Transitivity and construal in English emotion verbs

A quantitative investigation

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Outline

Cognitive perspective

- Usage-based approaches assume that linguistic meaning is a social construct which is dynamically negotiated within and across particular communication settings
- Explore the relation between objects and events in the external world and language users' subjective perspective on those events
  - How is this relation manifested in language structure and use?
- "*Patterns in language use index semantic structures, which in turn, reflect conceptual structure*"[1]

  ➪ Similar syntactic behavior implies similar semantic structure

[1] Glynn (2010)

Goal of this talk

- Explore how lexical and syntactic usage patterns reflect differences in speakers' conceptualization of emotions
- Focus on a special class of English psychological verbs to show. . .
  1. How users' semantic knowledge of emotion concepts is reflected in subtle differences in the kinds of arguments found with different verbs, and. . .
  2. How differences in the construal of emotion situations can shape speaker's syntactic choices, e.g. active vs. passive voice

Cognitive approach to transitivity

- Scalar notion associated with the degree to which an activity or event is transferred from one participant to another[2]
- Needs of the communicative context dictate the construal of a scene ➪ interplay between semantic and discourse factors:
  - semantic roles determined by position in causal chain of events
  - discourse influences direction of “attention flow” and viewpoint
- Semantic and discourse functional factors reflections of the same underlying cognitive schema[3]

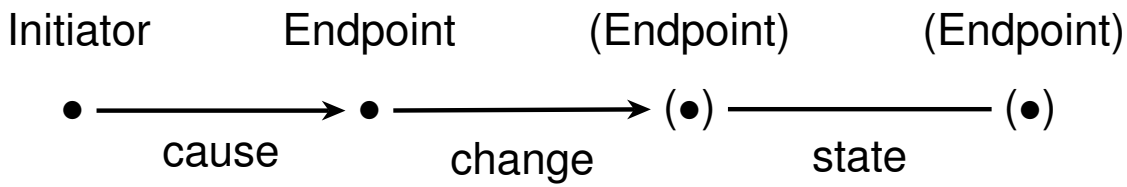
[2] Hopper and Thompson (1980)

[3] DeLancey (1987); Croft (1994); a.o.

Transitive prototype

Transitive prototype: a real, dynamic, temporally bounded event involving **a volitional agent acting upon a non-volitional patient**[4]

- Transitivity alternations involve a change or realignment in the verbal profile of the causal chain of events[5]



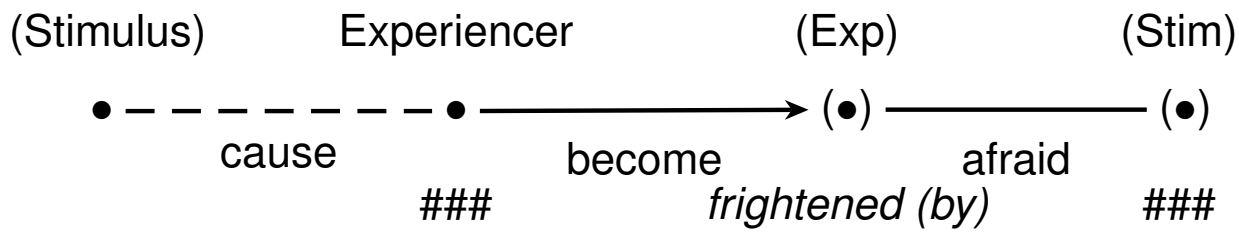
- Verb (root) meaning forms the base against which a specific use of a verb is profiled
- But event construal is flexible and contextually sensitive, hence verb use is variable

[4] Givón (1990); Lakoff (1977); Langacker (1987); Næss (2007); a.o.

[5] Croft (1994, 1998, 2012)

The role of event participants

- Construal/usage is influenced (but not determined) by a lexical and construction meaning[6]
- Different uses of a verb profile different sub-components of its causal structure



Hypothesis: Construal of an emotion as a prototypical transitive event should be correlated with the causal role of a verb's arguments ➪ active clauses more likely with human or event causes

[6] Ambridge et al. (2014); Croft (2001); Goldberg (2006); a.o.

