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Sketch-Based Elicitation on the Morphosyntactic Properties of Object-Experiencer Psych Verbs in Catalan and Spanish

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Abstract In this investigation of the psych alternation of object-experiencer psych verbs in Catalan and Spanish on Mallorca, novel elicitation methodology was employed, using visual stimuli to analyze seven morphosyntactic properties. Speakers' behavior between languages and lexemes is compared quantitatively. Here: voice, non-experiencer type and tense are verb-dependent; voice is language-dependent; non-experiencer type, person of the experiencer and tense correlate with voice. These results provide insights into how speakers construct psych verb sentences and highlight the benefits of elicitation methods to supplement theory and corpus data.

Keywords Psych alternation. Object-experiencer verbs. Voice. Catalan. Spanish. Elicitation.

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1 Introduction

This paper reports on an elicitation study on the morphosyntactic properties of the psych alternation in Catalan and Spanish object-experiencer psych verb constructions. The psych alternation investigated involves the use of a reflexive clitic to detransitivize an object-experiencer construction as shown in (1a) into a subject-experiencer construction as shown in (1b). This alternation – exemplified here with Catalan sentences – encompasses the optional choice between two grammatical voice constructions, i.e., active or pronominal, respectively, as will be further outlined in this paper.

(1) a. *A* *-l* *noi* *l'* *alegra* *el* *regal.*
to DEF boy 3SG.OBJ gladden.3SG DEF gift
'The boy is gladdened by the gift.'

b. *El* *noi* *s'* *alegra* *d* *-el* *regal.*
DEF boy REFL gladden.3SG of DEF gift
'The boy is gladdened by the gift.'

The aim of the present study was to gather data surrounding seven predetermined morphosyntactic parameters of such psych verb constructions. Firstly, to determine parameters which demonstrate covariation with the realization of grammatical voice in the psych alternation. Secondly, to determine parallels and discrepancies in speakers' habits regarding such constructions in general, contrasted across two Romance languages which are spoken in the same region. To obtain a new perspective on this phenomenon, novel elicitation methodology was employed. The study was conducted within the framework of an interdisciplinary research project exploring morphosyntactic and sociolinguistic parameters of psych predicates in Catalan and Spanish varieties spoken on the island of Mallorca (Wiskandt et al. 2023a).

The paper is structured as follows: Section 2 introduces the concepts of psych verbs and object-experiencers as well as the phenomenon of the psych alternation in Romance. Furthermore, current methodological gaps in the literature are highlighted and the specific research questions of this study are posed. The methods of this study are presented in Section 3 followed by inferential statistical results in Section 4. These findings are supplemented with descriptive statistical considerations in Section 5. Both results sections are considered in Section 6, which encompasses a discussion of implications for the research questions and future research outlook. Summarizing remarks are located in Section 7.

2 Background

2.1 Psych Verbs and Object-Experiencers

Over the past decades and beginning as early as 1988 with work by Belletti and Rizzi, the domain of psych verbs has been a common topic of investigation regarding the crossroads of syntax and semantics. Also named *experiencer verbs* or *mental verbs* (cf. Croft 1993; Franco 1992; Rott et al. 2020), the term *psych verbs* – as used in the present paper – encompasses verbs which carry a psychological entailment, i.e., an experiencer of a mental state (Landau 2010, 136f.). Rott et al. (2023, 2) specify this definition to surround verbs for which one argument elicits[1] and one experiences a mental state, where the mental state itself reflects the emotional content of the predicate.

Psych verbs are reported to demonstrate discrepancies from a given language's canonical transitive verbs (Verhoeven 2008); their argument structures pose exceptions to a language's standard structure of agent subjects and patient objects, demonstrating syntactic uniqueness from other predicates (Temme, Verhoeven 2016). These marked coding strategies – while reflected differently depending on the language – are a common feature in languages when it comes to psych verbs (Becker, Guzmán Naranjo 2020). Take the sentences in (2), for example: The experiencer, i.e., *the child*, may be realized in either the subject or the object position. This poses an anomaly to standard English argument linking, in which most transitive verbs cannot freely express a given argument in either syntactic position. This is shown in (3), which demonstrates how the equivalent of (2b) cannot be lexically expressed, i.e., with a single verb and without the use of passive voice, for a non-psych verb (cf. Rott et al. 2023).

(2) a. ***The child*** *fears the monsters*.
b. *The monsters frighten* ***the child***.

(3) a. ***The man*** *kicks his bicycle*.
b. *The bicycle *v.get.kicked.by* ***the man***.

1 This argument, sometimes referred to as the *stimulus* in the literature, will henceforth be described in this paper by the term NON-EXP, i.e., the non-experiencer argument, so as to remain neutral regarding its semantic role.

The term *object-experiencer verbs* refers to such psych verbs in which the experiencer argument fills the syntactic object position, as further exemplified in (4).

(4) a. *Flying really scares **her**.*
b. *Your tardiness is starting to annoy **our boss**.*
c. *It pleases **me** to hear that you are well.*

2.2 The Psych Alternation in Romance

Psych verb constructions in Romance languages, as briefly described in the introduction, encompass object-experiencer verbs which can undergo alternation in grammatical voice. A further example of this is presented in the Spanish sentences in (5) with the experiencer *Miguel*.

(5) a. *La* *sorpresa* *alegra* *a* ***Miguel***.
DEF surprise gladden.3SG to Miguel$_{[OBJ]}$
'The surprise gladdens Miguel.'
b. ***Miguel*** *se* *alegra* *de* *la* *sorpresa.*
Miguel$_{[SBJ]}$ REFL gladden.3SG of DEF surprise
'Miguel is gladdened by the surprise.'

Here, a detransitivized subject-experiencer construction in (5b) is derived from a transitive object-experiencer verb in (5a) by means of pronominal voice marked by a reflexive clitic. The result is *psych alternation*: In the presence of an object-experiencer psych verb, the subject position can be alternatively filled by either the NON-EXP argument or the experiencer, the latter by means of derivation (Rott et al. 2020). This flexibility poses an exception to theories on argument linking, highlighting speakers' unique behavior within the specific domain of psych verbs (Croft 1993; Kutscher 2009).

Notable is that this comes without an accompanying lexical change in predicate causality; whereas the English examples in (2) showcase such causality alternation (cf. Nichols et al. 2004), Rott et al. (2023) underline that the psych alternation is to be treated as a separate phenomenon, postulating that while the psych alternation shares patterns with causality alternation, it is not to be classified as a subtype of causality alternation. This study therefore specifically investigates the realization and properties of the psych alternation – not causality alternation – of object-experiencer psych verbs in two Romance languages, Catalan and Spanish.

2.3 Methodological Gaps and Research Questions

The phenomenon of psych alternation has been granted abundant attention from a theoretical standpoint. While this includes studies on possibilities to describe and categorize psych verbs in both Catalan (e.g., cf. Monné, Fontanals 1998; Royo 2018; Vilanova 2022) and Spanish,[2] two main issues prevail. Firstly, the focus of these studies does not always lie in a comprehensive description of psych verb constructions as a whole or in the factors influencing the psych alternation; Franco (1992) and Miglio et al. (2013) mainly focus, for example, on case alternation in psych verb constructions and Vilanova (2022) on double clitics. These investigations are compelling but do not shed light on all aspects of this phenomenon. Secondly, theory alone is insufficient to provide a holistic understanding of the psych alternation and the factors which condition it. To this end, Kutscher (2009, 43) reflects of psych verb research that "die Vorhersagen der jeweiligen Theorie die tatsächliche Datenlage nicht adäquat abbildet [the predictions from the respective theory do not adequately depict the actual data]". As such, empirical reports complementing theory are required to explore not only what is possible in such constructions, but also how speakers actually utilize them. This enables closer connections between theoretical findings and speaker reality to be drawn.

Despite this, however, little empirical work has been conducted on the psych alternation to date. Of those which do exist, they are mainly rooted in corpus analyses, although these also consist of linguistic investigations of psych concepts in a broader sense e.g., Becker and Guzmán Naranjo (2020). They used TED-Talk subtitle corpora for seven European languages to document patterns of psych constructions including psych nouns and psych adjectives. The only systematic elicitation method proposed in the literature comes from Rott and Verhoeven (2019), which – while typologically applicable and advantageous – aims to explore diverging parameters than those in the study at hand. Given the current state of the literature, previously employed methods are unable to provide reliable empirically-funded data relevant for the description of object-experiencer psych verbs and their alternation.

There are further gaps in the literature which this study contributes to bridging. Previously, no study comparing and contrasting two languages featuring psych alternation which are spoken in the same location had been conducted to gain insights on how similar or distinct patterns can be in the specific case of regional bilingualism.

2 e.g., cf. Acedo-Matellán, Mateu 2015; Franco 1992; Marín, McNally 2011; Miglio et al. 2013.

