Causatives cluster semantically by juncture level across languages

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Introduction – We present a study of the semantic factors that govern the acceptability of causative constructions across languages. It emerges that in terms of their semantic profiles, causatives fall into three broad clusters across languages, which map surprisingly well into the three nexus levels of RRG.

Method – A set of 43 short video clips was created featuring causal chains consistent with participants' experience, such as strong wind knocking a reporter to the ground or a person telling another to leave, which he does. The underlying design systematically varied causer type (intentionally vs. accidentally acting person vs. natural force), causee type/affectee type (person carrying out an action in a controlled manner vs. psychologically affected person vs. physically affected person vs. inanimate object), mediation (presence vs. absence of an intermediate event/participant between cause and effect), and type of resulting event (physical change vs. location change vs. process). Narratives of the clips' contents were collected from L1-speakers of the sample languages and the principal causative construction types of each language were identified. Stimulus descriptions were created with the help of L1-speakers crossing the construction types with the scenes to the extent this was possible without making up new lexical items. A minimum of 12 speakers per language were trained to rate the descriptions for well-formedness and accuracy and pragmatic felicity vis-à-vis the scenes using a single 4-point scale. A total of 60 causative constructions met the criterion of being testable for at least 30 of the scenes and were included in the analysis. Table 1 shows the sample languages and constructions.

Analysis – Each construction was assigned a rating vector that recorded for each scene the percentage of participants who had accorded ceiling rating (well-formed, semantically accurate, and pragmatically appropriately informative) to at least one stimulus description of the scene that instantiated the construction. The 60 rating vectors were then clustered using the Superheat package in R (Barter 2022). Figure 1 shows the output of the cluster analysis along with a heatmap of the response type vectors. The three top-level clusters comprise, respectively, adverbial/adsentential modifier constructions such as causal clauses and converb constructions (Cluster 1); lexical causatives including limited-productivity morphological causatives and serial verb

constructions (Cluster 2); and periphrastic causatives, fully productive morphological causatives, and light verb constructions (Cluster 3).

Discussion and conclusions – There is a one-to-one mapping between clause-level junctures and Cluster 1. Cluster 2 consists of constructions involving a single simple or complex nucleus. All core-layer junctures fall into Cluster 3. From the perspective of the Layered-Structure-of-the-Clause (LSC) theory, there are only two kinds of mismatches, both concerning Cluster 3: fully-productive morphological causatives pattern with periphrastic causatives, as already predicted in Shibatani (1973). This is readily explained with reference to the fact that these constructions allow for the representation of indirect, three-participant causal chains. Light verb constructions of Urdu, which in LSC terms are nuclear junctures, likewise ended up in Cluster 3. What these share with periphrastic causatives is low acceptability ratings across the board and relatively low usage frequencies compared to simplex predicates. Crucially, the cluster algorithm had access solely to the rating vectors, not to any kind of morphosyntactic information. The results thus suggest that each juncture level is associated with unique semantic properties, a core architectural assumption of RRG.

References: Barter, R. (2022). Package 'superheat': A graphical tool for exploring complex datasets using heatmaps. https://cran.r-project.org/web/packages/superheat/superheat.pdf. * Shibatani, M. (1973). A linguistic study of causative constructions. Doctoral dissertation, University of California Berkeley.

Table 1. *Causative coding devices in the sample languages included in the analysis*

Construction	Chuvash	English	Ewe	Japanese	Korean	Mandarin	Russian	Sidaama	Spanish	Swedish	Urdu	Yucatec	Zauzou
Lexical & not fully productive morphological causatives	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓		✓	✓
Light verb constructions											✓		
Serial verb constructions			✓										
Fully productive morphological causatives	✓			✓							✓		
Periphrastic causatives		✓	✓		✓	✓	✓	✓	✓	✓		✓	✓
Non-sentential causer adjunct		✓								✓			
Non-sentential cause adjuncts						✓	✓	✓	✓		✓		
Clause-layer serialization			✓										
Causal converb constructions	✓				✓								✓
Causal clause constructions		✓		✓		✓	✓	✓	✓	✓	✓	✓	✓
Extent ('So X that Y') constructions							✓		✓				
Means construction								✓					
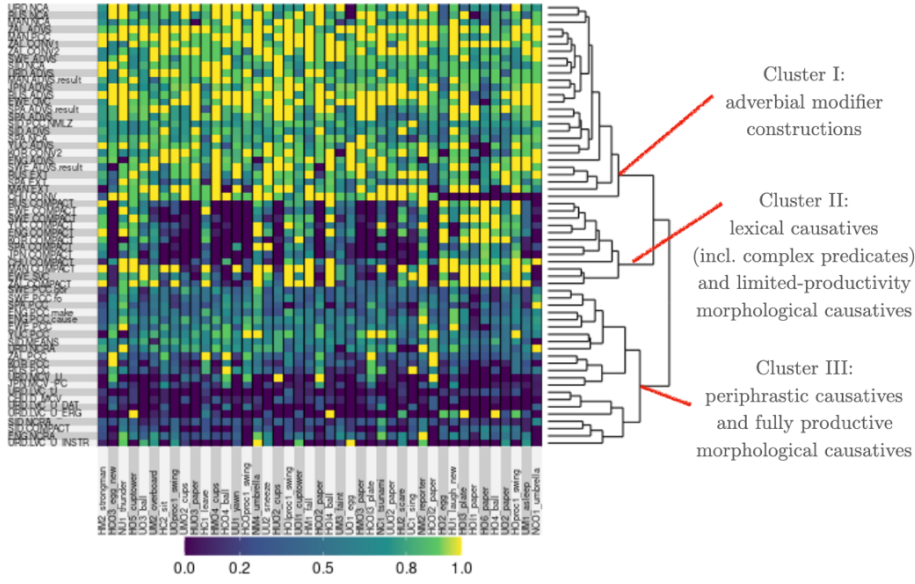
Figure 1. *Cluster dendrogram and heatmap of the 60 response types (y-axis) and 43 stimulus scenes (x-axis).*