Spanish psych-verbs in HPSG:
Word order, case, θ-roles and eventuality structure

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1. Psych-verbs in Spanish: The issue

- Threefold classification for psych-verbs (cf. Belleti and Rizzi, 1988)
- **Experiencer-subject** (ES) verbs (cf. (1)): stative transitive constructions, normally assigning ACC to the stimulus (STM) object
- **Experiencer-object** (EO) verbs: alternate the experiencer (EXP) in case marking (cf. Grimshaw, 1990; Pesetsky, 1995; Arad, 1998; Landau, 2010):
  - EXP-DAT **structures** (cf. (2) (3)): stative, with no change-of-state (CoS) in the EXP, and the STM is seen as the *subject matter* (SM) (cf. Fábregas et al., 2017).
  - EXP-ACC **structures** (cf. (4)): eventive, entailing a CoS, and the STM is perceived as a *causer* (CSR) (cf. Fábregas et al., 2017).

(1) [David]$_{\text{EXP}}$ (la) ama [a Clara]$_{\text{STM}}$.
David CL.ACC loves to Clara
'David loves Clara.'

(2) [A Clara]$_{\text{DAT.EXP}}$ (le) gusta [David / el reporte]$_{\text{SM}}$.
to Clara CL.ACC likes David / the report
'Clara likes David / the report.'

(3) [A Clara]$_{\text{EXP.DAT}}$ (le) asusta [David / el reporte]$_{\text{SM}}$
to Clara CL.DAT frightens David / the report
'David/the report frightens Clara.'

(4) [David/el reporte]$_{\text{STMCSR}}$ (la) asusta [a Clara]$_{\text{EXP.ACC}}$.
David/the report CL.ACC frightens to Clara
'David/the report frightens Clara.'

- However, Spanish data show that the STM also alternates in case, where the ACC argument is perceived as *target* (TG) and as DAT one the SM.

(5) [David]$_{\text{EXP}}$ le ama / teme [las manos]$_{\text{TG.ACC}}$ [a Clara]$_{\text{SM.DAT}}$.
David CL.DAT loves / fears the hands to Clara
'David loves Clara, the hands.'

- *Amar* 'love' verbs prototypically assign ACC to their objects, whereas *temer* 'fear' verbs generally assign DAT.
- The interaction of θ-roles, case marking of the EXP/STM, and eventuality type leads us to propose a fourfold classification of psych-verbs (cf. Section 5)

2. Neo-Davidsonian approach in HPSG

- A neo-Davidsonian analysis (cf. Parsons, 1990) allows us to manipulate the arity of predicates without having to assume different predicates, helping us to predict different alignment patters in the psych domain.

(6)
$$\left[\text{RELS}\left\langle\left[\begin{array}{ll}\text{ARG0} & \boxed{1}\ \textit{event}\\ \textit{kick'-rel}\end{array}\right],\left[\begin{array}{ll}\text{ARG0} & \textit{index}\\ \text{ARG1} & \boxed{1}\\ \textit{agent}\end{array}\right],\left[\begin{array}{ll}\text{ARG0} & \textit{index}\\ \text{ARG1} & \boxed{1}\\ \textit{patient}\end{array}\right]\right\rangle\right]$$

(7) $\lambda y \lambda x \lambda e.\textit{kick}'(e) \wedge \textit{agent}(x)(e) \wedge \textit{patient}(y)(e)$

- The predicate and the θ-roles (6) are listed independently as members of the RELS list as single elementary predications (EPs).
- This is convenient, for instance, to explain the different types of stimuli in EO constructions (cf. Fig. 4).

3. Underspecification of theta-roles

- θ-roles types are modelled in an inheritance hierarchy for semantic relations.
- This analysis allows us to define θ-roles by means of constraints assigning semantic properties to their subtypes; e.g. properties of causers + properties of stimuli: *stimulus-causer*.

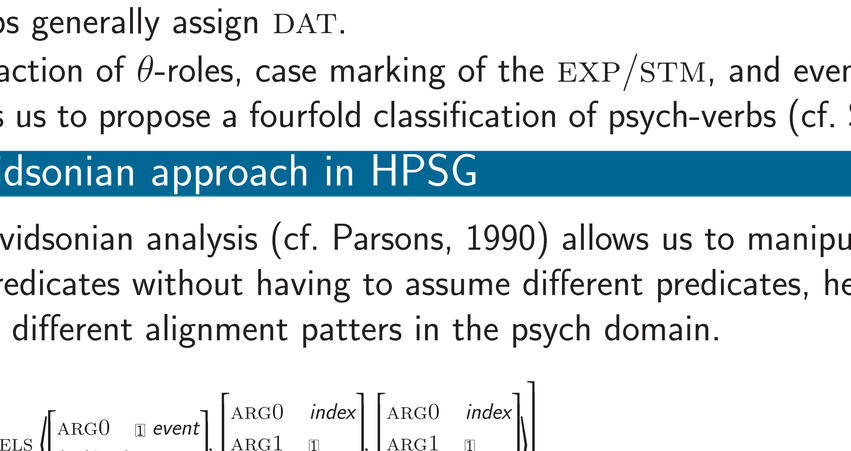

Figure 1: Type hierarchy for *semantic-relations*

4. Spanish psych-verbs in HPSG: Analysis

- Linking properties are modelled lexically, constraining the different types of lexemes (cf. Manning and Sag, 1998; Davis and Koenig, 2000).
- The *pos-lxm* constrains the HEAD value of lexemes. The *as-mapping* constrains the relation between elements in the ARG-ST list and elements in the valence features (i.e. SPR and COMPS) (cf. Fig. 2).