The linguistic environment of Mallorca, where Catalan and Spanish are both spoken, was therefore selected for investigation. In general, a systematic examination of all of the parameters discussed in this paper has not been undertaken empirically. Becker and Guzmán Naranjo (2020) represent an exception, however they did not investigate the psych alternation but rather linguistic representations of psych concepts in a broader sense, nor did they gather data on Catalan. Therefore, this study is the first one to report on the Catalan psych alternation and explore the selected parameters in object-experiencer psych verb constructions in general by using empirical methodology. Furthermore, a quantitative perspective rooted in inferential statistics was previously missing, which can serve to support or provide counterevidence to theoretically-based claims in a holistic cross-methodological pursuit of understanding this phenomenon.

Resulting from all of the reasons illustrated in this section, the study at hand was developed and conducted to elicit data on the morphosyntactic properties of object-experiencer psych verb constructions and the psych alternation in Catalan and Spanish, stemming from both targeted and explorative perspectives. In doing so, the following queries are investigated:

1. Within each investigated language, how do the selected object-experiencer psych verbs behave similarly and discrepantly regarding annotated morphosyntactic parameters, and are these patterns similar or discrepant across languages?
2. Where do Catalan and Spanish, when compared, show similar vs. discrepant trends regarding the morphosyntactic parameters in general, i.e., across object-experiencer psych verbs?
3. Within each investigated language and across both, which – if any – of the morphosyntactic parameters demonstrate a relationship with the realization of grammatical voice in the psych alternation?

In the following, the operationalization of these research questions is presented.

3 Methods

In order to gain further insights on the psych alternation and the parameters which influence it, novel methodology in this field was developed for this study in the form of visual elicitation. The elicitation phase took place across five days in May of 2023 at the Universitat de les Illes Balears (UIB). The following subsections provide insights

into the participants, stimuli, empirical procedure and annotation methodology of the study.

3.1 Participants

A total of $N = 79$ took part in this study, all of whom were recruited on the UIB campus. Their ages at the time of the study ranged from 20 to 48 ($\bar{x} = 23.34$, $\sigma = 4.08$). The majority originally came from Mallorca ($n = 66$; 84%), the remaining hailing from other Balearic Islands ($n = 5$; 6%), Catalunya ($n = 5$; 6%), non-Catalonian mainland Spain ($n = 2$; 3%) and France ($n = 1$; 1%). Regarding the primary place of residence at the time of the study, the following reports were provided: $n = 76$ (96%) lived on Mallorca, $n = 2$ (3%) in Catalunya and $n = 1$ (1%) on another Balearic Island.

All participants had either completed or were in the process of completing a higher educational degree. Most participants listed their main occupation to be student ($n = 61$; 77%). Further participants stated to be student teachers ($n = 8$; 10%). The other main occupations were academic teaching staff ($n = 3$; 4%), as well as $n = 1$ (1%) each of the following: administrator, cook, musician, receptionist, linguistic assistant. No occupation was listed by $n = 2$ (3%) of participants. No data was collected on participant sex.

Table 1 Target object-experiencer psych verbs

Stimulus No.	Language		Translation
	Catalan	Spanish	
1	*molestar(-se)*	*molestar(se)*	'to annoy'
2	*enfadar(-se)*	*enfadar(se)*	'to anger'
3	*entristir(-se)*	*entristecer(se)*	'to sadden'
4	*alegrar(-se)*	*alegrar(se)*	'to gladden'

3.2 Stimuli

Visual stimuli were employed in this study. They consisted of four sketches presented on a single sheet of paper. Each sketch individually aligned with a selected object-experiencer psych verb. An example of the sketches is found in Figure 1. The sketches remain as comparable as possible, i.e., the position of the experiencer remains constant. These matching representations were designed to not unintentionally prime participant responses. The verbs as presented in both the

Catalan and Spanish versions[3] of the stimuli are listed in Table 1. The verbs ('to annoy', 'to anger', 'to sadden' and 'to gladden'), referred to as *target verbs* in this paper, were chosen due to their fulfilment of selected criteria; they provide coverage for various basic emotions (e.g., cf. Ekman 1999) and demonstrate the previously described voice alternation as seen in data reported by Royo (2018) for Catalan and Marín and McNally (2011) for Spanish. Furthermore, the verb pairs represent cognates cross-linguistically.

Figure 1 Stimulus example.
Note. Stimulus drawings created and provided by Pia Kailuweit, April 2023 (Wiskandt et al. 2023a)

3.3 Procedure

Participants could freely select the Catalan or Spanish version of the study, provided they speak the selected language at a native level. They were only informed to provide a written descriptive sentence under each sketch, ensuring to incorporate the verb in the caption for each of the four sketches accordingly. These instructions were intentionally kept minimal, so as to generate as natural and authentically individual of speech data as possible. This aim was successful as highlighted in (6); both descriptions were composed for the same stimulus (*alegrar(-se)*), but offer vastly discrepant levels of

3 For the sake of clarity and uniformity, unless Spanish data is specifically being cited, the Catalan forms of the employed verbs will henceforth be used in this paper when generally referencing the target verb of both languages.

detail.[4] As demonstrated in Figure 1, each of the four stimuli were labelled with the corresponding target verb, including the reflexive clitic marker used in pronominal constructions, supplemented in parentheses to underline the optional nature of including it in descriptions. This also parallels standards in some dictionaries.

(6) a. *Me n' alegro molt!*
1.SG.REFL pro gladden.1SG much
'I'm very glad!' (CA)

b. *En Damià s' ha alegrat molt quan el*
DET Damià REFL have.3SG gladden.PTCP much when DEF
seu amic Joan li ha portat un regal
POSS.M.SG friend Joan 3SG.OBJ have.3SG bring.PTCP INDF gift
d- el seu viatje a les Illes Canaries.
from DEF POSS.M.SG trip to DEF.PL Islands Canaries
'Damià was very happy when his friend Joan brought him a present from his trip to the Canary Islands.' (CA)

3.4 Annotation

The generated data was labelled for the language of elicitation and the target verb of the description. It then underwent spreadsheet-based annotation in accordance with seven predetermined parameters: Grammatical voice (henceforth: voice), morphosyntactic realization of the non-experiencer argument, grammatical person of the experiencer argument, order of experiencer and target verb, part of speech of target, tense of target verb and prepositions used. For the purpose of legibility, these have been abbreviated as P1 - P7, respectively, and will henceforth be referred to as such. An overview of these parameters and their abbreviations is found in Table 2.

While some of these parameters have been closely investigated in the literature, others have not been paid targeted empirical attention and were therefore included in annotation in exploratory nature. In this section, each of the seven parameters and their respective annotation coding will be outlined in further detail, so as to clarify the content of data comparisons drawn in this study. An overview of the annotation labels presented in this section is illustrated in Table 3.

4 Examples from the elicited data will be glossed in accordance with the Leipzig Glossing Rules (cf. Comrie et al. 2008). An overview of the abbreviations used in this paper is located after Section 7. Examples are labelled with CA for Catalan and ES for Spanish. Examples are exact digitalizations of primary data and therefore subject to spelling and punctuation errors as found in participant descriptions.

P1: Voice In line with research investigating the psych alternation, the first area of interest surrounded voice. Descriptions were annotated as a (active) or p (pronominal), the latter surrounding constructions which employ a reflexive clitic to create a detransitivized sentence as discussed in Section 2.2. Examples of active voice from the data can be seen in (7a) for Spanish and (7b) for Catalan. Pronominal voice is showcased in (7c) for Spanish and (7d) for Catalan. All sentences in (7) come from the same stimulus, underlining the possible variation elicited with this method.

Table 2 Overview of abbreviations for annotated parameters

No.	Parameter
P1	Voice
P2	Morphosyntactic realization of the non-experiencer argument
P3	Grammatical person of the experiencer argument
P4	Order of experiencer and target verb
P5	Part of speech of target
P6	Tense of target verb
P7	Prepositions used

(7) a. ***Me*** *alegra mucho que hayas pensado en mi.*
1SG.OBJ gladden.3SG much that have.SBJV.2SG think.PTCP on 1SG.OBJ
'I'm very happy that you thought of me.' (ES)

b. *A* ***-l*** ***noi*** *l' alegra el regal rebut.*
to DEF boy 3SG.OBJ gladden.3SG DEF gift receive.PTCP
'The gift he received gladdened the boy.' (CA)

c. *Su amigo* ***se*** *ha alegrado a -l recibir su*
POSS.3SG friend REFL have.3SG gladden.PTCP to DET receive POSS.3SG
regalo.
gift
'His friend was happy to receive his gift.' (ES)

d. ***S'*** *alegra perquè li fa un regal.*
REFL gladden.3SG because 3SG.OBJ make.3SG INDF gift
'He is happy because he gives her a present.' (CA)

P2: non-exp In addition to voice, the realization of the NON-EXP was of interest. The realization of NON-EXPS was initially classified into four groups: The first of these is n for nominal constructions, including NPs, names and pronouns, as exemplified in (8a) through (8c), respectively.

