



DATA TO HELP US FORM IMAGES: THE ABSTRACT AND NON-IMAGEABLE

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OVERVIEW

- + 1. INTRODUCTION AND THEORETICAL BACKGROUND
- + 2. CROATIAN PSYCHOLINGUISTIC DATABASE
 - + <http://megahr.ffzg.unizg.hr/>
- + 3. METHODOLOGY AND GOALS
- + 4. CONCLUSION

‘chair/a chair’



‘dog’



'peace'



'experience'



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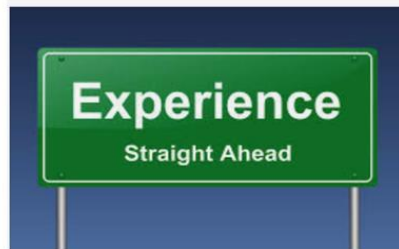
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THREE MAIN QUESTIONS

1. WHAT ARE CONCRETENESS AND
IMAGEABILITY?

2. WHY DO THEY MATTER?

3. HOW THEY CAN BE ACCESSED?

WHAT?

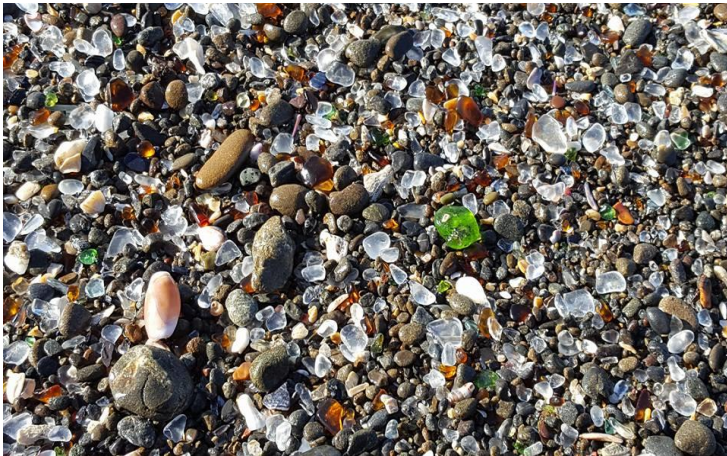
- + Concreteness and imageability are **cognitive and psycholinguistic constructs**
- + WHY?
 - + because they do not exist in an outside world beyond our head
 - + they are our individual conceptualizations of the world
 - + (similar to most abstract words)

CONCRETENESS AND IMAGEABILITY IN MENTAL GRAMMAR

- + MENTAL GRAMMAR - a complete collection of patterns, templates or schemas of the language stored in the brain/mind of a language user
- + CONCRETENESS
 - + relation btw. lexical representation and the world (objects in the world)
 - + EXPERIENTIAL
- + IMAGEABILITY
 - + representation of a concept in our mental lexicon
 - + participants asked to externalize their internal lexical representations

WHY?