Outline

1 Introduction

2 Psychological verbs

3 Corpus study

4 Conclusion

Object-Experiencer verbs

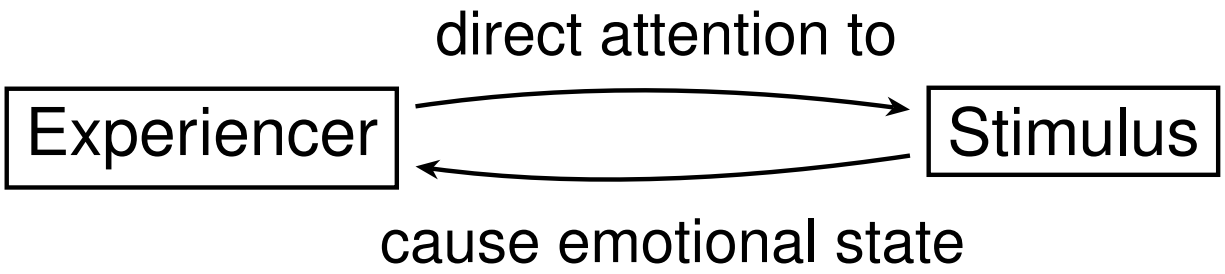
(1) a. the Tyrannosaurus$_{Stim}$ terrified all the kids$_{Exp}$ sitting near me.

b. All the kids$_{Exp}$ sitting near me were terrified by the Tyrannosaurus$_{Stim}$.

- Prototypically describe dynamic change of emotion state in Experiencer/Patient brought about by Stimulus/Agent
- Very large class:
  amaze, amuse, annoy, bore, bother, captivate, concern, depress, fascinate, frighten, horrify, irk, please, puzzle, sadden, surprise, terrify, upset, worry, . . .

Obj-Exp verbs are a special class

- Necessarily involve animate/sentient Patients
- Involve mental states/events that can be conceptualized in multiple ways[7]



⇨ Flexible nature of emotional concepts offers fertile ground for research into semantic and syntactic variation

[7] Bouchard (1995); Croft (1993); Scherer (2005)

Outline

Quantitative trends in Obj-Exp verb usage

Analyze large sample of Obj-Exp verb tokens from the Corpus of Contemporary American English (COCA)[8]

1. Annotation of verb and discourse features, as well as properties of both Stimulus and Experiencer arguments
2. Exploration of associations between verbs and semantic properties of Stimulus arguments
3. Test of the influence of Stimulus semantics on passivization under multivariate control

[8] Davies (2008)

Sample details

- 3200 randomly sampled active and passive observations of 16 Obj-Exp verbs ($\approx$ 200 per verb)
- Include only examples with both arguments present, and to exclude non-psychological uses
- Verbs: *amaze, amuse, anger, annoy, captivate, concern, depress, fascinate, frighten, horrify, please, scare, startle, surprise, upset*
- Verbs selected based on high overall frequency and prevalence of mention in the literature

Semantic annotation

Classification of Stimulus types

Human:	*Republicans, the former corporate lawyer*
Organization:	*the police, the government*
Other Animate:	*a bear, snakes*
Concrete Obj:	*fake flowers, coconuts*
Event:	*The launch, the activity outside*
Aesthetic Obj:	*the story, the painting*
Location:	*Paris, Kuwait*
Sensation:	*the smell, the sounds*
Abstract Obj:	*male chauvinism, history*
Abstract state of affairs (SoA):	*that . . .*