(8) a. ***El accidente con el jarrón*** *me entristeció mucho.*
DEF accident with DEF vase 1SG.OBJ sadden.3SG.PST much
'The accident with the vase saddened me a lot.' (ES)

b. *Juan se molestó con* ***Marc***.
Juan REFL annoy.3SG.PST with Marc
'Juan was annoyed with Marc.' (ES)

c. *Tenia la música molt alta i va molestar -se amb* ***ell***.
have.3SG.PST DEF music very loud and go.3SG annoy REFL with he
'He had the music very loud and she got annoyed with him.' (CA)

Table 3 Overview of annotation labels

Parameter	Label		Description
P1	a		active voice
	p		pronominal voice
P2	n		nominal
	c		clausal
		c_b	'because'
		c_w	'when'
		c_t	'that'
		c_vp	VP
		c_o	other
	y		'and'
	n/a		no NON-EXP argument
P3	f		1st person
	s		2nd person
	t		3rd person
	n/a		no experiencer argument
P4	e		experiencer comes first
	v		target verb comes first
	n/a		no experiencer argument
P5	ver		verbal realization
	adj		adjectival realization
P6	sp		simple present
	pp		present progressive
	pfp		present perfect
	pt		preterite past
	fut		future
	psub		simple present subjunctive
	spi		subjunctive present imperfective
	ipp		imperfective periphrastic past
	inf		infinitive

P7	e.g., con, por, etc.	wherever used, preposition was noted
	no	no preposition used
	yes	preposition used before NON-EXP argument

The label c was used for clausal constructions. To enable finer-grained coding, c constructions were – in an additional layer – further divided into: c_b for cases of clauses linked with a 'because' conjunction (cf. (9a)); c_w for cases of clauses linked with a 'when' conjunction (cf. (9b)); c_t for cases of clauses linked with a 'that' conjunction (cf. (9c)); c_vp for cases of directly adjacent VPs (cf. (9d)); and c_o for cases of clauses linked with any other type of conjunction (cf. (9e)).

(9) a. *S'* *enfada* ***perquè*** *ha* *trencat* *el* *gerro.*
REFL anger.3SG because have.3SG break.PTCP DEF vase
'He is angry because the vase broke.' (CA)

b. ***Quan*** *li* *faig* *un* *regal,* *Maria* *sempre* *s'* *alegra.*
when 3SG.OBJ make.1SG INDF gift Maria always REFL gladden.3SG
'When I give her a present, Maria is always happy.' (CA)

c. *Me* *entristece* *mucho* ***que*** *hayas* *rato* *mi*
1SG.OBJ sadden.3SG much that have.2SG.SBJV break.PTCP POSS.1SG
jarrón *favorito.*
vase favorite
'It saddens me a lot that you broke my favorite vase.' (ES)

d. *Se* *alegró* *de* ***dar*** ***-le*** ***el*** ***regalo.***
REFL gladden.3SG.PST of give 3SG.DAT DEF gift
'He was glad to give her the gift.' (ES)

e. *M'* *entristirà* ***si*** *romps* *el* *gerro* *de* *mon* *pare.*
1SG.OBJ sadden.3SG.FUT if break.2SG DEF vase of POSS.1SG.M father
'It will make me sad if you break my father's vase.' (CA)

For some items, such as in (10), additional clauses providing supplemental explanations extending beyond a nominal NON-EXP were not coded as c but rather as n; here *Toni* serves as the NON-EXP whereas the clause beginning with *perquè* is additional material as opposed to a clausal NON-EXP.

(10) *Na* *Maria* *va* *enfadar* *-se* *molt* *amb* *en* *Toni,* *perquè* *va*
DET Maria go.3SG anger -REFL much with DET Toni because go.3SG
rompre *un* *tassó.*
break INDF bowl
'Maria got very angry with Toni, because he broke a bowl.' (CA)

The third category of NON-EXP annotation was y. The label y, as shown in (11), was used for cases in which the word 'and' connected the clause including the experiencer with the clause including the NON-EXP.

(11) *S'* *ha* *romput* *la* *jerra* ***i*** *s'* *han* *enfadat.*
REFL have.3SG break.PTCP DEF vase and REFL have.3PL anger.PTCP
'The vase broke and they got angry.' (CA)

These cases were not annotated as a category of c, because whereas the forms of c semantically indicate the relationship between the experiencer and the NON-EXP is causal, with the word 'and' this relationship is only to be understand as causal through pragmatics and therefore represents a different phenomenon; consider the sentences in (12): (12d) is the only of the four, in which it is plausible that the annoyance of the experiencer and the volume of the cat are independent of one another. It is also the only sentence in which the addition of another non-experiencer argument would not be pragmatically marked (compare the sentences in (13)). Finally, the label n/a indicated that no NON-EXP was incorporated in the given description.

(12) a. *I am annoyed* ***because*** *my cat is loud.*
b. *I am annoyed* ***when*** *my cat is loud.*
c. *I am annoyed* ***that*** *my cat is loud.*
d. *I am annoyed* ***and*** *my cat is loud.*

(13) a. *I am annoyed ?*[by my sister]* ***because*** *my cat is loud.*
b. *I am annoyed [by my sister]* ***and*** *my cat is loud.*

P3: Person of experiencer To gather data on the realization of the experiencer argument, grammatical person was labelled: f, s and t were coded for first, second and third person arguments, respectively. The letters were chosen instead of their numerical counterparts, as they were to later be analyzed statistically as categorical variables. The t arguments here include 3SG pronouns, names and NPs. Where no experiencer argument was provided, the description was labelled with n/a. It is noteworthy that a participant's choice of person was grounded in individual preference only; no variations of the study to elicit various person constructions were employed.

P4: Order of experiencer and target verb The fourth annotated parameter surrounded the order of the experiencer and target verb. Descriptions in which the experiencer was realized first are labelled with e and those in which the target verb came first with v. In some cases, no experiencer was provided and the descriptions were

therefore coded with n/a. Examples are illustrated in (14a) through (14c), respectively.

(14) a. ***Me*** *molesta que no me escuches.*
1SG.OBJ annoy.3SG that neg 1SG.OBJ listen.2SG.SBJV
'It annoys me that you don't listen to me.' (ES)

b. *El chico molesta a* ***la*** ***mujer.***
DEF boy annoy.3SG to DEF woman
'The boy annoys the woman.' (ES)

c. *La música està masse alte i molesta.*
DEF music be.3SG too loud and annoy.3SG
'The music is too loud and it's annoying.' (CA)

P5: POS of target This parameter serves to differentiate cases in which the target was realized as a verb (labelled as ver, shown in (15a)) and cases in which the target was realized as an adjective instead (labelled as adj, shown in (15b)). Inclusion of both types mirrors the methodology by Becker and Guzmán Naranjo (2020).

(15) a. *M'* ***entristeix*** *que hagis romput la ceràmica.*
1SG.OBJ sadden.3SG that have.2SG break.PTCP DEF ceramic
'It saddens me that you broke the ceramic.' (CA)

b. *Estic* ***trista*** *perquè m' has trencot la gerra.*
be.1SG sad because 1SG.OBJ have.2SG break.PTCP DEF vase
'I'm sad because you broke my vase.' (CA)

P6: Tense Each description was additionally coded for the tense of the target verb. For cases in which the target was realized adjectivally, as described above, the temporal form of the verb 'to be' in the phrase with the adj target was annotated.

P7: Prepositions Finally, wherever prepositions were used in descriptions, forming a PP with the NON-EXP, they were noted. In addition to coding for the general presence of a preposition (yes vs. no), the preposition found was used as the label in an additional annotation layer. For prepositional contractions of a preposition and determiner, the stand-alone form of the preposition was used for the label (e.g., where *del* was written, the label used was de). In tests for inferential statistics, the binary coding for this parameter was used, but the specific prepositions are considered descriptively.

4 Results: Inferential Statistics

4.1 Data and Analytical Methods

The $N = 79$ participants were given the option to freely select the Catalan or Spanish version of the study. This led to discrepant amounts of data for both languages: $n = 64$ chose Catalan and $n = 15$ chose Spanish. Each participant provided descriptions for all four stimuli, generating $N = 316$ items ($n = 79$ per target verb). During data filtration $n = 8$ sentences were removed. In $n = 7$ of these cases, the description lacked the corresponding target verb and in $n = 1$, the correct verb was used, but not with the targeted meaning (here, *molestar-se* was not used as the object-experiencer psych verb 'to annoy' but rather as 'to bother [to do sth.]'). The final amount of items per target verb per language are outlined in Table 4. The total and relative data value distributions per parameter per target verb per language can be found in Tables 9 through 16 in the appendix.

Table 4 Items per target verb per language after data filtration

Target verb	Language	
	Catalan	Spanish
'to annoy'	63	15
'to anger'	64	15
'to sadden'	63	14
'to gladden'	60	14

The results from an inferential statistical perspective are presented below, structured as follows: First, within each language separately, the four target verbs will be compared regarding P1 - P7. Then, cross-linguistic comparisons will be made across target verbs regarding P1 - P7. This is followed by analyses of covariation between P1 and P2 - P7. All statistical analyses presented in this section were conducted using the open-access statistics program R.Version 4.3.1 (R Core Team 2021), the package ggbarstats (Patil 2021) and the user interface software RStudio (RStudio Team 2020). Figures of statistic results were generated with the package ggplot2 (Wickham 2016).