- + COGNITIVE ADVANTAGE IN PROCESSING
 - + AND MEMORY
- + CONCRETENESS EFFECT
 - + BUT ALSO SALIENCE



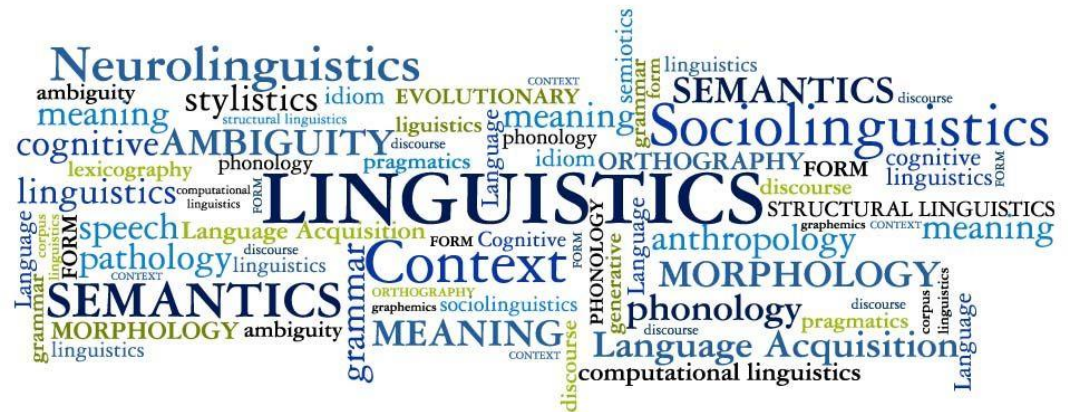
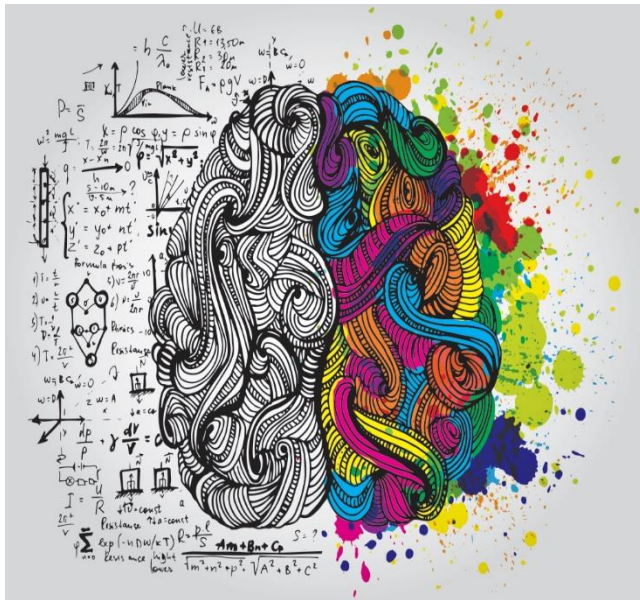
COGNITIVE ADVANTAGE

- + FOR A LONG TIME, TWO INFLUENTIAL ACCOUNTS
 - + 1. Dual coding theory (Paivio 1971, 1986, 1991, 2007)
 - + 2. Context availability model (Schwanenfluegel 1991, Schwanenfluegel & Shoben 1983)
- + MORE RECENTLY – DIFFERENT APPROACHES
 - + 3. Situated conceptualization framework (especially abstract semantics; Barsalou, Wiemer-Hastings, 2005, Wiemer Hastings 2005, Barsalou et al 2018)
 - + 4. Embodied theory of semantic representation (Altarriba et al. 1999, Vigliocco & Kita 2007, Vigliocco, Koustas 2011, 2014) – as a version of embodied cognition (Cowan 2005)

HOW?

- + INDIRECT ACCESS THROUGH PSYCHOLINGUISTIC EXPERIMENTS
- + manipulating/combining
 - + syntagmatic and syntactic
- + identification (lexical decision tasks, word-naming tasks, RT)
- + understanding (density of word-nets, semantic relations between words)
- + memorizing (short- and long-term memory, longer and better)

PSYCHOLOGY vs. LINGUISTICS



PSYCHOLOGY vs. LINGUISTICS

- + Words are never used *in absentia*
 - + Yet we test them one by one
- + Sentence grammaticality and textual/discoursive coherence depends on the combinatorial potential of semantic and grammatical frames.

PSYCHOLOGY

processing

+ LEXICAL PROCESSING

- + Concrete words (words referring to concrete concepts)
 - + identified faster (lexical decision tasks, word-naming tasks, RT)
 - + retained longer (and better, for combinatorial purposes) in long and short term memory

+ BUT...

- + data from aphasia and ageing brain – reported both effects
- + Vigliocco et al. reported faster processing of abstract words

LINGUISTICS

representational geometry



- + QUESTIONS to be asked
 - + Do syntagmatic relations of concrete and abstract words differ?
 - + If they do differ, how?
 - + Sketch engine
 - + What does that mean for the language capacity?