Correspondence Analysis

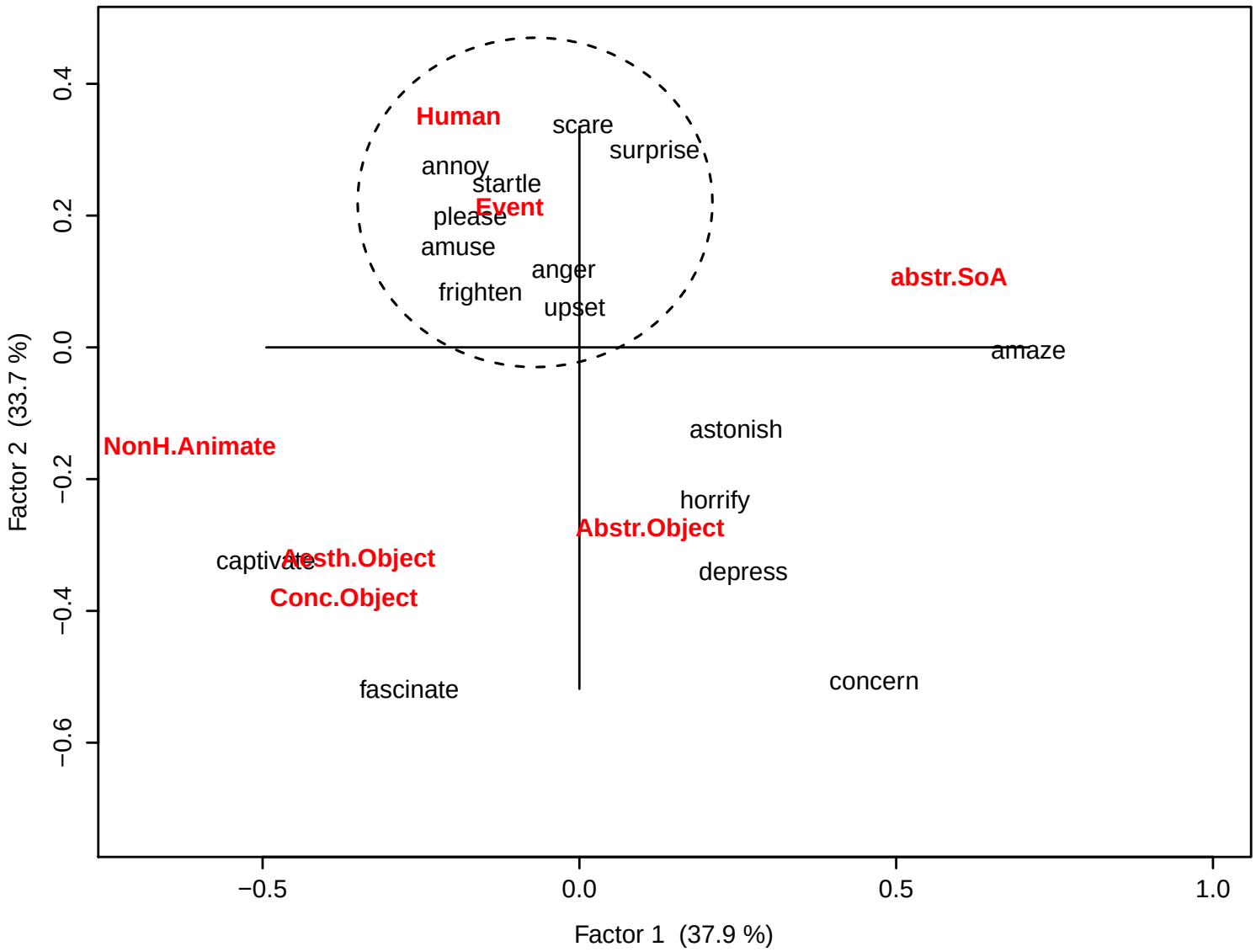
Technique for visually representing frequency-based associations among groups or categories[9]

- Converts a contingency table to a 2D map in Euclidean space
- Proximity on the map reflects strength of association