To test for significant differences in the data between selected variables, Pearson's chi-squared (X^2) tests of independence were conducted. Where the X^2 criteria of five observations per cell was not fulfilled, a Fisher's exact test was conducted. In all cases, the p values within a tested group were adjusted using the Holm-Bonferroni method to counteract the α-problem of multiple comparisons and therefore reduce the chance of false significance (for more, cf. Holm

1979). The threshold for statistical significance lies at $p < .05$. All descriptive visualization and interpretation of results is withheld until Sections 5 and 6.

4.2 Cross-Target Verb Comparisons

This analysis provides insights to the question *within each language, how do the target verbs behave similarly and discrepantly regarding the seven annotated parameters?* In this section, results are presented for significance tests regarding the covariation of the variables target verb and each of the seven parameters individually. Significance here indicates that the relationship between the target verb (i.e., which of the four was used in the given description) and the tested parameter is not independent and an effect is present. Results for Catalan are presented below, followed by those for Spanish in Section 4.2.2.

4.2.1 Catalan

Table 5 depicts the results for the Catalan data.[5] Two parameters indicate a highly significant relationship with the target verb: P1 and P2 ($p < .001$ each). Note that this effect does not remain when the fine-grained coding of clausal arguments in P2 is combined to a singular c label ($p = .09$). P6 is shown to also be significant ($p = .01$). As aforementioned, P7 in inferential testing is done corresponding with the binary coding due to target verb-individual lexical constraints which challenge comparability. Neither this nor any other remaining parameter reveal statistically significant covariation with the target verb in Catalan sketch descriptions.

4.2.2 Spanish

The results for Spanish data are outlined in Table 6. Here no annotated parameter is shown to have a statistically significant relationship with the target verb.

5 In this and all following tables where *p* values are listed, the *p* values shown are those corrected for multiple comparisons. Bold indicates statistical significance.

4.3 Cross-Linguistic Comparisons

This analysis provides insights to the question *where do Catalan and Spanish show similar vs. discrepant trends regarding the seven annotated parameters in general, i.e., across target verbs?* In this section, results are presented for significance tests regarding the covariation of the variables language and each of the seven parameters individually. Significance here indicates that the languages display discrepant patterns regarding the tested parameter regardless of the target verb.

The results of these analyses are visualized in Table 7. It is shown that two parameters of object-experiencer psych verb constructions – when compared across all four target verbs – are language-dependent: P1 significantly (p =.04) and P6 (p <.001) highly significantly. No other parameter yielded significant results when tested cross-linguistically.

Table 5 X^2 test results between target verb and P1 - P7: Catalan

Parameter	X^2	*d.f.*	Φ_c	p
P1: Voice	27.68	3	0.30	**<.001**
P2: NON-EXP	59.46	21	0.28	**<.001**
P2: NON-EXP_combined-c	18.75	9	0.11	.09
P3: Person of experiencer	4.78	9	0.08	.87
P4: Order of e and v	8.35	6	0.13	.23
P5: POS of target	10.77	3	021	.07
P6: Tense	45.75	21	0.25	**.01**
P7: Prepositions_binary	10.27	3	0.20	.07

Table 6 X^2 test results between target verb and P1 - P7: Spanish

Parameter	X^2	*d.f.*	Φ_c	p
P1: Voice	5.28	3	0.30	.76
P2: NON-EXP	25.80	21	0.39	.76
P2: NON-EXP_combined-c	13.03	9	0.27	.76
P3: Person of experiencer	0.97	3	0.13	.99
P4: Order of e and v	8.98	3	0.39	.29
P5: POS of target	2.31	3	0.20	.99
P6: Tense	17.20	9	0.31	.32
P7: Prepositions_binary	6.19	3	0.33	.69

4.4 Morphosyntactic Covariance with Voice

This analysis provides insights to the question *within each language and across both, which – if any – of the annotated parameters P2 - P7*

demonstrate covariation with voice across target verbs? To more closely explore the domain of the psych alternation, in this section, results are presented for significance tests regarding the covariation of the variables P1 and each of the six remaining parameters individually. Significance here indicates that the relationship between the value of P1 (i.e., whether active or pronominal voice was used in the given description) and the tested parameter is not independent and an effect is present. Results are shown in Table 8.

Table 7 X^2 test results in cross-linguistic comparisons of P1 - P7

Parameter	X^2	*d.f.*	ϕ_c	p
P1: Voice	7.72	1	0.17	**.04**
P2: NON-EXP	17.87	7	0.24	.07
P2: NON-EXP_combined-c	3.57	3	0.11	.73
P3: Person of experiencer	9.39	3	0.18	.16
P4: Order of e and v	3.38	2	0.11	.69
P5: POS of target	2.33	1	0.10	.36
P6: Tense	60.12	8	0.44	**<.001**
P7: Prepositions_binary	0.14	1	0.03	.73

In Catalan descriptions, all parameters are shown to be highly significantly non-independent from the value of P1 (p <.001) with one exception: When comparing the value of P1 to P2 where all clausal types of NON-EXPS are combined, the significance does not remain (p =.65). In Spanish descriptions, two parameters share a highly significant relationship (p <.001) with P1: P3 and P6. Two further parameters demonstrate significance when compared to P1: the binary coding for P7 (p =.01) and P2 (p =.02). The remaining three parameters do not stand in a significant relationship with P1. Finally, when analyzing all descriptions regardless of the language, all parameters are shown to be highly significantly non-independent from the value of P1 (p <.001) with one exception: When comparing the value of P1 to P2 where all clausal types of NON-EXPS are combined, the value of p is reduced from high significance, but remains in the level of significance (p =.03).

Table 8 X^2 test results of P2 - P7 in relation to P1

Parameter	Language											
	Catalan				Spanish				Across languages			
	X^2	*d.f.*	Φ_c	p	X^2	*d.f.*	Φ_c	p	X^2	*d.f.*	Φ_c	p
P2: NON-EXP	93.92	7	0.61	**<.001**	16.38	7	0.53	**.02**	104.98	7	0.58	**<.001**
P2: NON-EXP_combined-c	7.24	3	0.17	.65	3.89	3	0.26	.54	8.66	3	0.17	**.03**
P3: Person of experiencer	96.60	3	0.62	**<.001**	26.04	1	0.71	**<.001**	129.54	3	0.65	**<.001**
P4: Order of e and v	18.04	2	0.27	**<.001**	0.38	1	0.14	.54	18.21	2	0.24	**<.001**
P5: POS of target	26.52	1	0.34	**<.001**	3.06	1	0.27	.16	32.16	1	0.33	**<.001**
P6: Tense	104.19	7	0.65	**<.001**	36.25	3	0.79	**<.001**	137.89	8	0.67	**<.001**
P7: Prepositions_binary	13.00	1	0.24	**<.001**	9.70	1	0.45	**.01**	21.44	1	0.27	**<.001**

5 Results: Descriptive Statistics

In this section, the trends reported above are described in regards to value distributions. This is beneficial in interpreting the statistics above to explain, for example, the directionality of significant findings and identify patterns which are non-significant statistically albeit noteworthy.

5.1 Voice Alternation (P1)

As indicated in Table 5 above, in Catalan, voice is highly significantly related to the target verb, meaning the use of active vs. pronominal voice depends on the psych verb in the given description. This relationship becomes clearer when viewing the total frequencies in the value distribution as portrayed in Figure 2: Whereas the target verbs *alegrar-se*, *enfadar-se* and *entristir-se* exhibit a clear preference for pronominal voice, the opposite is the case for *molestar-se*, which favors active voice.

Although this target verb-dependent significance was not mirrored in the Spanish data **[tab. 6]**, a descriptive analysis of the value distribution delivers interesting observations. Figure 3 illustrates a parallel between Catalan and Spanish, in that descriptions of *molestar-se* feature a predominant use of active voice in Spanish as well. The similarities cease here, however; unlike Catalan speakers, Spanish speakers also preferred active voice for *alegrarse*, both voices were used equally for *entristecerse*, and the preference for *enfadarse* is more minimal compared to in Catalan.

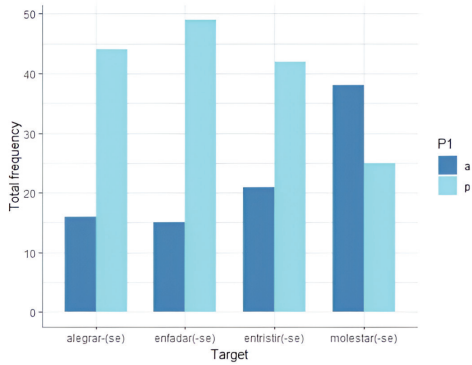

Figure 2 Total frequencies of P1 per target verb: Catalan

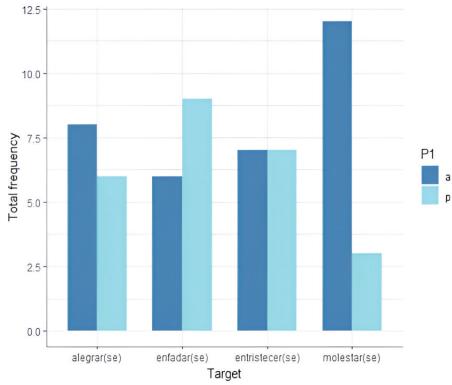

Figure 3 Total frequencies of P1 per target verb: Spanish

These reflections generate two findings. Firstly, the use of voice appears to be a language-specific phenomenon in the present data, in which Catalan speakers demonstrate a pronominal voice preference whereas Spanish speakers are less clearly partial towards one voice. This clarifies the finding reported in Table 7 that the languages behave significantly discrepantly regarding P1. Secondly, it appears as though the verb *molestar-se* is treated specially in both languages in that active voice is greatly preferred. This specific effect found for the verb 'to annoy' is mirrored by Wiskandt et al. (2023b); they report a similar effect in Portuguese and Catalan corpus data. They argue this is due to a higher likelihood of an agentive interpretation compared to most other object-experiencer psych verbs.

