# Boundaries at play: The 'se' morpheme in the Spanish psych-domain

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**Abstract**

In this paper, we model the left-bounded state reading and the true reflexive reading of the *se*-morpheme in the Spanish psychological domain. We argue that a lexical analysis of *se* provides us with a more accurate description of the different classes of psychological verbs that occur with the morpheme. We provide a unified analysis where the different uses of *se* are modeled by means of lexical rules. Our analysis shows the similarities and differences between the true-reflexive reading and the left-bounded reading achieved with *se*. Furthermore, we take the morphologically simple but semantically more complex basic items (e.g. *asustar* 'frighten') as input of the lexical rules, giving us as the output a morphologically more complex but semantically simpler verb (e.g *asustarse* 'get frightened'). For psych-verbs, our analysis correctly allows only those verbs assigning accusative to the experiencer or the stimulus to combine with the *se*-morpheme, hence preventing dative verbs from entering the lexical rules. We also show how to account for *punctual* and *non-punctual* readings of psych-verbs with the *se*-morpheme incorporating 'boundaries' into the type hierarchy of eventualities.
**Keywords:** Spanish, Reflexives, Causative-Inchoative-Alternation, Psych-Verbs, Left Boundary

# 1 Introduction

Verbs of emotion or psychological verbs (hereafter psych-verbs), such as *surprise*, *entertain*, *frighten*, participate in an alternation where one of their two arguments, the EXPERIENCER (EXP) alternates between the subject and the object of the sentence (cf. Pesetsky 1995; Landau 2010). Some Spanish psych-verbs also display this behavior. In (1a), the experiencer *David* is the object (experiencer-object: EO), whereas in (1b) *David* is the subject (experiencer-subject: ES) of the sentence. The other argument, *Ana* in (1a) is the STIMULUS (STM), i.e. the entity causing the emotion of frightening.

(1) a. $\text{Ana}_{\text{STM}}$ asusta a $\text{David}_{\text{EXP}}$.
Ana frightens to David
'Ana frightens David.'

b. $\text{David}_{\text{EXP}}$ se asusta.
David SE frightens
'David gets frightened.'

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Looking at the sentences in (1), we see that Spanish alternates the experiencer by means of the *se*-morpheme. Indeed, Spanish presents basic transitive EO verbs (e.g. *asustar* 'frighten') and derives the morphologically more complex intransitive ES alternants by attaching the *se*-morpheme to the transitive verb (e.g. *asustarse* 'get frightened'). There is still no consensus on how to refer to this morpheme when it comes to psych-verbs. The literature has generally analyzed it as an anti-causativizer (cf. Schäfer 2008; Alexiadou et al. 2015; Alexiadou & Iordachioaia 2014), an inchoativizer (cf. Haspelmath 1993; De Miguel & Fernández 2000; Bar-el 2005), and recently as a left boundary marker (cf. Marín & McNally 2005, 2011; based on Piñón 1997). Following Marín & McNally (2011), we treat the *se*-morpheme as a boundary that attaches to the state the verb refers to. For instance, in (1b) this boundary denotes the beginning of the state of being frightened in *David*. In other words, these verbs are treated as **left-bounded states**.[1] In addition, by means of the left-boundary we can further specify these items as **punctual** stative verbs (e.g. *asustarse* 'get frightened', *enfadarse* 'get angry') and **non-punctual** stative verbs (e.g. *divertirse* 'get entertained', *preocuparse* 'get worried') (cf. Marín & McNally 2011). Additionally, the *se*-morpheme can also be used as a **true reflexive** marker (cf. Grimshaw 1990; Arad 1998). For instance, in (2), the experiencer *David* acts upon himself causing to be frightened; as demonstrated by the use of the reflexive adjunct *to himself*, which is optional in Spanish.

(2) David se asusta (a sí mismo).
David SE frightens
'David frightens himself.'

This paper focuses on the above described uses of the *se*-morpheme (i.e. as left boundary and true reflexive) in Spanish psych-verbs. Based on previous work (cf. Machicao y Priemer & Fritz-Huechante 2018; henceforth MyP & FH 2018), we describe the distribution of the *se*-morpheme in HPSG in association with the different classes of psych-verbs, taking into consideration their theta-roles, case marking of the experiencer and eventualities in the sentence structure.

