Effect of semantics on Hindi inflection

Inflection

- Modification of root word to express different tense, mood, voice, number, gender, etc.

- Example:
  Root word: देख
  Inflections: दिखा, दिखवा, दिखाइए, देखूंगा

- No single rule

- Building computational models to model cognitive processes involved in inflection

Connectionist vs Dual model

- Connectionist
  - Regular verbs are inflected by rule (add -ed)
  - Exception verb inflections are stored in lexicon (dictionary).
  - The rule is applied by default but if stored inflected form of verb is retrieved, rule application is blocked.

- Connectionist Model
  - No distinct mechanism for regular and exception verbs
  - Single model trained over phonology and semantics of word.

Hindi causative inflection

○ Causative Inflection

root word + "वा" (not always applicable !!!)

"fall"   →   "to cause to fall"
गिरना   →   गिरवाना

करना	करवाना
लिखना	लिखवाना
पढ़ना	पढ़वाना

Regular

फेंकना	फिंकवाना
जोड़ना	जुड़वाना
खाना	खिलाना

Exceptions

Experiment

○ High imageability: पीना, भागना
  Less imageability: चुनना, रेंगना, भेजना

○ Imageability (semantics) affects response time of humans to inflect given verb ?

○ Measure response time of subjects and see effect of imageability and lemma frequency

References

○ "Hindi Wordnet", IIT Bombay. 2008 <http://www.cfilt.iitb.ac.in/wordnet/webhwn/>

○ Butler, R., Patterson, K., & Woollams, A. M. (2012). In search of meaning: Semantic effects on past-tense inflection. The Quarterly Journal of Experimental Psychology, 65(8), 1633-1656.
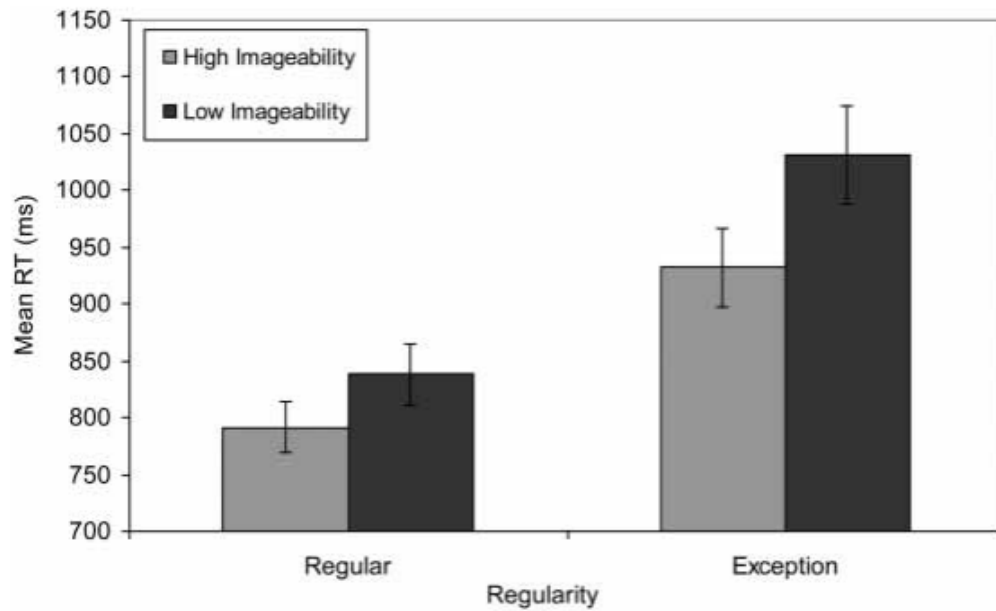
Thank You.

Figure: Mean reaction times (RTs) as a function of regularity and imageability