5.2 Morphosyntactic Realization of the NON-EXP (P2)

A highly significant relationship was observed between the target verb and the realization of the NON-EXP in Catalan descriptions **[tab. 5]**. No significance is found in this test with Spanish data, however **[tab. 6]**. Nonetheless, a descriptive analysis of both datasets deliver further insights. As highlighted in Table 7, there is no significant difference in the data when comparing languages across all target verbs. Therefore, the similarities in the data will be more closely investigated. Figures 14 and 15 show the distribution of P2 values for Catalan and Spanish, respectively. In both languages, the verb *entristir-se* exhibits a uniquely strong disinclination for nominal NON-EXP. Although not statistically significant **[tabs 5-6]**, this trend becomes clearer when comparing the target verbs where all subtypes of c are cumulated; Figures 6 and 7 showcase the unique lack of nominal NON-EXPS for *entristir-se* in Catalan and Spanish descriptions, respectively. This is especially notable in Catalan data, where the remaining three target verbs exhibit behavior similar to one another in this regard. A possible explanation for this is that events are responsible for initiating some emotions, not directly the person who caused the event (cf. e.g., Kailuweit 2005). In this case, it would be the vase breaking which triggers sadness, as opposed to a person causing the vase to break. A cognitive scientific perspective on the matter in the future is required to further explore this possibility.

Because clausal NON-EXPS are the preferred type in each target verb in both languages, a closer look at the distribution of c types is of interest. Cross-linguistically similar trends can be found as both languages demonstrate a clear preference for 'because' clauses in *enfadar-se*. While this 'because' majority can also be found in *entristir-se* descriptions, Catalan exhibits a larger gap between this and the second-most utilized type of c. Furthermore, it is notable that there is less c subtype variation in *molestar-se* descriptions compared to the other target verbs in both languages.

When P2 is tested with P1, the covariation in Catalan and across languages is highly significant and in Spanish significant, as reported in Table 8. When looking at the data of both languages, found in Figure 8, the cause of this significance between voices becomes clear; regarding clausal NON-EXPS, active voice prefers 'that' clauses, whereas pronominal voice greatly prefers 'because' clauses. Further noteworthy is the greater representation of 'when' clauses in pronominal voice compared to active voice.

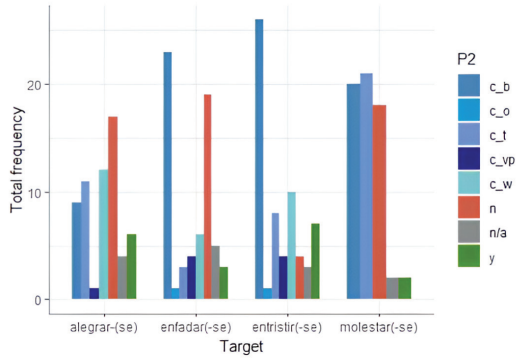

Figure 4 Total frequencies of P2 per target verb: Catalan

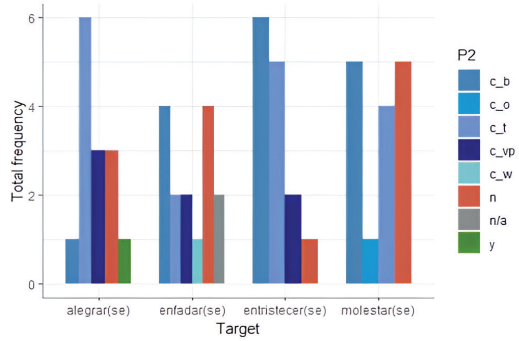

Figure 5 Total frequencies of P2 per target verb: Spanish

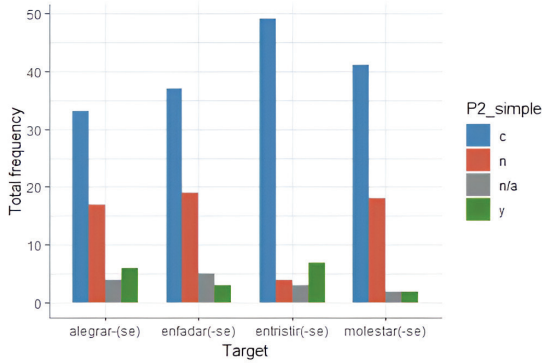

Figure 6 Total frequencies of simplified P2 per target verb: Catalan

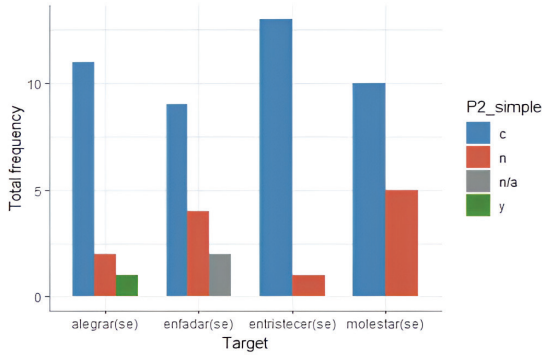

Figure 7 Total frequencies of simplified P2 per target verb: Spanish

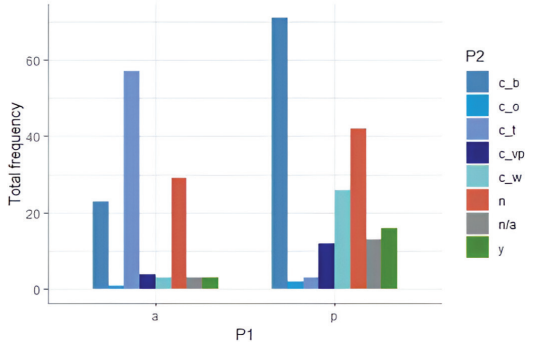

Figure 8 Total frequencies of P2 per P1: Across languages

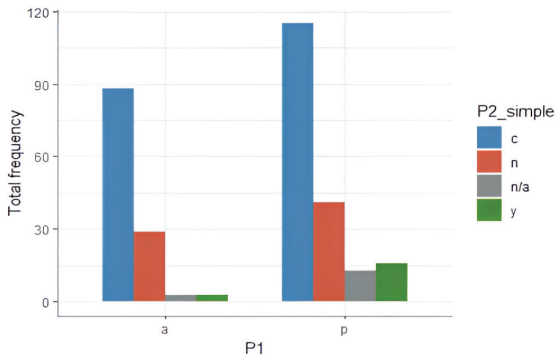

Figure 9 Total frequencies of simplified P2 per P1: Across languages

Where the subtypes of c are visually cumulated, however, the lack of significance shown in Table 8 for P2_combined-c is elucidated. Figure 9 indicates that when the subtypes of c are not considered, but rather grouped against nominal, 'and' clause as well as missing NON-EXPS, that the voices demonstrate highly comparable distributions.

This contrast between P2 and P2_combined-c here and in analyses above is critical. They highlight the sensibleness for future research on psych verb constructions to investigate both clausal NON-EXPS as a cumulative category, while additionally considering category-internal differences; both units of analysis deliver unique insights which would be overlooked when addressing only one.

When comparing these findings to those in previous studies, there are parallels and deviations. Becker and Guzmán Naranjo (2020, 514) report that in all European languages they investigated, there is more variance across concepts than across languages, which behave mainly similarly. This mirrors the findings here, although only where c is subdivided. The authors further report clausal arguments to account for a minor portion of NON-EXPS (Becker, Guzmán Naranjo 2020, 519). Wiskandt et al. (2023b) also report c arguments to be less common in their corpus data on Portuguese, Catalan (where they also investigated *molestar-se* and *entristir-se*) and Romanian than in the present study. This is a stark contrast to the data here, where c is responsible for the majority of NON-EXPS in both languages and all target verbs. This can likely be explained due to the methodological differences between the studies, highlighting the advantage of employing elicitation methods for new insights; in spontaneous elicitated speech data, clausal NON-EXPS seem to occur with increased frequency compared to corpus reports.

5.3 Grammatical Person of the Experiencer Argument (P3)

When examining the experiencer argument regarding the parameter of grammatical person, no significant differences between the target verbs were determined in either Catalan or Spanish (cf. Table 5 and Table 6, respectively). This lack of significance is paralleled in Table 7, highlighting that the languages do not differ in this regard.

Regarding the relationship between P1 and P3, however, highly significant effects were identified in Catalan, Spanish and cross-linguistically, as illustrated in Table 8. Comparing Figure 10 and Figure 11, the results are striking as in both languages, the same preferences become clear: When speakers use first person experiencers, they greatly prefer active voice (true in 100% of Spanish descriptions), whereas they prefer pronominal voice when referring to third person experiencers.

