

Psych verbs in Brazilian Portuguese: causation and argument structure

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Abstract Psychological verbs are broadly discussed in the literature because of their peculiar syntactic behavior in several languages. Specially Object Experiencer verbs have been the focus of interested of many researchers, because they are expressed in distinct and unsystematic ways across languages. Two of the main issues regarding these verbs is their aspectual nature and event structure, and the fact that, despite being Object Experiencer verbs, they appear with the experiencer argument in subject position, in a type of “alternation” process. In this paper, taking Brazilian Portuguese as our object language, we provide an analysis of Object Experiencer verbs, focusing on these two main issues. Based on a detailed study of 170 verbs, we claim that these verbs describe complex states in which a stimulus state activates (in a causative relation) a mental state in an experiencer. We show as well that a small subgroup of these verbs can have, additionally, an eventive reading, motivated by a metaphorical process. In a similar way, eventive verbs can also present a psychological stative reading. Besides, all Object Experiencer verbs of the language appear in an inverse form, with experiencer subject and the experiencer in an oblique position. We claim that the pragmatic prominence of the experiencer enables these verbs to appear in such inverse construction, presenting a re-construal of the eventuality described by the verb. To explain the behavior of BP Object Experiencer verbs, we adopted the Lexical-Constructional Model. We argue that the different readings of BP Object Experiencer verbs and their inverse form derive from their integration into specific types of argument structure constructions.

Key-words: psych verbs, object experiencer, argument structure, complex states, causation, constructions, Brazilian Portuguese.

1. Introduction

Psychological verbs, or simply psych verbs, are broadly discussed in the literature because of their peculiar syntactic behavior in several languages. These verbs were already investigated in English (Postal, 1971; Grimshaw, 1990, Pesetsky, 1995, Arad, 1998, Cervel, 2015), Spanish (Marín and McNally, 2005), Finish (Pylkkänen, 1997, 2000), Polish (Biały, 2005; Rozwadowska, 2012; Rozwadowska and Bondaruk, 2019), French (Ruwet, 1972, Legendre, 1989), Italian (Belletti and Rizzi, 1988), European Portuguese (Mendes, 2004); Brazilian Portuguese (Cançado, 1995, 2002, 2012; Cançado and Franchi, 1999), Japanese (Iwata, 1995), among many other languages and also in crosslinguistic perspectives (Talmy, 1985; Landau, 2010; Croft, 1991, 2012; Verhoeven, 2014; Alexiadou and Iordăchioaia, 2014, and others).¹ These verbs are characterized by their two arguments, an experiencer and a stimulus (Talmy, 1985). They describe an eventuality in which the experiencer holds a certain psychological state in relation to the stimulus. One of the interesting facts about the

¹It is impossible to do justice to the vast literature on psych verbs. See Landau (2010) and Grafmiller (2013) for thorough reviews.

behavior of the broad class of psych verbs is that the experiencer can be subject, as in *John fears/loves/hates Mary*, or object, as in *John frightens/worries/bothers Mary*.

The first type of psych verbs, the Subject Experiencer verbs, or SubjExp verbs in short, following Pesetsky's (1995) terminology, present a simple stative transitive configuration, and does not pose many problems for linguistic analysis. But the second type, the Object Experiencer verbs, ObjExp verbs in short, are expressed in distinct and unsystematic ways across languages (Talmy, 1985; Landau, 2010; Croft, 2012). Thus, these verbs pose important problems for linguistic analysis, especially in relation to argument structure. Two of the main issues regarding these verbs is their aspectual nature and event structure, whether they are stative, eventive or ambiguous, and also the fact that these verbs, despite being ObjExp verbs, can appear with the experiencer argument in subject position, in a type of "alternation" process.

In this paper, taking Brazilian Portuguese (henceforth BP) as our object language, we provide an analysis of ObjExp verbs, focusing on these two main issues regarding their argument structure properties. Based on a detailed study, we claim that these verbs describe complex states in which a stimulus state activates (in a causative relation) a mental state in an experiencer (following Pylkkänen, 1997, and Arad, 1998). We show as well that a small subgroup of these verbs can have, additionally, an eventive reading. This eventive reading is motivated by a metaphorical process. And, in a similar way, eventive verbs can also present a psychological stative reading, which, we shall remark, is a very productive process. Besides, all ObjExp verbs of the language appear in an inverse form, which we do not assume to be an argument structure alternation, because both arguments remain mandatorily. The experiencer appears in subject position and the stimulus is an oblique headed by *com* 'with'. We claim that the pragmatic prominence of the experiencer enables these verbs to appear in such inverse construction, presenting a re-construal of the eventuality described by the verb.