THE BUILDING BLOCKS OF CROATIAN MENTAL GRAMMAR: CONSTRAINTS OF INFORMATION STRUCTURE



COLLABORATORS AND EXPERTS



OJ conference (online)

CROATIAN PSYCHOLINGUISTIC DATABASE



<https://doi.org/10.17234/megahr.2019.hpb>

- + Corpus HrWac – words more frequent than 3000 occurrences: 7695 Nouns, 3124 Adjectives, 2849 Verbs (random choice of 1000 of each)
- + Psycholinguistic measures
 - + concreteness, imageability
 - + relative frequency, AoA
- + 3000 words (1000 Nouns, Verbs and Adjectives)
- + Additional 3000 words
 - + 1500 most frequent words from the Frequency Dictionary of Croatian language
 - + 1500 words from textbooks (Croatian Language, History, Mathematics, Natural Science, Geography)
- + 2 sets of questionnaires – adults and elementary-school students

MEGACRO

WHY THE DATABASE? (1)



- + we wanted to produce a database for Croatian comparable to other databases:
- + **English:** Bird, Franklin & Howard 2001; Brysbaert et al. 2014; Coltheart 1981; Cortese & Fugett 2004; Schock, Cortese & Khanna 2012; **French:** Desrochers & Thompson 2009; **Italian:** Della Rosa et al. 2010; Rofes, Aguiar and Miceli 2015; **Norwegian:** Linde et al. 2015; Simonsen et al. 2013; **Dutch:** Brysbaert et al. 2014; **Spanish:** Guasch et al. 2016

MEGACRO

WHY THE DATABASE? (2)



+ 1. RESEARCH INTERESTS

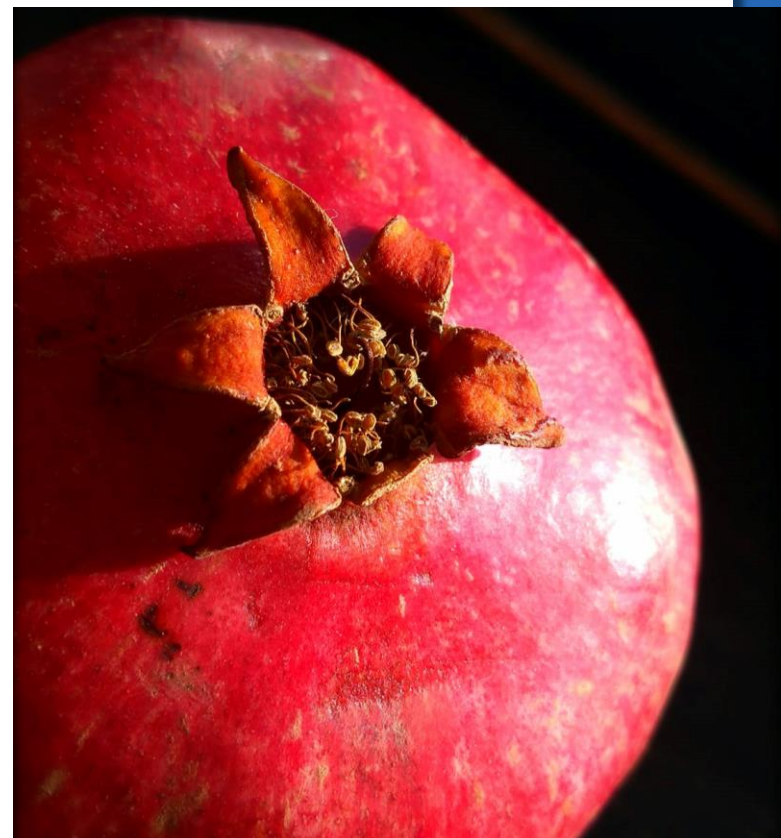
- + comparability of data points with other databases
 - + lexicalization and conceptualization
- + the relation of lexical network and syntax
 - + i. e. specificity of abstract words in languages such as Croatian, with suffixes –*nje* (gledanje [watching], trčanje [running]), –*ost* (urednost [tidiness], umjetnost [art]), –*ota* (dobrota [kindness], ljepota [beauty]), –*stvo* (zdravstvo [health (system)], ustrojstvo [structure])

MEGACRO

WHY THE DATABASE? (3)



- + 2. PRACTICAL INTEREST
 - + relation between academic vocabulary and reading comprehension