	Stimulus types				
Verb	Human	Event	Concrete Object	Abstract Object	Abstract SoA	. .
amaze	42	13	9	84	110	. .
amuse	99	39	17	61	32	. .
anger	61	34	1	62	26	. .
annoy	140	62	26	81	36	. .
astonish	31	15	12	55	41	. .
⋮	⋮	⋮	⋮	⋮	⋮	⋱

[9] Glynn (2012); Grafmiller (2013:177–183)

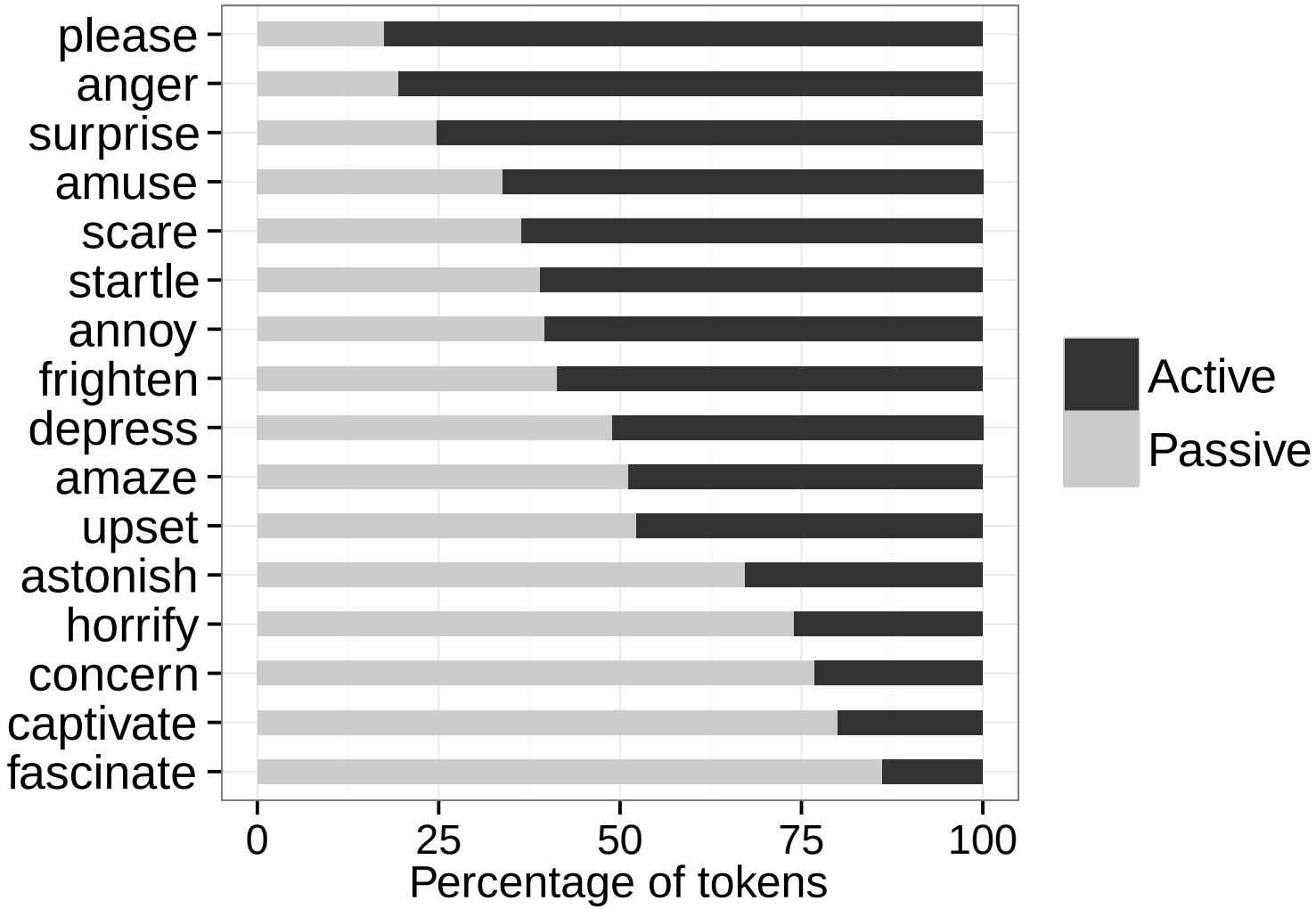
CA of verbs and stimulus types



Summary of CA

- Some verbs tightly cluster around Stimulus args with high degree of causal force (humans or events)
  - "Potent" Obj-Exp verbs: *startle, anger, annoy, amuse, scare, please, surprise*
- Other verbs are more widely distributed and cluster closer to less potent Stimulus args (abstract concepts or states-of affairs)