We model the different uses of *se* by means of lexical rules (LRs) and propose an inheritance hierarchy of LRs that construes and expands the uses of the morpheme. In our approach, we analyze the morphologically simple but semantically more complex forms of the verbs (e.g. *asustar* 'frighten') as the input of the LRs. This gives us as the output a morphologically more complex but semantically simpler verb (e.g. *asustarse* 'get frightened'). In addition, we further enrich the type hierarchy of eventualities in HPSG by including boundaries (cf. following Piñón 1997), which provide a more

[1] Also known as "inchoative states" in Marín & McNally's 2011. We use *left-bounded states* in this paper since inchoative states might be misleading for the reader.

fine-grained classification of the psych-verbs, i.e. the distinction between punctual and non-punctual verbs (cf. Marín & McNally 2011).
We treat the *se*-morpheme as a clitic lexical form and not phrasal (following works by Miller & Sag 1997; Bouma et al. 2001; Abeillé & Godard 2002; Crysmann 2003; Bildhauer 2007; a.o.) in order to manipulate the argument structure lexically (cf. Müller & Wechsler 2014). The unified model of the various types of *se*-morpheme provides us with a description of commonalities and differences of its use in the Spanish psych domain.

## 2 Spanish psych-verbs and *se*-morpheme

The *se*-morpheme combines with Spanish psych-verbs according to their classification. Starting with the morphologically basic verbs and working on Belleti & Rizzi (1988)'s threefold categorization of Italian psych-verbs, MyP & FH (2018) expand this classification and propose a four-way distinction of the verbs based on their case alternation patterns, theta-roles and event structure. Briefly, the authors constrain psych-verbs as being eventualities of type *state* involving an EXP and a STM, and further specify the STM into: subject matter (*sm*), target (*tg*), and stimulus-causer (*stmcsr*)[2] (cf. Pesetsky 1995 and Section 2, Figure 1). From here, psych-verbs are divided into two sub-classes: ES verbs and EO verbs. EO verbs can be further specified as: (a) **class 1**, those only assigning dative case to the experiencer (e.g. *gustar* 'like', cf. 3), and (b) those that alternate the experiencer between dative and accusative case marking (e.g. *divertir* 'entertain' and *asustar* 'frighten').[3] This last alternating class firstly constrains the experiencer as a dative object and the stimulus as an NP bearing structural case with the specification of its theta-role as *subject matter* (cf. 4a). Since these verbs show the same constraints as the lexical items in class 1, they are considered as items of the type *gustar* 'like'. The alternation to the accusative structure is modeled by means of a LR. This LR has as input an experiencer-dative and a subject-matter-nominative elements. The output of the LR is **class 2** (cf. Section 2.3), realizing the experiencer with structural accusative case and deleting the subject matter argument. Instead, a *stimulus-causer* is realized as a new semantic argument bearing structural nominative case (cf. 4b).

(3) A David$_{\text{EXP}}$ le gusta Ana$_{\text{SM}}$.
to David CL.DAT likes Ana
'David likes Ana.'

[2]By further specifying the STM theta-role distinct associations can be made, such as: (a) the *subject matter* stimulus appears in stative constructions, and (b) the *stm-csr* stimulus is present in eventive structures (cf. MyP & FH 2018; see also Fábregas et al. 2017).

[3]The literature has claimed that dative structures are perceived as stative predicates and accusative ones as eventive (cf. Arad 1998; Marín 2011, 2015). This idea is in line with the distinction of the theta-role that participates in such constructions (see Footnote 2).

(4) a. A David$_{\text{EXP}}$ le asusta Ana$_{\text{SM}}$.
to David CL.DAT frightens Ana
'Ana frightens David.'

b. Ana$_{\text{STM-CSR}}$ asusta a David$_{\text{EXP}}$.
Ana frightens to David
'Ana frightens David.'

Besides the case marking alternation of the experiencer, Spanish data also shows a case marking alternation of the stimulus. ES verbs alternate the *stm* between: (a) **class 3**, which constrains the second NP (i.e. the stimulus) with structural case and specifies its theta-role as a *target* (e.g. *amar* 'love', cf. 6a), and (b) **class 4**, which constrains the second NP with dative and specifies its theta-role as *subject matter* (e.g. *temer* 'fear', cf. 5) (cf. MyP & FH 2018). This leads us to the aforementioned 4 classes of EO psych-verbs. From these classes, only those with accusative case combine with the *se*-morpheme. Class 2 is ambiguous between a *se*-morpheme interpreted as a left boundary as in (1b) and a true reflexive as in (2); whereas class 4 only allows a *se*-morpheme interpreted as a true reflexive (cf. 6b). The next section explains these different readings in more details and provides the analysis in HPSG.

(5) David$_{\text{EXP}}$ le teme a Ana$_{\text{SM}}$.
David CL.DAT fears to Ana
'David fears Ana.'