Current proposals in the literature generally leave out the pragmatic and cognitive facets involved in the event structure and the "alternation" of ObjExp verbs. In this work, differently, we take these matters into consideration and we propose a constructionist analysis for the behavior of BP ObjExp verbs (within the Lexical-Constructional Model framework; Ruiz de Mendoza, 2013). In our analysis we show that cognitive and pragmatic factors, namely metaphor and the experiencer's pragmatic prominence, have impact on these verbs' argument structure. Our study shows that the experiencer and its psychological state are inherent properties of verbs, but also the semantic pole of argument structure constructions. These properties are, thus, relevant for the argument structure organization of the language. This paper continues an extensive research about BP psych verbs (since Cançado 1995), although we take here a different perspective from previous works. With this research, we hope to contribute to the long-standing and vast debate about ObjExp verbs in Linguistics.

The paper is organized as follows: in the next section, we describe the semantic-syntactic behavior of ObjExp verbs in BP. In Section 3, we go into the details of the specific psych argument structure constructions of BP. We show their formal and functional properties, and how they accommodate different types of verbs. We make our final considerations in Section 4.

2. The syntactic-semantic behavior of ObjExp verbs in BP

In this section we provide an analysis of the syntactic-semantic behavior of ObjExp verbs in BP. First, we demonstrate that all verbs in this class have a stative reading. These verbs describe a complex state, in which a stimulus state causes the activation of a mental state in an experiencer. Second, we show that some ObjExp verbs may also have an eventive reading, besides the stative reading. At the same time, many eventive verbs may have a stative psychological reading, too. Finally, we show that ObjExp verbs in BP systematically alternate to a type of inverse structure in which the experiencer appears in subject position, and the stimulus in an oblique position. We give evidence that this is not a causative alternation, generally attributed to psych verbs in various languages.

Our analysis comprises 170 BP ObjExp verbs, collected from VerboWeb (Cançado et al., 2017)². We make use of a robust body of data, which results from a thoroughly methodological process of gathering an analysis of linguistic information. Additionally, a quantitative study was carried out, in two stages. First, the study aimed at comparing instances of the inverse structure of ObjExp verbs with instances of the inchoative construction of change of state verbs. And, in second stage, to be presented in Section 3, a comparison was made between the number of instances of the inverse structure and the number of instances of the stative causative structure of ObjExp verbs. In this study, we used the Web/Dialects corpus of Corpus do Português (Davies, 2016)³. Grafmiller (2013) criticizes studies on English psych verbs, mentioning the lack of representative data, and the fact that these analyses rarely make use of more than a small set of constructed sentences. Contrastively, we believe the study to be presented in further detail in the next sections is well grounded in a significant set of BP data.

2.1 The stative interpretation

In BP, as in many other languages, ObjExp verbs occur in transitive sentences, presenting a specific thematic structure, as exemplified below:

² Accessible at www.lettras.ufmg.br/verboweb.

³ Accessible at <https://www.corpusdoportugues.org/web-dial/>.

- (1) A partida do filho preocupou/angustiou/ entristeceu a mãe.
 the departure of.the son worried distressed saddened the mother
 {Stimulus, Experiencer}
 ‘The son’s departure worried/distressed/saddened his mother.’

Other verbs which behave as *preocupar* ‘worry’, *angustiar* ‘distress’, and *entristecer* ‘sadden’ are (the complete list of the 170 BP ObjExp verbs analyzed here can be accessed at VerboWeb’s webpage):

- (2) *Acalmar* ‘calm down’, *Alegrar* ‘cheer up’, *Amedrontar* ‘scare’, *aborrecer* ‘annoy’, *Assustar* ‘frighten’, *Comover* ‘move’, *Consolar* ‘comfort’, *Constranger* ‘embarrass’, *Decepcionar* ‘disappoint’, *Deprimir* ‘depress’, *Emocionar* ‘move’, *Encantar* ‘delight’, *Enfezar* ‘infuriate’, *Enfurecer* ‘infuriate’, *Enraivecera* ‘infuriate’, *Entediar* ‘bore’, *Entristecer* ‘sadden’, *Fascinar* ‘fascinate’, *Frustrar* ‘frustrate’, *Horrorizar* ‘horrify’, *Importunar* ‘annoy’, *Impressionar* ‘impress’, *Incomodar* ‘annoy’, *Irritar* ‘annoy’, *Magoar* ‘hurt (feelings)’, *Maravilhar* ‘amaze’, *Oprimir* ‘oppress’, *Perturbar* ‘annoy’, *Reconfortar* ‘comfort’, *Sossegar* ‘calm down’, *Tranquilizar* ‘calm down’