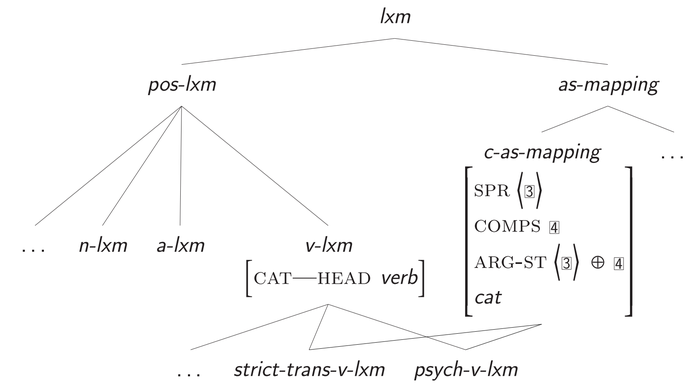

Figure 2: Type hierarchy for *lexeme*

- The *psych-v-lxm* constrains the mapping of semantic arguments to the elements in the ARG-ST list (cf. *linking* type in Van Eynde, 2015), with two outputs: *es-psych-v-lxm* and *eo-psych-v-lxm* (cf. Fig. 3).
- The EXP is linked to the first element in the *arg-st* list and the STM to the second element.
- Other elements can appear (cf. $\oplus$ *list*), but they are not required. When this happens, this list is specified as *empty list* (*e-list*).
- The type *es-psych-v-lxm* constrains the first element of the ARG-ST list (EXP) with structural case, while *eo-psych-v-lxm* constrains the EXP as a DAT object bearing structural case.

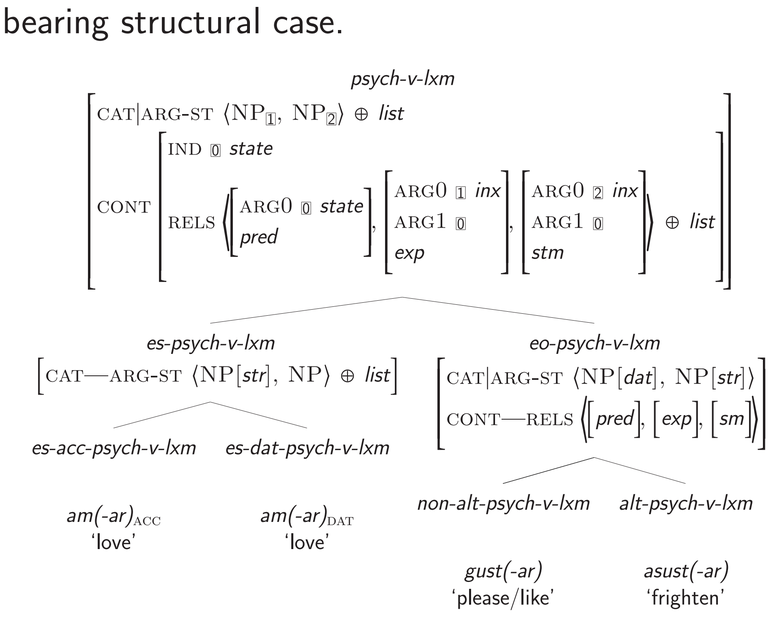

Figure 3: Type hierarchy for *psych-v-lxm* in Spanish (neo-Davidsonian)

- A LR is needed to model EXP-ACC verbs with a STMCSR (cf. Fig. (4)).

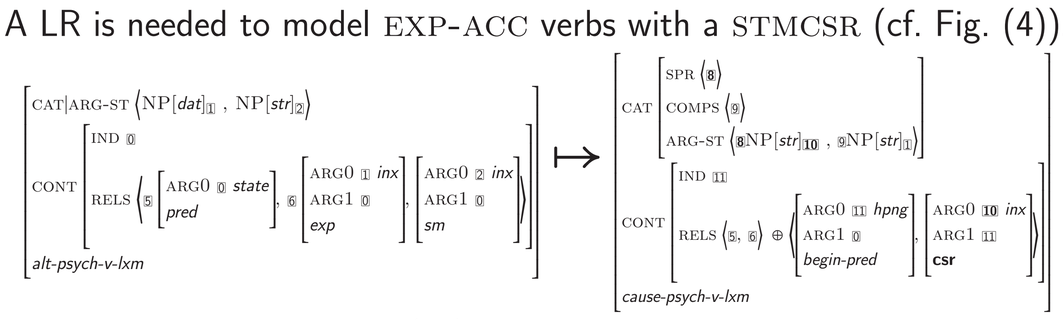

Figure 4: Lexical Rule (LR) for case alternation for *alt-psych-v-lxm*

5. Conclusions

- The interaction of θ-roles, case marking of the EXP/STM, and eventuality type leads us to a fourfold classification of psych-verbs:
- **Class 1**: DAT *gustar* 'like' and *asustar* 'frighten': EXP-DAT > SM-NOM (cf. (2) and (3)
- **Class 2**: ACC *asustar* 'frighten': STMCSR-NOM > EXP-ACC (cf. (4))
- **Class 3**: ACC *amar* 'love' and *temer* 'fear': EXP-NOM > TG-ACC (cf. (5))
- **Class 4**: DAT *amar* 'love' and *temer* 'fear': EXP-NOM > SM-DAT (cf. (5))
- The proposed neo-Davidsonian treatment of psych-verbs helps us to explain the different patterns found in the languages, giving details on their formation (cf. Machicao y Priemer and Fritz-Huechante, 2018).

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