MAIN LINGUISTIC RESEARCH QUESTIONS

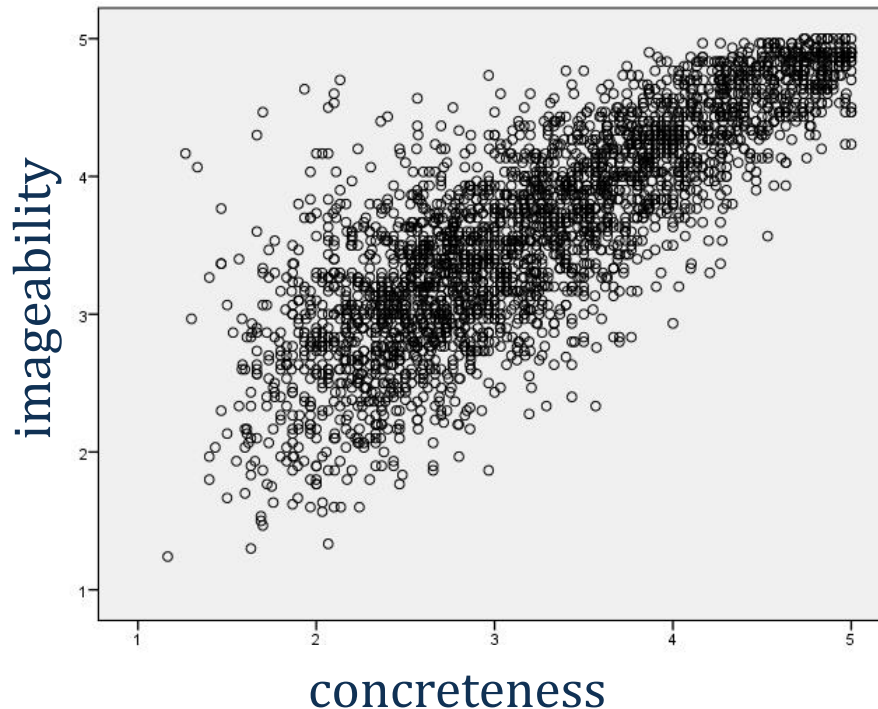
- + Which features are universal and which are language-specific? Why?
 - + mostly of typological, but also of ecological interest (how do the features of one language translate to another one)
- + How do these features affect the combinatorial potential of Nouns, Verbs and Adjectives?
 - + at the interface of semantics and syntax
 - + at the interface of semantics and phonology

CROATIAN PSYCHOLINGUISTIC DATABASE



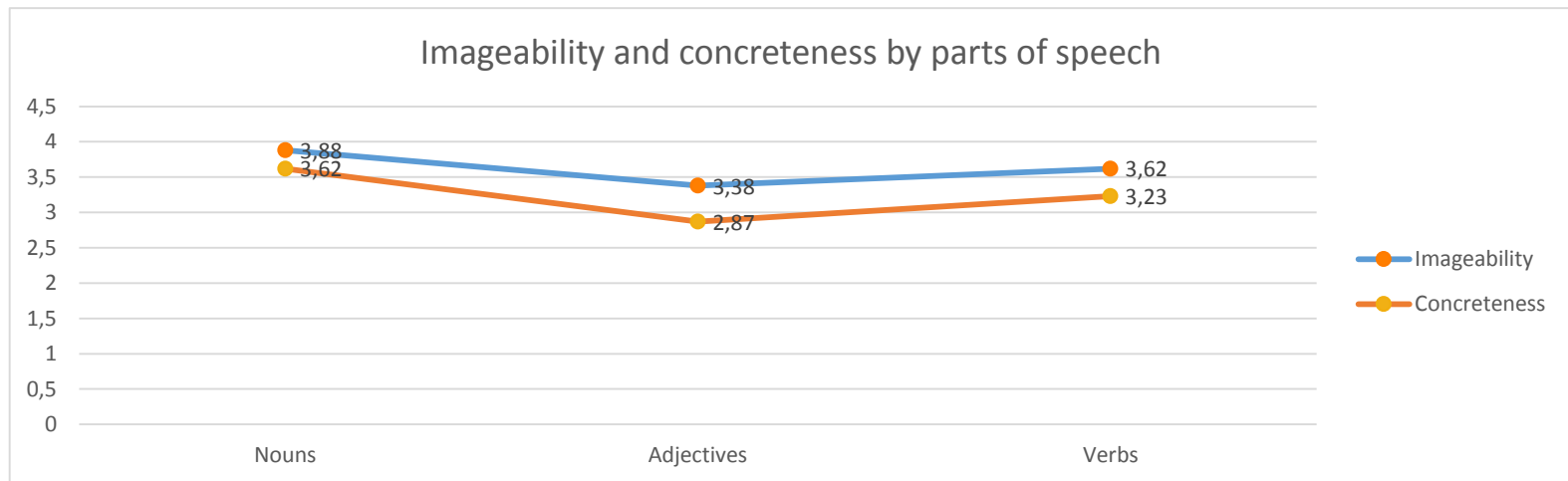
- + METHODOLOGICAL GOALS
- + Which part of the language knowledge is common to all speakers of the language and which part is subject to variability?
 - + adults vs. children (elementary school students)
 - + two groups of adults (familiarity effect)
- + NEXT STEP - testing adults significantly different in their level of education