(6) a. Ana$_{\text{EXP}}$ ama a David$_{\text{TG}}$.
Ana loves to David
'Ana loves David.'

b. David$_{\text{EXP}}$ se ama (a sí mismo).
David SE loves to her self
'David loves himself.'

## 2.1 Analysis starting point

This section deals with three main points for the development and understanding of our analysis of the *se*-morpheme. First, we model predications in a neo-Davidsonian approach, with theta-roles as single elementary predications (following Parsons 1990, Copestake 2006). As such, we treat the values of RELS as a list of elements of type *sem-rels* (cf. Figure 1). The theta-roles ($\theta$-roles) and predicates (*pred*) are subtypes of *sem-rels* which constitute the type hierarchy (cf. MyP & FH 2018). This classification provides the relevant $\theta$-roles for all psych-predicates (see the ones in bold in Figure 1), and crucially it defines those that participate in the *se*-morpheme alternation in the Spanish psych domain, i.e. *stimulus-causer*, *experiencer*, *patient*, and

*agent*. Following Dowty's (1991) distinction of $\theta$-roles into proto-agent and proto-patient, we take these to further specify the $\theta$-roles.[4] As shown in Figure 1 (taken from MyP & FH 2018), the ***stimulus-causer*** is a subtype of a less constrained subtype *stimulus*. Both *stimulus* and *agent* are subtypes of *proto-agent*, which is specified with (proto)agent properties. Likewise, *experiencer* and *patient* theta-roles are subtypes of *proto-patient* showing (proto)patient properties.

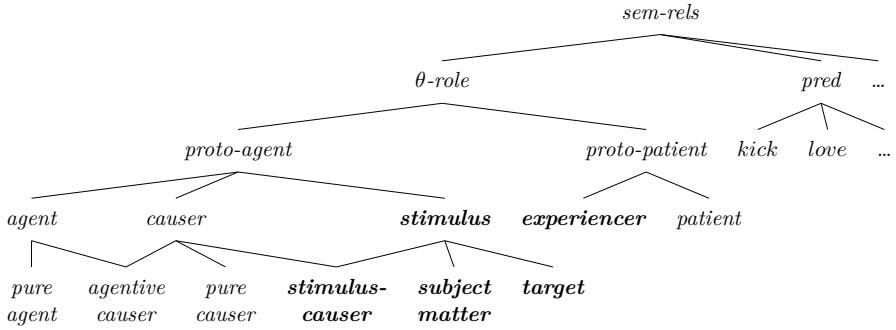


Figure 1: Type hierarchy for *semantic-relations*

Second, for the treatment of semantic arguments, we follow the type hierarchy in MyP & FH (2018) that uses Bach's (1986) hierarchy of eventualities as working hypothesis. Moreover, this hierarchy of eventualities is enriched by Piñón's (1997) boundaries (cf. Figure 2). We consider boundaries as a subtype of *eventuality*, defined as a **point in time** and not as an interval. Crucially, a boundary **must** always be a boundary of a further eventuality; i.e. they cannot exist alone (cf. Piñón 1997). In the case of psych-verbs, this means the (left) boundary of a state (see Section 2.3, cf. 12).

Finally, following previous HPSG analyses on clitics in Romance languages, we analyze the *se* **clitization** as **morphological** and not as a syntactic process (cf. Miller & Sag 1997; Abeillé & Godard 2002; Crysmann 2003; Bildhauer 2007). We make a distinction between **inflectional morphology** and morphological changes that affect the ARG-ST of a lexeme. This allows us to obtain the proper combinations of *se* with the lexeme, i.e. either attaching *se* to the infinitive verb (cf. 7a) or preceding the inflected verb (cf. 8b). We are not going into details on how to linearize the morpheme and the inflected verb, since this linearization has to be dealt with a more general rule for clitics in Spanish.

[4]Furthermore, this *semantic-relations* type hierarchy can be used in combination with linking constraints as proposed in Davis & Koenig (2000) and Van Eynde (2015) to achieve the different linearizations needed (cf. MyP & FH 2018). Moreover, since for some phenomena, a more fine-grained differentiation of theta-roles is needed, we make use of the theta-roles mentioned in Baker (1998); Belleti & Rizzi (1988); Pesetsky (1995). For more details, see MyP & FH (2018).

