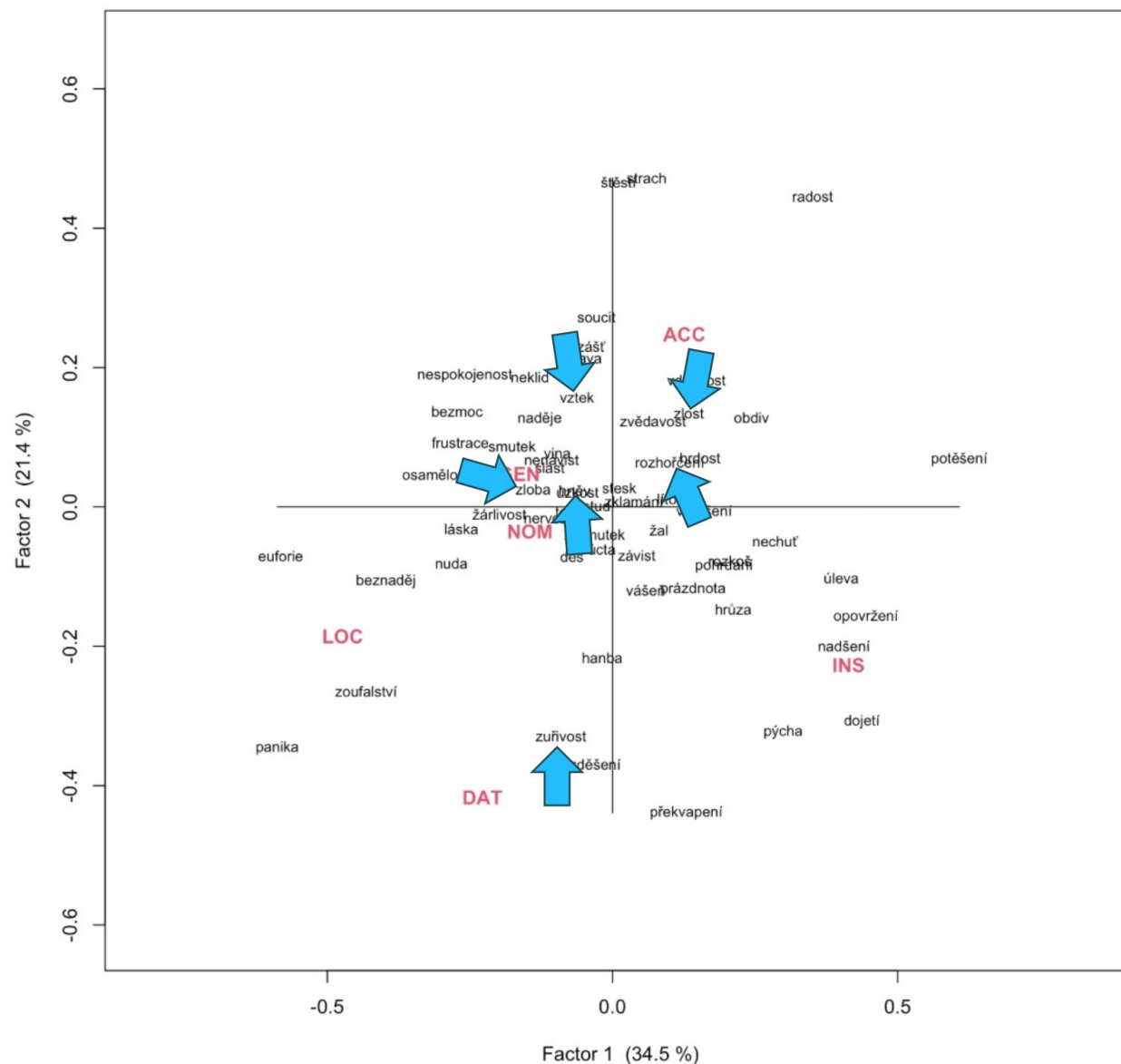
  
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**hněv, zloba: NOM,  
GEN = agent-like  
forces or emotional  
contents**

**vztek, zlost,  
rozhořčení: ACC =  
experienced and  
controlled states**

**zuřivost: DAT = state  
one is driven into**



# Collocates

- Anger as a dynamic and episodic phenomenon that flares up or erupts: *vzplanout* 'flare up', *vzkypět* 'boil up', *popadnout* 'seize', and *zachvátit* 'grab', *výbuch* 'explosion', *záchvat* 'fit', and *nával* 'surge'
- Other collocates point to bodily manifestation: anger makes people tremble, redden, distort their faces, or show other visible signs of inner tension
- Anger often presented as states that need to be controlled, as shown by verbs such as *potlačit* 'suppress', *ovládnout* 'take control', *skrývat* 'hide', and *utišit* 'mute'
- Anger is typically presented as something that arises suddenly, escalates, becomes visible on the body, and often needs to be controlled



# Individual lexemes remain distinct

- *Vztek* 'rage' and *zlost* 'ire': ACC, with *mít* 'have', *vylít si* 'pour out one's', and *vybít si* 'work out one's' -- anger that is strongly felt and then vented
- *Zuřivost* 'fury': DAT, an extreme state that a person is pushed into
- *Rozhořčení* 'indignation': publicm evaluative profile, moral judgement: *spravedlivé/oprávněné rozhořčení* 'righteous/justified indignation', *vyjádřit rozhořčení* 'express indignation'
- *Hněv* 'anger': dynamic processes *vzplanout* 'flare up', *vzkypět* 'boil up', and *vyprchat* 'fade away'
- *Zloba* 'malice': substance-like material (*plný zloby* 'full of malice')



# Conclusions and future plans



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# Conclusions

- **Contrary to what psychologists suggest, grammar does not treat emotions along axes of polarity and intensity, instead they behave as metaphorical containers, possessions, forces, substances, etc.**
- **Similar emotions can behave differently, and different emotions can behave similarly**
- **Grammatical constructions reveal various metaphorical roles for emotions: as agents, substances, possessions, forces, containers, etc.**
- **Grammars of different languages can treat emotions differently; learning constructions can help with acquisition of vocabulary**



# Implications

- **Lexicography:**
  - Grammatical behaviour is not external to lexical meaning, but part of the lexical profile of the word and part of the way its meaning is realized in use
  - A semantic field-based description can therefore complement traditional lexicographic practice by showing not only the meanings of individual lexemes, but also their place within a structured network of contrasts and associations
- **Pedagogy:**
  - Emotion words can be challenging because they are abstract, metaphorical, language-specific
  - Need to target strategic constructions for learners



# Future plans

- **Book:**
  - **Grammar-based analysis of verbs, adjectives, adverbs, prepositions, etc. in expression of emotions in Czech**
  - **In Czech, for Czechs**
- **Further applications to other fields such as:**
  - **color, body parts, time, evaluation, size, quantity, modality, verbs of motion, speaking and thinking**