RELATION BETWEEN CONCRETENESS AND IMAGEABILITY: RESULTS



- + ALL RESULTS
- + calculated with Pearson correlation coefficient $r = 0,82$ ($p < ,01$)
- + divided by the central value (3,17) into two groups - statistically different correlations for abstract ($r = 0,454$ ($p < ,01$)) and concrete words ($r = 0,735$ ($p < ,01$))
- + as expected - less concrete, less correlated

RELATION BETWEEN CONCRETENESS AND IMAGEABILITY: RESULTS



+ SEPARATED PARTS OF SPEECH

- + further analysis shows that the correlation is the lowest for **adjectives** ($r = 0,74$; $p < ,01$), somewhat higher for **verbs** ($r = 0,82$; $p < ,01$) and the highest for **nouns** ($r = 0,86$; $p < ,01$)

+ COGNITIVE INCENTIVE - QUALITATIVE ANALYSIS NEEDED!

RELATION BETWEEN CONCRETENESS AND IMAGEABILITY: OPEN ISSUES



- + high correlation in general, but...
- + Examples in our database: *mišljenje* [thinking] (Concr = 1,27, Imag = 4,17), *reinkarnacija* [reincarnation] (Concr = 1,33, Imag = 4,07), *obećanje* [promise] (Concr = 1,7, Imag = 4,47), *tajanstven* [mysterious] (Concr = 1,67, Imag = 4,3), *zadesiti* [befall] (Concr = 1,93, Imag = 4,63)
- + AVENUES OPEN FOR INTERPRETATION:
 - + Two or more different meanings? Embodiment? Internal body-related sensory experiences? Emotional valence?

100 MOST CONCRETE WORDS IN THE CROATIAN DATABASE



- + SAME: all highly concrete
 - + **MOSTLY NOUNS (96%) !!!**
- + EXCEPT:
 - + differ substantially in corpus and relative frequency
 - + *telefon* 'phone'- f 86.99 p/m !!
 - + *termostat* 'thermostat' – f 2.53 p/m
 - + *plašt* 'robe' – rf 2.41
 - + *olovka* 'pencil' – rf 4.76
- + SIMILAR:
 - + in AoA – approx. 4 - 10