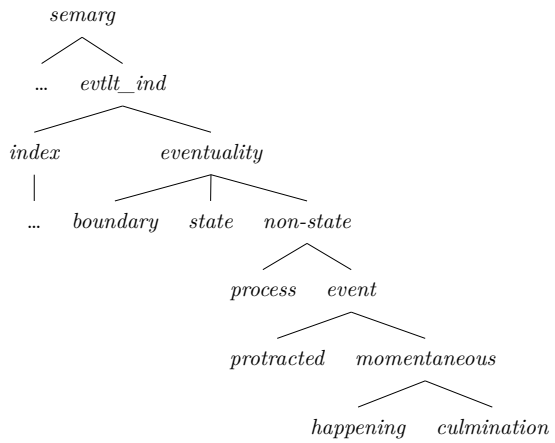


Figure 2: Type hierarchy for *semarg*

(7) a. asust- -ar -se
fear- -INF SE
'get frightened'

b. * se asust- -ar
SE fear- -INF
'get frightened'

(8) a. * asust- -a -se
fear- -3SG.PRS SE
'get frightened'

b. se asust- -a
SE fear- -3SG.PRS
'get frightened'

## 2.2 *se*-morpheme as a true reflexive

Having the basics for our analysis of the *se*-morpheme, we start with the simplest type of interpretation of *se*, the true reflexive reading. The literature describes true reflexives as semantically transitive predicates (cf. Schäfer 2008; Alexiadou & Schäfer 2013). True reflexive predicates possess two theta-roles: (a) an "external" one which has proto-agent properties, and (b) an "internal" theta-role which has proto-patient properties. This can be seen in (9), where *David* (the *agent*) performs the action of shaving and this action goes to himself, i.e. *David* also acts as the *patient*. As such, the same entity (*David*) gets assigned both theta-roles. As we mentioned in the introduction of this section, the interpretation of the *se*-morpheme as a true reflexive is also possible with psych-verbs (Grimshaw 1990; Arad 1998). In example (10), *David* performs an action of the type entertaining on himself.

Once again, the true reflexive reading is possible with two classes of psych-verbs: class 2 (e.g. *divertirse* 'get entertained' and *asustarse* 'get frightened') and class 4 (e.g. *amar* 'love') (cf. 10).

(9) David se afeita (a sí mismo).
David SE shaves to him self
'David shaves himself.'

(10) David se divierte / se asusta / se ama (a sí mismo).
David SE entertains SE frightens SE loves to him self
'David entertains/frightens/loves himself.'

### 2.3 *se*-morpheme as a left boundary

The left-bounded reading of the *se*-morpheme comes as a more refined approach to what has been generally proposed for the morpheme in the psych domain. Traditionally, in Spanish the *se*-morpheme has been analyzed as an **inchoativizer** for those verbs that alternate the experiencer from a morphologically basic EO transitive item (e.g. *asustar* 'frighten') to a morphologically more complex ES intransitive item (e.g. *asustarse* 'get frightened') (cf. Arad 1998; Alexiadou et al. 2015); i.e. class 2 in our account (cf. MyP & FH 2018). When *se* is analyzed as an inchoativizer, inchoativity is formalized by means of a BECOME operator (cf. Dowty 1991; Bar-el 2005) which models the transition from *not being in a state* to *being in a state*. For instance, in (11) the verb *secarse* 'get dried' implies the process the clothes go through which is from *not being dry* (i.e. being wet) to gradually being less wet until it reaches its telos, which is *becoming dried* (i.e. the clothes have no humidity at all). In this example, the BECOME operator models the change of state in the clothes. In fact, in the verb's telic reading, *secarse* 'get dried' prototypically combines with the time-span adverbial *in* (cf. Dowty 1991). *In x time* measures the interval during which the described eventuality takes place. In sentence (11), this is the 5 minutes the clothes took to be dried.

(11) La ropa se secó **en 5 minutos**.
the clothes SE dried in 5 minutes
'The clothes got dried in 5 minutes.'

In the Spanish psych domain, data shows a different pattern. Instead of an inchoativizer, what class 2 ES psych verbs possess is a **left boundary** (cf. Marín & McNally 2005, 2011). Based on Piñón (1997), Marín & McNally (2011) propose that this boundary makes reference to the **beginning** of the state the verb refers to. For instance, in (12) the verbs *divertirse* 'get entertained' and *asustarse* 'get frightened' refer to the *starting of the state* of being entertained/frightened in the experiencer *David*. Crucially, the verbs do not make reference to the interval prior to the beginning of the state; in

contrast to the inchoative reading explained in (11). In fact, when the verbs (cf. 12) co-occur with the time-span adverbial, *in* produces an ingressive or 'after' reading (slightly different from the acceptability judgments in Marín & McNally 2011), showing that these verbs are **atelic**. In sentence (12), the adverbial measures the time until the state in the experiencer starts, i.e. *David* started being entertained/frightened after minute five and not before that time. The ingressive reading is possible because these psych predicates lack a process that leads to an endpoint (i.e. a change of state) which could be measured by the adverbial.