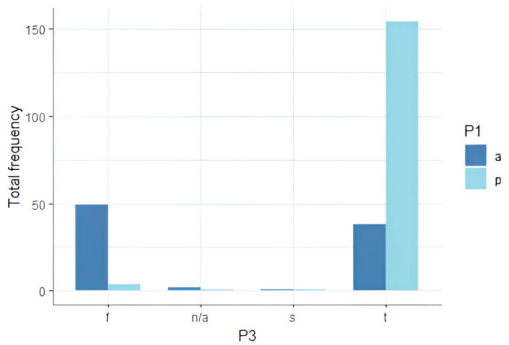

Figure 10 Distribution of P1 per P3: Catalan

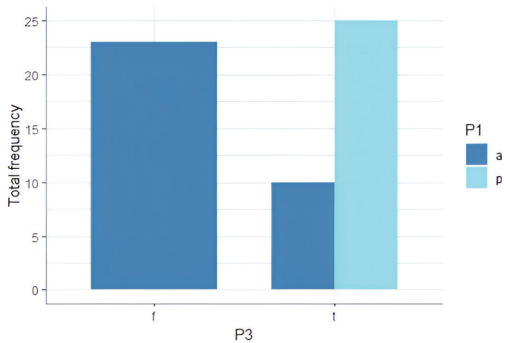

Figure 11 Distribution of P1 per P3: Spanish

5.4 Order of Experiencer and Target Verb (P4)

In both observed languages, no significant discrepancies were found between the order of the experiencer / target verb and which target verb was used in a given description **[tabs 5-6]**, nor do the languages behave differently across target verbs **[tab. 7]**. Highly significant covariation was determined for P4 as a covariate of P1 in Catalan and across languages, but no significance was determined in this regard for Spanish, outlined in Table 8.

From a descriptive standpoint, some noteworthy patterns are discovered. Figures 12 and 13 visualize the distribution of voice in experiencer-first vs. verb-first descriptions in Catalan and Spanish, respectively. At first glance it is clear that verb-first constructions are not conducive to pronominal voice due to syntactic constraints. Nonetheless, these graphs deliver interesting considerations. Firstly, within experiencer-first constructions, the given language's general voice preference in this data is mirrored, i.e., Catalan prefers pronominal voice and Spanish is more impartial, slightly preferring active voice. Further, experiencer-first descriptions predominate over verb-first descriptions in both languages. This trend is of special interest; although both e and v structures are grammatically possible in both languages, there is a clear trend towards experiencer-first constructions. This is in line with reports by Temme and Verhoeven (2016), who state that cross-linguistically, experiencers are often fronted in psych verb constructions. They report this phenomenon to be particularly observable for accusative experiencers, as found in the data at hand. All in all, while P4 significance in these analyses is unsurprising due to syntactic constraints, the distribution of experiencer-first vs. verb-first descriptions is compelling.

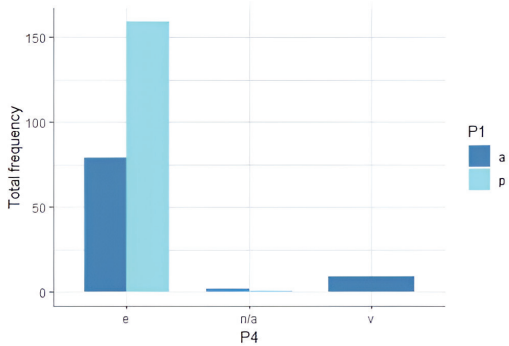

Figure 12 Distribution of P1 per P4: Catalan

5.5 Part of Speech of Target (P5)

To investigate whether Catalan and Spanish speakers demonstrate similar or discrepant preferences towards using psych verbs vs. psych adjectives, the part of speech of the target was also examined. Here, as depicted in Tables 5, 6 and 7, there is no observable effect between P5 and the target verb or the language. The parameter does, however, indicate highly significant covariation with the realization of voice in Catalan and across languages, but not in Spanish individually **[tab. 8]**. This significance or lack thereof is, however, likely to be traced back to the language's general voice preferences; in verbal constructions, Catalan generally prefers pronominal voice, whereas Spanish speakers employed a more fair distribution. Including this parameter for analysis was chosen for exploratory reasons, though it has been determined that analyzing this parameter does not foster new insights on psych verb constructions in this study.

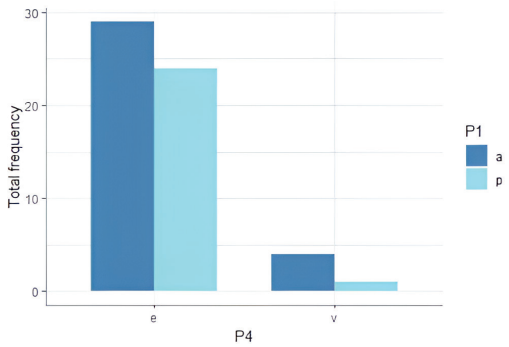

Figure 13 Distribution of P1 per P4: Spanish

5.6 Tense of Target (P6)

As shown in Table 5, the tense of target verbs and the target verb used in a given description share a significant relationship in the Catalan data. This effect is not mirrored statistically in Spanish data **[tab. 6]**, however a descriptive analysis of the value distribution paints a similar picture to the Catalan distribution; in Figures 14 and 15 for Catalan and Spanish, respectively, *molestar-se* is shown to be treated differently from the other target verbs. Here, in both languages and especially in Catalan, a substantial use of simple present is showcased. The tense is used more for *molestar-se* than for any other target verb, and within *molestar-se* descriptions, the difference between simple present and other tenses is substantially greater than

the differences between the most and second-most common tenses for any other target verb, again in both languages. Similar to how the verb gains discrepant treatment regarding voice, *molestar-se* descriptions are an exception as only here can a clear tense preference can be identified. This is particularly interesting in light of the methodology used; even where some participants interpreted the stimuli as a continuous story, a shift in tense from simple present in *molestar(-se)* – the first of the four items – descriptions to other tenses for the remaining descriptions was located. This was not expected due to its markedness when combined with the remaining stimuli and underlines the uniqueness of how speakers treated *molestar(-se)*.

Furthermore, P6 is shown in Table 7 to be highly significantly discrepant when comparing languages across target verbs, however this will not be considered further as the languages exhibit individual tense inventories, prohibiting comparative claims. In general, however, within each language across target verbs, a myriad of tenses were incorporated in sketch descriptions. This leads to the impression that – apart from the uniqueness found in *molestar-se* – the data shows no indication that tense is an anomaly in the domain of psych verb constructions compared to verb use in general in each language when it comes to which tenses can be and are employed in natural speech.

Target verb tense additionally has a highly significant relationship with the realization of voice within both languages and across both **[tab. 8]**. A common feature of both Catalan and Spanish is a highly substantial preference for simple present tense in active voice constructions **[figs 16-17]**. Another similarity is that perfect present tense is favored for pronominal voice in both languages, albeit with a less prominent preference than simple present for active voice. These differences in the data across both languages are striking, especially as constructions in both voices in each tense are grammatically possible, yet such clear preferences exist regardless.

A possible explanation for this finding is that the underlying motivation at play is aspect-based. Pronominal voice can be viewed as an inchoative change-of state marking voice (cf. Marín, McNally 2011). In the case of object-experiencer psych verbs, this implies that the use of pronominal voice denotes a shift from the experiencer argument not experiencing an emotion to experiencing it. Therefore, when participants describe a static scene, they may opt to employ pronominal voice to highlight this inchoativity and the perfective aspect that the change of state has not ended, i.e., the experiencer is still experiencing the given emotion. This tendency is not relevant for active voice, which could explain speakers' preference of the least marked tense, i.e., simple present, when using it.