  - *depress, captivate, concern, fascinate, horrify*

Variation in frequency of passivization



Stimulus type and passivization

Verbs frequently used with human/event Stimulus args are significantly more frequent in active uses than other verbs $(\chi^2 = 73.599, p < 0.0001, \phi = .14)$

But. . . passivization is influenced by many factors (e.g. information structure, length, etc.).

- Does the nature of the Stimulus predict the likelihood of passive even when controlling for other factors?

Confirming the influence of Stimulus type

Mixed-effects logistic regression model predicting likelihood of passivization

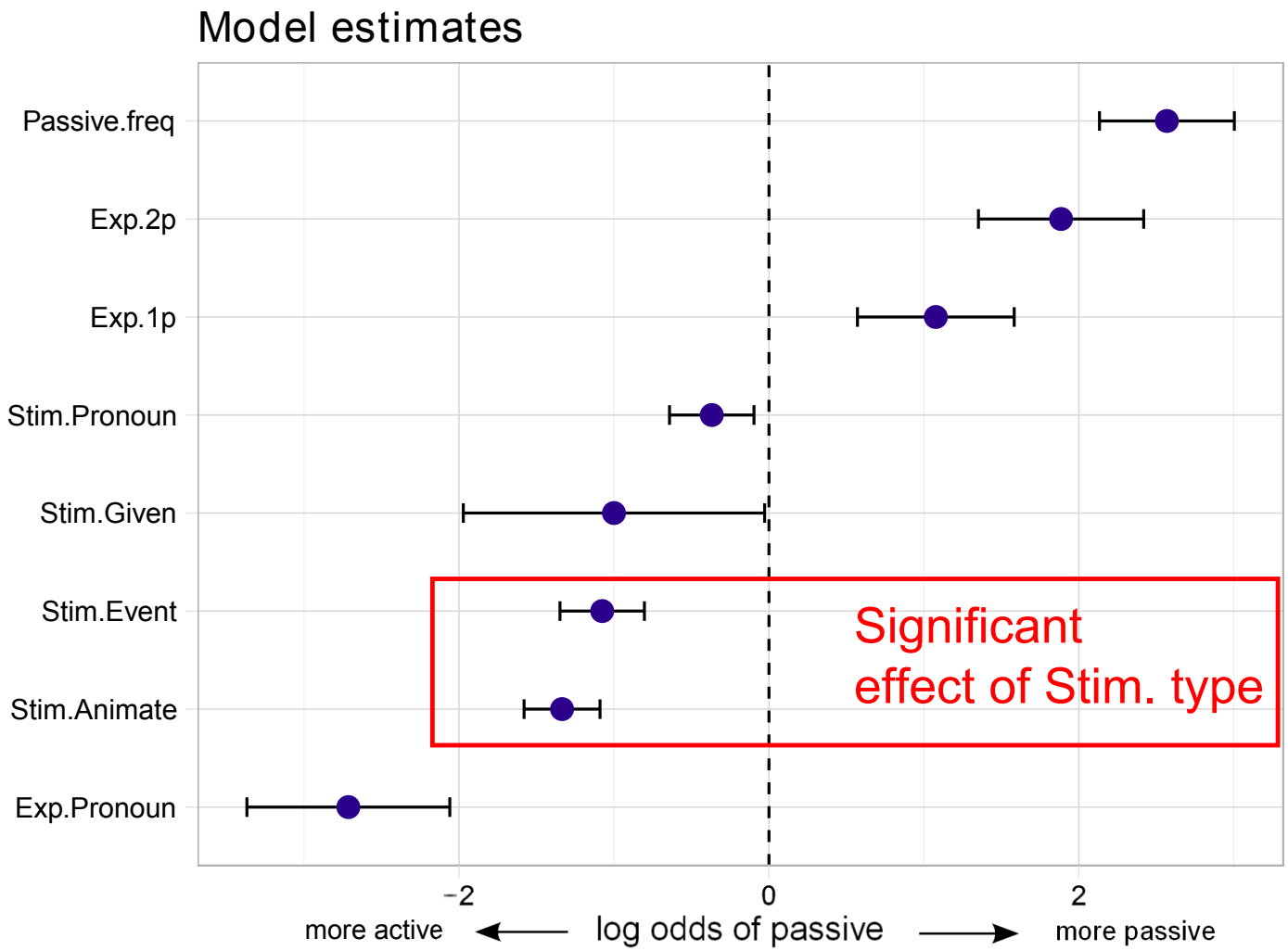
Factors included:

- Givenness, person, pronominality, and length of Experiencer
- Givenness, pronominality, and length of Stimulus
- Passive bias: Verbs' overall frequency of passive uses in COCA
- Semantic types collapsed into 3 broad levels of potency (due to data sparseness)

  Animate (human/org/animate) vs. Event vs. Abstract (all others)
- Random intercept by verb

Effect of Stimulus type

- Passive is significantly less likely when Stimulus denotes human or event



Summary

Stimulus' relative degree of causal efficacy significantly influences passivization.

- Abstract Stimulus args increase likelihood of passivization.
- Verbs most closely associated (in CA) with human arguments passivize the least
  - These arguments refer to concrete, often human, individuals (potentially) capable of intentional action

Outline

Summing up: Emotions and their causes

Language users sometimes construe emotions as change-of-state events involving causally forceful participants (events and associated human actors)

- Such potent entities are prototypical transitive subjects, and often viewed as agents

(2) a. Looking at these first few photos *depressed* me, . . .

b. Williams' gesture toward Lance was simple, but it *captivated* a country still reeling from the attack.

c. He's going to *astonish* you with stories of rituals. . .

- Hence these verbs' preference for active uses

Summing up: Emotions and their causes

Users can also construe emotions as attitudes not associated with immediate causes, but directed at abstract entities lacking spatio-temporal bounds and causal force.

- Such abstract entities are less prototypical subjects.

(3) a. When you meet her, you'll be *amazed* at just how old she really is.

b. Hall was *fascinated* with biology and medicine, . . .

c. Many Israelis are *depressed* by the long history of false starts and phony hopes, . . .

- Hence the preference for passive uses

Flexible nature of emotion concepts

Likelihood that an Obj-Exp verb will passivize is tied to the nature of the emotion and the conceptualization of the emotion event

Emotions have a dual conceptual nature as both externally affected states, and internally directed attitudes[10]

- Individual Obj-Exp verbs have inherent biases toward one conceptualization or the other, but these biases are defeasible.
- Among Obj-Exp verbs this is only a tendency and not a categorical distinction, unlike that between Subj-Exp and Obj-Exp verbs (*fear* vs. *frighten*).[11]

[10] Croft (1993); Scherer (2005)

[11] (Levin & Grafmiller 2013)

Psychology of emotion concepts

Emotion concepts are relational structures that integrate multiple parts of an experienced situation.[12]

- As abstract concepts, emotions refer to entire situations, or "situated conceptualizations" representing settings, agents, events, introspections, etc.
- Lexicalized meaning represents the entrenchment of situated conceptualizations which, over time, "become so well established that [they become] active automatically and immediately when the situation arises"[13].
- Psychologically plausible mechanism by which detailed conceptual knowledge shapes, and is shaped by, the production and interpretation of language.