(12) David se divirtió / se asustó **en 5 minutos**.
David SE entertained SE frightened in 5 minutes
'David got entertained/frightened in 5 minutes.'

The left boundary does not only differentiates class 2 ES verbs from other change of state verbs (e.g. *dry* in (11)), but it also leads to a further specification of this class. These verbs can be divided into two sub-classes: (a) **punctual** psych-verbs, as *asustarse* 'get frightened', which denote a point in time (i.e. a left boundary) of a state (cf. 13), and (b) **non-punctual** psych-verbs, as *divertirse* 'get entertained', which denote a state with a left boundary (cf. 14). Difference in readings can be seen when the verbs co-occur with the durative adverbial *for*. *For x time* in occurrence with non-punctual verbs generate a durative reading. In sentence (14), *David* was constantly entertained during the time-lapse of 5 minutes. In contrast, the occurrence of the durative adverbial with punctual verbs produces an iterative reading. In sentence (13), *David* got frightened repetitively in different occasions during 5 minutes. The iterative reading is possible because these verbs are a point in time which causes an adjustment of the reading in combination with the durative adverbial.

(13) David se asustó **durante 5 minutos**.
David SE frightened for 5 minutes
'David got frightened for 5 minutes.'

(14) David se divirtió **durante 5 minutos**.
David SE entertained for 5 minutes
'David got entertained for 5 minutes.'

One final relevant point for our analysis in HPSG is the treatment of the stimulus in class 2 ES predicates. As seen in (15), the argument from the transitive alternant (i.e. *Ana*, cf. 1) can be realized as an adjunct in the intransitive alternant by means of a preposition. In this case, *con Ana* is not an argument of the verb (cf. Vanhoe 2004, contra Franco 1990); in fact, the stimulus does not need to be implied (cf. 16), but it can be implicated. In the transition from the transitive to the intransitive alternant *con Ana* is

deleted, such that we get an structure only with the experiencer argument. The structure of the class 2 ES verbs is then semantically simpler than the structure of class 2 EO verbs (cf. LR (21) in Section 3.3).

(15) David se divirtió / se asustó **con Ana**.
David SE entertained SE frightened with Ana
'David got entertained/frightened by (because of) Ana.'

(16) David se divirtió / se asustó **de la nada**.
David SE entertained SE frightened of the nothing
'David got entertained/frightened out of nothing.'

# 3 Generalizations

Our account is based on the assumption that the *se*-morpheme and all its readings are to some extent related.[5] Therefore, we model the different outputs by means of an inheritance hierarchy of LRs that allows us to capture the commonalities and differences between true reflexive and left-bounded readings of the *se*-morpheme. In the following sections, the single types captured in the inheritance hierarchy in Figure 3 will be explained in details.

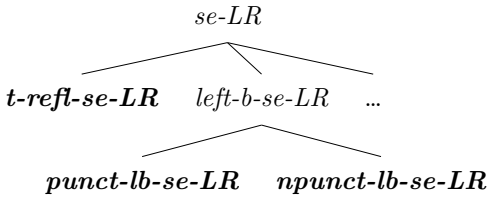


Figure 3: Lexical Rules for *se*-morpheme

## 3.1 Underspecified *se*-LR

The most underspecified LR (*se-LR*) takes an inflected verb as input.[6] The verb must have two structural arguments in its ARG-ST list. The second element of the ARG-ST list is interpreted as a proto-patient (cf. $\boxed{2}$ in (19)). Crucially, this element should be constrained with a quite general theta-role (cf. Figure 1), since it can be e.g. a patient (e.g. in (17a)), an experiencer (e.g. in (17b)) or some other subtype of a proto-patient (cf. Figure 1).

[5]Due to lack of space, we concentrate only on the true reflexive reading and the left-bounded reading of the *se*-morpheme.

[6]We are not dealing here with the difference between preverbal vs. postverbal clitization in Spanish. This has to be accounted for in a more general LR for clitization since it does not only affect the clitics at hand but any kind of clitization in Spanish.

(17) a. Pedro afeita a Mario.
'Pedro shaves Mario.'

b. Pedro ama a Mario.
'Pedro loves Mario.'

c. Pedro asusta a Mario.
'Pedro frightens Mario.'

The output of the LR is a cliticized verb (cf. e.g. (18a)). In its ARG-ST list, there are two elements: (a) a structural argument interpreted as a proto-patient in the input, and (b) an affixal NP, which is the *se*-morpheme. Following Bouma et al. (2001) and Abeillé & Godard (2002), we propose that affixes are *non-canonical arguments*, therefore they are not mapped onto the valency lists, but since they appear in the ARG-ST list, they are accessible e.g. for binding.