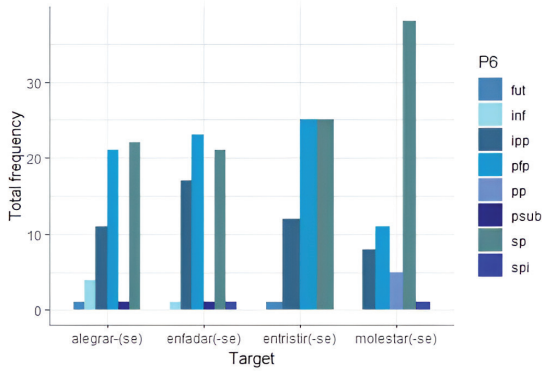

Figure 14 Distribution of P6 per target verb: Catalan

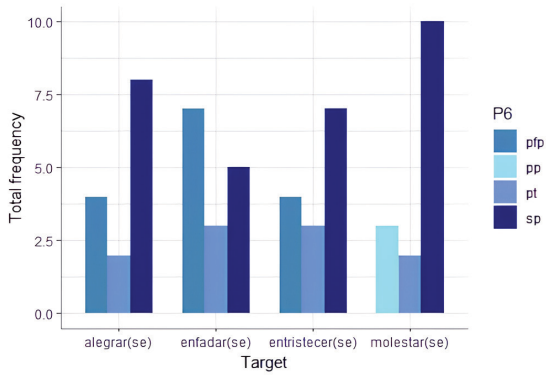

Figure 15 Distribution of P6 per target verb: Spanish

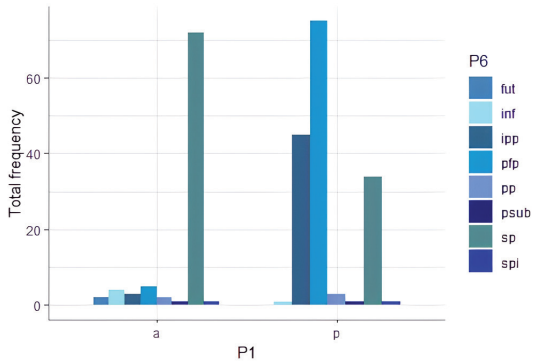

Figure 16 Distribution od P6 per P1: Catalan

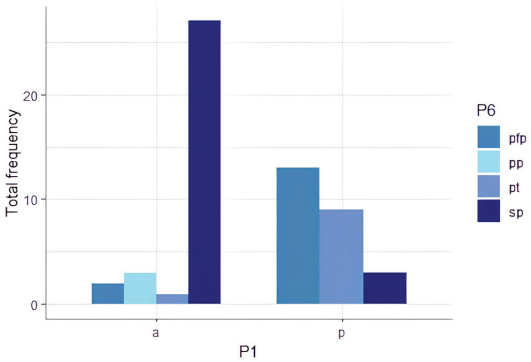

Figure 17 Distribution of P6 per P1: Spanish

5.7 Prepositions (P7)

Finally, the presence vs. absence of a preposition before the NON-EXP did not yield significant results when tested between target verbs in Catalan or Spanish **[tabs 5-6]**, nor when tested between languages across target verbs **[tab. 7]**. Table 8 indicates high significance when testing covariance of binary P7 and P1 for Catalan and cross-linguistically and significance for Spanish. This is, however, not surprising as the variables are nearly collinear; further data exploration reveals syntactic constraints as the origin of this significance. For example, the presence of a pre-NON-EXP preposition in active voice descriptions is only possible where the target is realized adjectivally as opposed to verbally, as seen in (16), where the preposition *per* precedes a VP-NON-EXP and the target verb *enfadar-se* is realized as an adjective.

(16) *Estic molt enfadada per haver -me romput el gerro.*
be.1SG very angry for have.INF 1SG.OBJ break.PTCP DEF vase
'I'm very angry about my vase breaking.' (CA)

A descriptive analysis of the non-binary distribution of P7 values, i.e., which specific prepositions were used where, does not provide further insights due to lexical constraints of the individual target verbs, e.g., the combination of *entristir-se* and 'with' or *alegrar-se* and 'of'. As a whole, it therefore appears that neither the presence nor value of pre-NON-EXP prepositions are worthy of further investigation within the data of the current study.

6 Discussion

6.1 Implications for Research Questions

Summarizing the findings reported above, each of the three research questions proposed in 2.3 will now be addressed individually:

1. Within each investigated language, how do the selected object-experiencer psych verbs behave similarly and discrepantly regarding annotated morphosyntactic parameters, and are these patterns similar or discrepant across languages?

Two parameters were identified for which there are target verb-dependent trends which appear parallel in both languages. These were P2 (morphosyntactic realization of the NON-EXP) and P6 (tense). For one parameter – P1 (voice) – target verb-dependent trends were identified in both languages, however the language-internal trends are partially discrepant. For all remaining parameters (P3, P4, P5, P7), no target verb-dependent trends were identified in either language.

As such, in the data at hand, the speakers treated verbs differently from one another regarding the NON-EXPS, tense, and voice, indicating that object-experiencer psych verb constructions vary in some morphosyntactic parameters depending on the verb at hand. In most cases, the languages exhibit similar trends when it comes to language-internal target verb distributions, showcasing that the target verb-dependent trends identified are not random, but rather systematic across both languages. This highlights that speakers in both languages do not treat all object-experiencer psych verbs equally.

2. Where do Catalan and Spanish, when compared, show similar vs. discrepant trends regarding the morphosyntactic parameters in general, i.e., across object-experiencer psych verbs?

Only two parameters were treated discrepantly depending on the language: P1 (voice) and P6 (tense). As aforementioned, the dissimilarities in tense are due to contrasting inventories and are therefore not of further interest, leaving voice to be the only parameter which is language-dependent. The take-aways from this research question are twofold: First, it is evident that investigating the morphosyntactic parameters of psych verb constructions is senseful when analyzing target verb-dependent trends within or across languages, but not when comparing languages across all target verbs. Second, it underlines that voice preferences in the Romance psych alternation are language-specific as opposed to

general, fueling questions about the motivators within each language for the trends to be different.

3. Within each investigated language and across both, which – if any – of the morphosyntactic parameters demonstrate a relationship with the realization of voice in the psych alternation?

While the parameters other than voice did not deliver significant results when comparing languages, they do when tested in covariation with voice. All parameters demonstrate a relationship with voice. While this was not surprising due to syntactic or lexical constraints for P4 (order of experiencer and target verb), P5 (part of speech of the target) or P7 (prepositions), there are compelling results for the remaining three parameters. In P2 (morphosyntactic realization of the NON-EXP), the preferred subtypes of clausal arguments differ depending on voice. When combined and compared with nominal arguments, however, there is no covariation. In P3 (grammatical person of the experiencer), first person is preferred in active voice constructions, whereas third person is preferred in pronominal voice constructions. In P6 (tense), simple present is preferred in active voice constructions, whereas perfect present is preferred in pronominal voice constructions.

If – as reflected above – trends in voice preference in the psych alternation are language-specific, the results of this paper indicate that the parameters of NON-EXP realization, grammatical person of the experiencer and tense ought to be examined in order to identify the properties which condition the realization of the psych alternation within a language.

Finally, the results of this study lead to three additional considerations from the research questions at hand. Firstly, it appears that the target verb *molestar-se* is granted special treatment in both languages in several parameters; this leads to questions on if 'to annoy' has a sort of unique status within the domain of psych verb constructions. Secondly, it is clear that *entristir-se* is different from the other target verbs regarding the NON-EXPS; this leads to questions on how different emotions are triggered by events vs. by the causers of said events. Thirdly, the analyses highlight that it is senseful to consider the clausal NON-EXPS both as a whole and separated into subtypes. These considerations pose implications for future research, as considered in the following.

6.2 Research Outlook

Both the results as well as some limitations of this study pose an array of implications for future research. Firstly, it is evident that employing elicitation methodology in investigations of the psych alternation and psych verb constructions generates novel insights and could be employed broadly in this field. As such, the methods used in this study can be further developed. It is possible that some of the effects documented here are subject to stimuli effects, hence future studies could adapt the stimuli. For one, the order of items could be changed to test if the partial special treatment of *molestar-se* seen is a result of its being first in the set. Similarly, different sketches could be used to verify that the target verb-specific results are rooted in the verbs themselves and not in the drawings they were paired with. New sketches could furthermore be developed to explore additional target verbs. Further uses of this methodology could consider removing the reflexive clitic in parentheses in the stimulus labels, as its presence could foster a biased increase in the use of pronominal voice. Additionally, the static stimuli employed in this study could be replaced or supplemented by dynamic stimuli in the form of videos. This could lead to new insights, such as regarding the interplay of voice and tense / aspect. Not all possible properties were explored in this study and future investigations could construct stimuli to elicitate data on other morphosyntactic properties, such as animacy of the NON-EXP, conforming with other work, e.g., by Rott and Verhoeven (2019) and effects reported by Verhoeven (2017) and Pijpops and Speelman (2017) for Germanic languages. Wiskandt et al. (2023b) argue animacy plays an important role in psych verb constructions in a cross-Romance perspective. Finally, entirely other forms of visual stimuli could be employed, such as storyboards, and spoken as opposed to written data could provide novel insights.

In part, future research can also counteract limitations of this study. Considerably the largest limitation at play is the limited amount of Spanish data in comparison to Catalan data. Research with larger samples in both languages, but especially Spanish, may shed clearer light on trends reported here. These methods could also be employed in other Romance languages. Future samples should additionally be constructed in a more sociodemographically representative manner; due to the project's parameters, the participants of this study exhibit mainly homogeneous make-up regarding age and educational background. This impedes investigations of the sociodemographic factors possibly involved in the psych alternation and psych verb constructions, which may also be a factor. Furthermore, no metadata was collected on the mono- or bilingual Catalan / Spanish L1 status of the participants. Collecting this in future research would facilitate

investigating potential effects of L1 on the realization of psych verb constructions.

There are further open questions from the results and supplemental considerations for future research. One of these stems from emotional psychological theory; in addition to previous reflections regarding eventual vs. personal causality of emotion triggering, emotional intensity itself could be considered. This could, for example, surround sketches in which the facial expressions of the experiencers are scaled from slightly to extremely emotional, distributed to different participant groups. This could also explore the seemingly unique status of *molestar-se*. Another consideration is that although covariation is tested, causality could not be, therefore directionality of effects in covariation with voice is speculative. More large-scale and crosslinguistic studies are required to determine if, for example, tense / aspect motivates voice or vice versa. Along similar lines, investigating the effects found in this paper for languages exhibiting other alignments systems would test the universality of such effects. Finally, at this time, an additional perspective which cannot be analyzed is that of language contact. Diachronic and longitudinal investigations may elucidate the effect the region's bilingualism has on voice alteration over time.