[12] Wilson-Mendenhall et al. (2011)

[13] Barsalou (2009:1284)

Thank you!

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Selected References I

Ambridge, B., C. H. Noble, and E. V. M. Lieven (2014). The semantics of the transitive causative construction: Evidence from a forced-choice pointing study with adults and children. Cognitive Linguistics 25(2), 293–311.

Barsalou, L. W. (2009). Simulation, situated conceptualization, and prediction. Philosophical Transactions of the Royal Society of London: Biological Sciences 364, 1281–1289.

Bouchard, D. (1995). The Semantics of Syntax. Chicago: University of Chicago Press.

Croft, W. (1993). Case marking and the semantics of mental verbs. In J. Pustejovsky (Ed.), Semantics and the Lexicon, pp. 55–72. Dordrecht: Kluwer.

Croft, W. (1994). Voice: Beyond control and affectedness. In B. Fox and P. J. Hopper (Eds.), Voice: Form and Function, pp. 89–117. Amsterdam: John Benjamins.

Croft, W. (1998). Event structure in argument linking. In The Projection of Arguments: Lexical and Syntactic Constraints, pp. 21–63. Stanford: CSLI Publications.

Croft, W. (2001). Radical construction grammar: syntactic theory in typological perspective. Oxford: Oxford Univ. Press.

Croft, W. (2012). Verbs: Aspect and Causal Structure. Oxford linguistics. Oxford [England] ; New York: Oxford University Press.

Davies, M. (2008). The Corpus of Contemporary American English (COCA): 450 million words, 1990-present.

DeLancey, S. (1987). Transitivity in grammar and cognition. In R. S. Tomlin (Ed.), Coherence and Grounding in Discourse, pp. 53–68. Amsterdam: John Benjamins.

Givón, T. (1990). Syntax: A Functional-Typological Introduction, Volume II. Amsterdam: John Benjamins.

Glynn, D. (2010). Testing the hypothesis. objectivity and verification in usage-based cognitive semantics. In D. Glynn and K. Fischer (Eds.), Corpus-Driven Cognitive Semantics. Quantitative Approaches, pp. 241–269. Berlin: Mouton de Gruyter.

Glynn, D. (2012). Correspondence analysis. an exploratory technique for identifying usage patterns. In D. Glynn and J. Robinson (Eds.), Polysemy and Synonymy. Corpus methods and Applications in Cognitive Linguistics, pp. 133–180. Amsterdam: John Benjamins.

Selected References II

Goldberg, A. E. (2006). Constructions at Work. Oxford: Oxford University Press.

Grafmiller, J. (2013). The Semantics of Syntactic Choice: An Analysis of English Emotion Verbs. Ph.d. thesis, Stanford University, Stanford, CA.

Hopper, P. J. and S. A. Thompson (1980). Transitivity in grammar and discourse. Language 56, 251–299.

Lakoff, G. (1977). Linguistic gestalts. In Papers from the 13th Regional Meeting, pp. 225–235. Chicago: Chicago Linguistic Society.

Langacker, R. W. (1987). Foundations of Cognitive Grammar. Stanford: Stanford University Press.

Levin, B. and J. Grafmiller (2013). Do you always fear what frightens you? In T. H. King and V. d. Paiva (Eds.), From Quirky Case to Representing Space: Papers in Honor of Annie Zaenen, pp. 21–33. CSLI Publications.

Næss, Å. (2007). Prototypical Transitivity. Amsterdam: John Benjamins.

Scherer, K. R. (2005, December). What are emotions? and how can they be measured? Social Science Information 44(4), 695–729.

Wilson-Mendenhall, C. D., L. F. Barrett, W. K. Simmons, and L. W. Barsalou (2011). Grounding emotion in situated conceptualization. Neuropsychologia 49, 1105–1127.