Similar to passivization, the second element of the ARG-ST list in the input is the first element of the ARG-ST list in the output. Consequently, by means of the Case Principle (Przepiórkowski 1999; Meurers 1999), this element will be realized with structural nominative.

(18) a. Mario se afeita.
'Mario shaves himself.'

b. Mario se ama.
'Mario loves himself.'

c. Mario se asusta.
'Mario frightens himself' or 'Mario gets frightened'

(19)
$$\left[\begin{array}{l}\textsc{ss|loc}\left[\begin{array}{l}\textsc{cat}\left[\begin{array}{l}\textsc{head}\ \textit{infl-verb}\\ \textsc{arg-st}\ \left\langle \mathrm{NP}[\textit{str}]_{\boxed{1}},\ \boxed{4}\mathrm{NP}[\textit{str}]_{\boxed{2}}\right\rangle\end{array}\right]\\ \textsc{cont}\left[\begin{array}{l}\textsc{ind}\ \boxed{0}\ \textit{evtlty}\\ \textsc{rels}\left\langle\left[\begin{array}{ll}\textsc{arg0}&\boxed{0}\\ \textit{pred}&\end{array}\right],\ \boxed{6}\left[\begin{array}{ll}\textsc{arg0}&\boxed{2}\\ \textit{prt-pat}&\end{array}\right],\ \left[\begin{array}{ll}\textsc{arg0}&\boxed{1}\\ \textit{prt-ag}&\end{array}\right]\right\rangle \oplus \textit{list}\end{array}\right]\end{array}\right]\end{array}\right] \mapsto$$

$$\left[\begin{array}{l}\textsc{ss|loc}\left[\begin{array}{l}\textsc{cat}\left[\begin{array}{l}\textsc{head}\ \textit{cl-verb}\\ \textsc{arg-st}\ \left\langle \boxed{4},\ \mathrm{NP}[\textit{aff,lx-acc}]\right\rangle\end{array}\right]\\ \textsc{cont}\left[\begin{array}{l}\textsc{ind}\ \textit{evtlty}\\ \textsc{rels}\left\langle \boxed{6}\right\rangle \oplus \textit{list}\end{array}\right]\end{array}\right]\\ \textit{cl-verb}\end{array}\right]$$

The LR in (19), is ruling out a specific subtype of psych-verbs with two arguments: the type of verbs such as *gustar* 'to like'. In Spanish, these verbs have an argument bearing dative case, and cannot be combined with the *se*-morpheme, neither as a true reflexive nor in a left-bounded reading (cf. Section 2).

### 3.2 LR for true reflexive readings

A subtype of the underspecified *se-LR* is the rule for true reflexives (*t-refl-se-LR*). This LR takes the output of *se-LR* as input and gives a true-reflexive cliticized verb as output. Besides inheriting the constraints of the *se-LR*, the LR for true reflexives states that the first element in its ARG-ST list is not only interpreted as the proto-patient but also as the proto-agent of the eventuality denoted by the verb (cf. $\boxed{2}$ in (20)). That is, in (18a) and in the reflexive reading of (18b) and (18c), *Mario* is the proto-agent and the proto-patient of the shaving, loving or frightening eventuality, respectively.

(20) *cl-verb* $\mapsto$

$$\left[\begin{array}{l} \text{SS|LOC} \left[\begin{array}{l} \text{CAT} \left[\begin{array}{l} \text{HEAD } \textit{cl-verb} \\ \text{ARG-ST } \left\langle \text{NP}[\textit{str}]_{\boxed{2}},\ \text{NP}[\textit{aff}] \right\rangle \end{array}\right] \\ \text{CONT} \left[\begin{array}{l} \text{IND } \boxed{0}\ \textit{evtlty} \\ \text{RELS } \left\langle \left[\begin{array}{l} \text{ARG0 } \boxed{0} \\ \textit{pred} \end{array}\right], \left[\begin{array}{l} \text{ARG0 } \boxed{2} \\ \text{ARG1 } \boxed{0} \\ \textit{prt-pat} \end{array}\right], \left[\begin{array}{l} \text{ARG0 } \boxed{2} \\ \text{ARG1 } \boxed{0} \\ \textit{prt-ag} \end{array}\right] \right\rangle \oplus \textit{list} \end{array}\right] \end{array}\right] \\ \textit{t-refl-cl-verb} \end{array}\right]$$

The hierarchy of semantic relations (cf. Figure 1), more specifically the hierarchy for theta-roles, is useful allowing for combinations of patient and agent (cf. for instance (17a)), as well as of experiencer and stimulus-causer (cf. for instance (17b)).