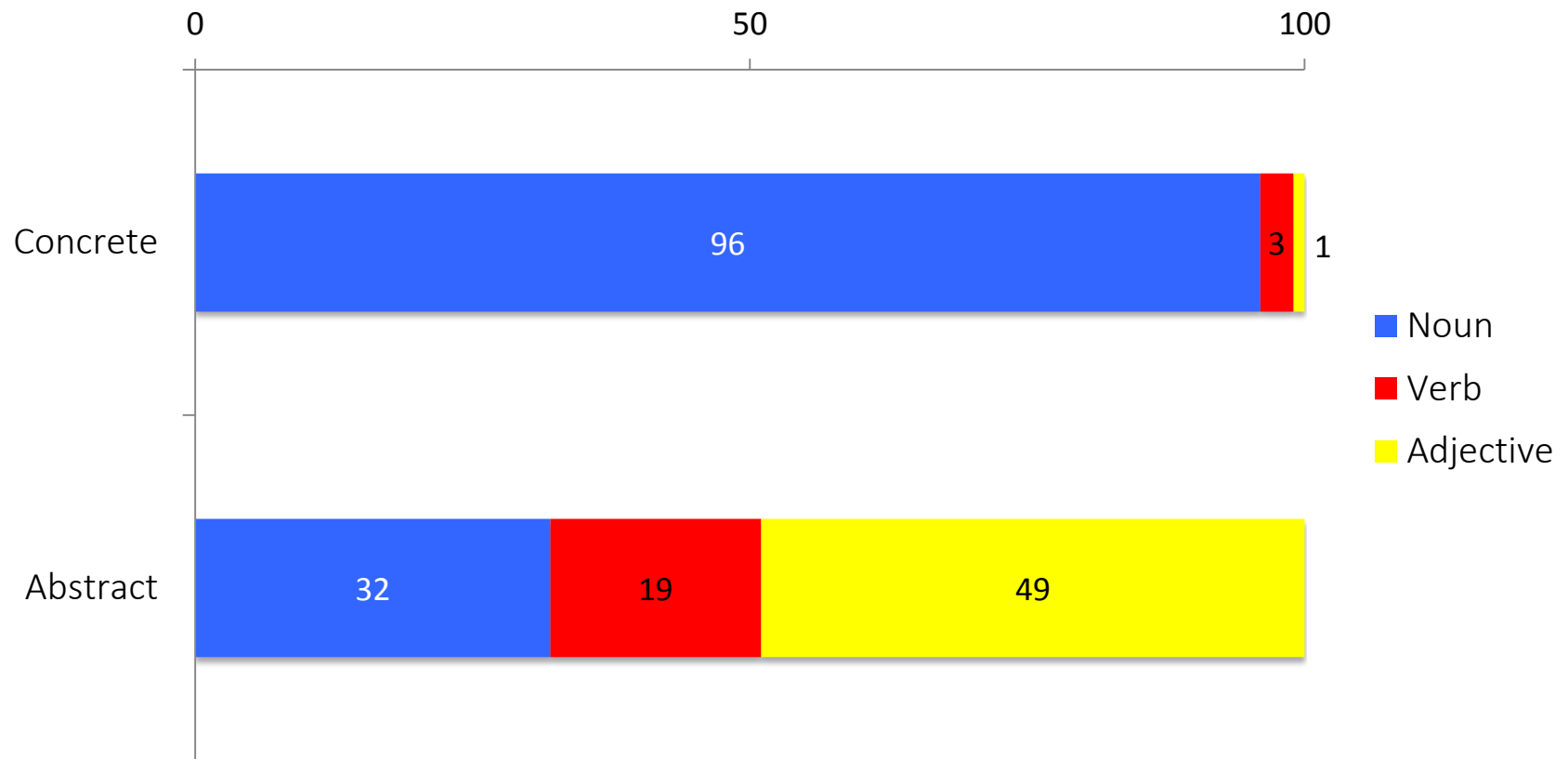
100 MOST ABSTRACT WORDS IN THE CROATIAN DATABASE

- + SAME: all highly abstract
- + EXCEPT: **Adjectives, Verbs and Nouns**

AND:

- + differ substantially in corpus and relative frequency
 - + *nesuđen* 'not meant to be' f 2.47 p/m
 - + *mišljenje* f 185.51 p/m
 - + *posvemašnji* 'widespread' rf 1,48
 - + *mišljenje* 'thinking' rf 4,76
- + SIMILAR:
 - + in AoA – approx. 7.5 – 14

CONCRETE vs. ABSTRACT



CONCLUSION: CONCRETE AND ABSTRACT

- + 100 most concrete lexemes in our database are mostly Nouns
- + 100 least concrete lexemes in our database are Adjectives, Nouns and Verbs
- + No conclusive evidence about the types of relations, but the **density and composition** of syntactic and semantic networks for concrete and abstract lexemes differ.

HVALA!