7 Conclusion

This study used elicitation methodology to investigate the psych alternation as well as psych verb constructions in general in Catalan and Spanish varieties spoken on Mallorca. In doing so, it was found that voice, the realization of the NON-EXP and tense are verb-dependent. The phenomenon of psych alternation appears to be a language-dependent one in the elicitated data, where each language clearly demonstrates its own preference for voice. Covariation between voice and the realization of the NON-EXP, the grammatical person of the experiencer argument and tense was also discovered. It is clear that the employment of elicitation methodology in this domain can generate novel insights and a more holistic understanding of the phenomenon; the results postulated in this paper contribute to findings on voice alternation in Romance and – in a broader sense – the interface of language and emotion.

Glossing Abbreviations

1 = first person
2 = second person
3 = third person
DAT = dative
DEF = definite
DET = determiner
F = feminine
FUT = future
INDF = indefinite
INF = infinitive
M = masculine
NEG = negative
OBJ = object
PL = plural
POSS = possessive
PRO = pronoun
PST = past
PTCP = participle
REFL = reflexive
SBJ = subject
SBJV = subjunctive
SG = singular

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Appendix

Table 9 Total and relative frequencies of annotation values: alegrar(-se) (Catalan)

Parameter	Label		Total frequency	Relative frequency
P1	a		16	27%
	p		44	73%
P2	n		17	28%
	c		33	55%
		c_b	9	27% of c; 15% of total
		c_w	12	36% of c; 20% of total
		c_t	11	33% of c; 18% of total
		c_vp	1	3% of c; 2% of total
		c_o	0	0%
	y		6	10%
	n/a		4	7%
P3	f		11	18%
	s		0	0%
	t		48	80%
	n/a		1	2%
P4	e		54	90%
	v		5	8%
	n/a		1	2%
P5	ver		60	100%
	adj		0	0%
P6	sp		22	37%
	pp		0	0%
	pfp		21	35%
	fut		1	2%
	psub		1	2%
	spi		0	0%
	ipp		11	18%
	inf		4	7%
P7	no		48	80%
	yes		12	20%
		per	5	42% of yes; 8% of total
		de	5	42% of yes; 8% of total
		amb	2	17% of yes; 3% of total

Table 10 Total and relative frequencies of annotation values: enfadar(-se) (Catalan)

Parameter	Label		Total frequency	Relative frequency
P1	a		15	23%
	p		49	77%
	n		19	30%
	c		37	58%
		c_b	23	62% of c; 36% of total
		c_w	6	16% of c; 9% of total
P2		c_t	3	8% of c; 5% of total
		c_vp	4	11% of c; 6% of total
		c_o	1	3% of c; 2% of total
	y		3	5%
	n/a		5	8%
	f		11	17%
	s		1	2%
P3	t		51	80%
	n/a		1	2%
	e		62	97%
P4	v		1	2%
	n/a		1	2%
	ver		54	84%
	adj		10	16%
P5	sp		21	33%
	pp		0	0%
	pfp		23	36%
	fut		0	0%
	psub		1	2%
P6	spi		1	2%
	ipp		17	27%
	inf		1	2%
	no	per	44	69%
	yes	a	20	31%
P7		amb	4	20% of yes; 6% of total
			2	10% of yes; 3% of total
			14	70% of yes; 22% of total

Table 11 Total and relative frequencies of annotation values: entristir(-se) (Catalan)

Parameter	Label		Total frequency	Relative frequency
P1	a		21	33%
	p		42	67%
P2	n		4	6%
	c		49	78%
		c_b	26	53% of c; 41% of total
		c_w	10	20% of c; 16% of total
		c_t	8	16% of c; 13% of total
		c_vp	4	8% of c; 6% of total
		c_o	1	2% of c; 2% of total
	y		7	11%
	n/a		3	5%
P3	f		15	24%
	s		0	0%
	t		48	76%
	n/a		0	0%
P4	e		63	100%
	v		0	0%
	n/a		0	0%
P5	ver		53	84%
	adj		10	16%
P6	sp		25	40%
	pp		0	0%
	pfp		25	40%
	fut		1	2%
	psub		0	0%
	spi		0	0%
	ipp		12	19%
	inf		0	0%
P7	no		57	90%
	yes		6	10%
		per	2	33% of yes; 3% of total
		a	2	33% of yes; 3% of total
		amb	2	33% of yes; 3% of total

Table 12 Total and relative frequencies of annotation values: molestar(-se) (Catalan)

Parameter	Label		Total frequency	Relative frequency
P1	a		38	60%
	p		25	40%
P2	n		18	29%
	c		41	65%
		c_b	20	49% of c; 32% of total
		c_w	0	0%
		c_t	21	51% of c; 33% of total
		c_vp	0	0%
		c_o	0	0%
	y		2	3%
	n/a		2	3%
P3	f		16	25%
	s		1	2%
	t		45	71%
	n/a		1	2%
P4	e		59	94%
	v		3	5%
	n/a		1	2%
P5	ver		53	84%
	adj		10	16%
P6	sp		38	60%
	pp		5	8%
	pfp		11	17%
	fut		0	0%
	psub		0	0%
	spi		1	2%
	ipp		8	13%
	inf		0	0%
	no		53	84%
P7	yes		10	16%
		per	1	10% of yes; 2% of total
		amb	9	90% of yes; 14% of total

Table 13 Total and relative frequencies of annotation values: alegrar(se) (Spanish)

Parameter	Label	Total frequency	Relative frequency
P1	a	8	57%
	p	6	43%
P2	n	3	21%
	c	10	71%
	c_b	1	10% of c; 7% of total
	c_w	0	0%
	c_t	6	60% of c; 43% of total
	c_vp	3	30% of c; 21% of total
	c_o	0	0%
	y	1	7%
	n/a	0	0%
P3	f	7	50%
	s	0	0%
	t	7	50%
	n/a	0	0%
P4	e	14	100%
	v	0	0%
	n/a	0	0%
P5	ver	12	86%
	adj	2	14%
P6	sp	8	57%
	pp	0	0%
	pfp	4	29%
	pt	2	14%
P7	no	8	57%
	yes	6	43%
	a	2	33% of yes; 14% of total
	de	2	33% of yes; 14% of total
	por	2	33% of yes; 14% of total

Table 14 Total and relative frequencies of annotation values: enfadar(se) (Spanish)

Parameter	Label	Total frequency	Relative frequency
P1	a	6	40%
	p	9	60%
P2	n	4	27%
	c	9	60%
	c_b	4	44% of c; 27% of total
	c_w	1	11% of c; 7% of total
	c_t	2	22% of c; 13% of total
	c_vp	2	22% of c; 13% of total
	c_o	0	0%
	y	0	0%
	n/a	2	13%
P3	f	6	40%
	s	0	0%
	t	9	60%
	n/a	0	0%
P4	e	15	100%
	v	0	0%
	n/a	0	0%
P5	ver	13	87%
	adj	2	13%
P6	sp	5	33%
	pp	0	0%
	pfp	7	47%
	pt	3	20%
P7	no	11	57%
	yes	4	43%
	con	3	75% of yes; 20% of total
	por	1	25% of yes; 7 of total

Table 15 Total and relative frequencies of annotation values: entristecer(se) (Spanish)

Parameter	Label	Total frequency	Relative frequency
P1	a	7	50%
	p	7	50%
P2	n	1	27%
	c	13	60%
	c_b	6	46% of c; 43% of total
	c_w	0	0%
	c_t	5	38% of c; 36% of total
	c_vp	2	15% of c; 14% of total
	c_o	0	0%
	y	0	0%
	n/a	0	0%
P3	f	5	36%
	s	0	0%
	t	9	64%
	n/a	0	0%
P4	e	13	93%
	v	1	7%
	n/a	0	0%
P5	ver	11	79%
	adj	3	21%
P6	sp	7	50%
	pp	0	0%
	pfp	4	29%
	pt	3	21%
P7	no	12	86%
	yes	21	14%
	a		50% of yes; 7% of total
	por	1	50% of yes; 7% of total

Table 16 Total and relative frequencies of annotation values: molestar(se) (Spanish)

Parameter	Label	Total frequency	Relative frequency
P1	a	12	80%
	p	3	20%
P2	n	5	33%
	c	10	67%
	c_b	5	50% of c; 33% of total
	c_w	0	0%
	c_t	4	40% of c; 27% of total
	c_vp	0	0%
	c_o	1	10% of c; 7% of total
	y	0	0%
	n/a	0	0%
P3	f	5	33%
	s	0	0%
	t	10	67%
	n/a	0	0%
P4	e	11	73%
	v	4	27%
	n/a	0	0%
P5	ver	10	67%
	adj	5	33%
P6	sp	10	67%
	pp	3	20%
	pfp	0	0%
	pt	2	13%
P7	no	14	93%
	yes	1	7%
	con	1	100% of yes; 7% of total