### 3.3 LR for left-bounded readings

The left-bounded reading is derived by the LR in (21). This rule takes a cliticized verb as input, i.e. the output of (19), but not all objects of type *cl-verb* are allowed as input of this rule. The input of (21) is further constrained for verbs denoting an eventuality that causes the starting point of a state. Furthermore, this predication has two semantic arguments, a proto-agent of the causing eventuality and a proto-patient of the state that has begun.

For instance, this rule can apply to (17c), but not to (17a) or (17b), which do not have a beginning predicate or a left boundary. In (17c) 'Pedro frightens Mario' can be paraphrased as: Pedro causes the starting point of the frightening state experienced by Mario. On the contrary, (17b) 'Pedro loves Mario' does not mean: Pedro causes the starting point of the loving state experienced by Mario. In a similar way (17a) 'Pedro shaves Mario' does not mean: Pedro causes the starting point of the being-shaved state experienced by Mario.

The output of the rule gives us an object of type *left-bounded-cliticized-verb*. The rule deletes two elementary predications of the RELS list: the

beginning predicate and the proto-agent[7] (of the beginning predicate). That is, (18c) 'Mario gets frightened' can be paraphrased as the starting point in which Mario experiences the state of being frightened. No stimulus-causer is semantically implied as it has been mentioned previously in examples (15) and (16), but it can be added by means of adjunction.

The IND value of the verb is left unspecified since the verbs belonging to this type can have different interpretations. Thus, the specification of the IND value will be taken care of with the next two LRs in Section 3.4.

(21)
$$\begin{bmatrix} \textsc{ss|loc|cont} \begin{bmatrix} \textsc{ind} \boxed{0}\ \textit{evtlty} \\ \textsc{rels} \left\langle \begin{bmatrix} \textsc{arg0} \boxed{0} \\ \textsc{arg1} \boxed{1} \\ \textit{beg} \end{bmatrix}, \boxed{5}\begin{bmatrix} \textsc{arg0} \boxed{1} \\ \textsc{arg1} \boxed{2} \\ \textit{left-b} \end{bmatrix}, \boxed{6}\begin{bmatrix} \textsc{arg0} \boxed{2} \\ \textit{pred} \end{bmatrix}, \boxed{7}\begin{bmatrix} \textsc{arg0} \boxed{3} \\ \textsc{arg1} \boxed{2} \\ \textit{prt-pat} \end{bmatrix}, \begin{bmatrix} \textsc{arg0} \boxed{4} \\ \textsc{arg1} \boxed{0} \\ \textit{prt-ag} \end{bmatrix} \right\rangle \oplus \boxed{8}\textit{list} \end{bmatrix} \\ \textit{cl-verb} \end{bmatrix} \mapsto$$

$$\begin{bmatrix} \textsc{ss|loc} \begin{bmatrix} \textsc{cat} \begin{bmatrix} \textsc{head}\ \textit{cl-verb} \\ \textsc{arg-st} \left\langle \text{NP}[\textit{str}]_{\boxed{3}}, \text{NP}[\textit{aff}] \right\rangle \end{bmatrix} \\ \textsc{cont} \begin{bmatrix} \textsc{ind}\ \textit{evtlty} \\ \textsc{rels} \left\langle \boxed{5}\begin{bmatrix} \textsc{arg0} \boxed{1} \\ \textsc{arg1} \boxed{2} \\ \textit{left-b} \end{bmatrix}, \boxed{6}\begin{bmatrix} \textsc{arg0} \boxed{2} \\ \textit{pred} \end{bmatrix}, \boxed{7}\begin{bmatrix} \textsc{arg0} \boxed{3} \\ \textsc{arg1} \boxed{2} \\ \textit{prt-pat} \end{bmatrix} \right\rangle \oplus \boxed{8}\textit{list} \end{bmatrix} \end{bmatrix} \\ \textit{left-b-cl-verb} \end{bmatrix}$$

## 3.4 LRs for punctual and non-punctual left-bounded readings

As already mentioned in Section 2.3, psych-verbs combined with the *se*-morpheme can have a punctual and a non-punctual reading. So far, we have left the IND value in the output of the LR (21) unconstrained. Following Marín & McNally's (2011) analysis of so-called "inchoative states", and Piñón's (1997) ontology of eventualities, we can derive both readings by means of structure sharing in our LRs.

In order to achieve the non-punctual reading (cf. 13), we use LR (22) that takes objects of type *left-bounded-cliticized-verb* as input, and for the output, it structure shares the IND value of the verb with the ARG0 value of the stative predicate (cf. $\boxed{2}$ in (22)). That is, a verb of type *non-punctual-left-bounded-verb*, e.g. *se divierte* 'gets entertained', denotes a state of entertainment being experienced by someone, and this state has a starting point (the left boundary).

[7]For verbs such as *asustar* 'frighten' and *divertir* 'entertain' with structural accusative case, the proto-agent is a stimulus-causer (cf. Machicao y Priemer & Fritz-Huechante 2018).

(22) *left-b-cl-verb* ↦

$$\left[\begin{array}{l} \textsc{ss|loc|cont} \left[\begin{array}{l} \textsc{ind}\ \boxed{2} \\ \textsc{rels}\ \left\langle \left[\begin{array}{l} \textsc{arg0}\ \textit{bound} \\ \textsc{arg1}\ \boxed{2} \\ \textit{left-b} \end{array}\right], \left[\begin{array}{l} \textsc{arg0}\ \boxed{2}\ \textit{state} \\ \textit{pred} \end{array}\right] \right\rangle \oplus \textit{list} \end{array}\right] \\ \textit{npunct-lb-cl-verb} \end{array}\right]$$

In order to derive the punctual alternant of psych-verbs, we use the LR (23). This lexical rule constrains the IND value of the verb as being structure shared with the left boundary (cf. $\boxed{1}$). That is, a verb of type *punctual-left-bounded-verb*, e.g. *se asusta* 'gets frightened', denotes a point in time (the left boundary) which is the starting point of a state of being frightened. This state is being experienced by someone, for instance *Mario* in (18c).

(23) *left-b-cl-verb* ↦

$$\left[\begin{array}{l} \textsc{ss|loc|cont} \left[\begin{array}{l} \textsc{ind}\ \boxed{1} \\ \textsc{rels}\ \left\langle \left[\begin{array}{l} \textsc{arg0}\ \boxed{1}\ \textit{bound} \\ \textsc{arg1}\ \boxed{2} \\ \textit{left-b} \end{array}\right], \left[\begin{array}{l} \textsc{arg0}\ \boxed{2}\ \textit{state} \\ \textit{pred} \end{array}\right] \right\rangle \oplus \textit{list} \end{array}\right] \\ \textit{punct-lb-cl-verb} \end{array}\right]$$

# 4 Conclusions

The aim of this paper was to provide a unified account to describe the different types of readings of the *se*-morpheme in the Spanish psych domain. We focused on two (of many) interpretations of the morpheme, namely the left-bounded and the true reflexive readings. In order to properly describe the behaviour of the *se*-morpheme with psych-verbs, we made use of types hierarchies of semantic relations and eventualities. Furthermore, we make use of a hierarchy of lexical rules for the *se*-morpheme in order to derive the different readings of psych-verbs cliticized with *se*. From here, we were able to deduce three main facts. Firstly, only those psych-verbs that assign accusative to either the experiencer (class 2, e.g. *asustar* 'frighten') or stimulus arguments (class 4, e.g. *amar* 'love') are able to build the *se*-form. This let us put aside dative verbs such as *gustar* 'like' (class 1) or *amar* 'love' when assigning dative to the stimulus (i.e. class 3).

Secondly, the analysis showed similarities and distinctions between the studied structures. By means of lexical rules, we could further constrain those lexemes that accept a *se*-morpheme with only a true reflexive reading (class 1) and those lexemes where *se* is ambiguous between a left boundary and a true reflexive interpretation (class 2). Moreover, these constraints allowed us to see similarities to passive and medio-passive constructions. As in passivization, we reduce the ARG-ST list, but also the RELS list, such

that there is no semantic implication of a causer in the output; i.e. semantic arguments are deleted. Likewise, by means of the LRs we can also foresee connections between the psych domain and other verb classes (e.g. with degree achievement verbs *secarse* 'get dried').

Finally, in our analysis, we derived the morphologically more complex (but semantically simpler) *se*-forms from the morphologically simpler (but semantically more complex) transitive causative alternants of the verbs by means of lexical rules. This shows to be an advantage over derivational approaches that require that the causative form, e.g. *asustar*, is derived from the non-causative form e.g. *asustarse* (cf. Kratzer 2000; Piñón 2001 for derivational approaches). Lastly, by incorporating the elaborated formal analyses proposed in Piñón (1997) and Marín & McNally (2011) in HPSG, we enrich the type hierarchy for eventualities (i.e. by making use of boundaries) leading to a more-fine grained differentiation of psych-verbs.

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