In the vast literature about these verbs, many authors assume that causativity is the reason why ObjExp verbs differ from SubjExp verbs, and it is the factor which determines the realization of the stimulus argument in subject position (Grimshaw, 1990; Croft, 1991; Arad, 1998; Pesetsky, 1995; Pustejovsky, 1995; Iwata, 1995; Pytkänen, 2000; Reinhart, 2001; Biały, 2005; Rozwadowska, 2012; Grafmiller, 2013; Alexiadou and Iordachiaioa, 2014, among others). The basic idea behind a causative analysis is that the stimulus argument causes an emotional state in the experiencer argument. This position goes against proposals such as Belletti and Rizzi’s (1988) unaccusative analysis and Landau’s (2010) locative approach. Some authors (as Alexiadou and Iordachiaioa, 2014) assume that the ObjExp verb class, in relation to their causal structure, defined as a relation between two sub parts temporally distinct, behave just like canonical change of state verbs, as *break*. However, others point out that there is something peculiar about the causal relation established between these verbs’ arguments (Croft, 1993; DiDesidero 1999; Dowty 1991; Iwata 1995; Jackendoff 2007; Pustejovsky 1995). More specifically, other authors associate this causal relation to stativity (Arad 1998; Biały 2005; Pytkänen 1999). Following this path, we suggest that ObjExp verbs in BP present a complex causal structure, but this complex causative structure is stative.

Pylkkänen (2000) argues that state and cause are not incompatible notions in the semantics of a verb. Causative predicates are not an aspectually uniform class, and cannot be associated to accomplishment verbs, as proposed by Dowty (1979) originally. Pylkkänen (2000) argues “that causative predicates are statives when the causally related eventualities described by them are both interpreted as states. The result is a complex state decomposable in two substates”. Confirming Pylkkänen’s (2000) idea, Martin and Schäfer (2014:226) argue that “a causing eventuality need not finish before the caused eventuality starts [...], there is no reason why a causal relation should not be able to hold between two simultaneous states.”

Arad (1998), following Pylkkänen (1997, cited in Arad 1998), proposes that some ObjExp verbs have a stative interpretation, in which a stimulus causes an activation of a mental state, but not a change. This means that the causal relation is established between two states. The causal relation of these verbs is triggered by a stimulus on which the mental state depends to be active; both situations are simultaneous. The author makes an analogy which illustrates very well the situation of an experiencer on the stative reading: imagine someone who is allergic to cats and starts sneezing every time a cat is around. The same occurs when some situation or the thought of it triggers a specific mental state on an experiencer: there is already a mental state inactive which gets activated every time a person perceives or even thinks about this specific situation. From this point of view, there is no change of state in the experiencer, but only the activation of an existent state. Let us illustrate these assumptions with the following schemas, adapted from Arad (1998:5):

(3) a) Eventive causative verbs:

trigger	change of state
----->(indefinite)

b) Stative ObjExp verbs:

perception of stimulus:	_____ stop
mental state:stop

The schemas represent two types of causation: the eventive causation and the stative causation. With eventive verbs, as *break*, illustrated in (3a), there is a trigger which causes a change of state in someone/something. The change happens immediately after the trigger eventuality or action ends; once this change starts, the trigger has no participation in the event anymore. With ObjExp verbs, illustrated in (3b), there is a trigger which activates an existent state in someone simultaneously, that is, this state ceases only when that stimulus stops. There is, thus, an activation of a state, but not a change of state. The type of causation in (3b) is also proposed by Biały (2005:155) for stative ObjExp

verbs in Polish. The author argues that the eventuality denoted by verbs such as *martwić* ‘worry’ is not of the same kind as that of other stative verbs; these verb types describe a causal relation in which the emotion is triggered whenever the causing eventuality is present. He calls this relation “generic causation”.

In addition, we argue that the causing eventuality may not be a state in the real world, but can be a thought inside the experiencer’s mind, so there is a dependency relation between stimulus and experiencer. With these assumptions, we argue that sentences in (1) do not describe changes of state occurring immediately after the son’s departure. The eventuality involving the son could not even have happened, but just the thought about it triggers, not a change of state, but the activation of a psychological state of worry/distress/sadness in the experiencer, every time that she thinks about it. There is no end point or result, but a perception of some stimulus, and this perception triggers some mental state in the experiencer, whenever it takes place. As follows, we provide evidence for this analysis.

One empirical evidence for the stative nature of ObjExp verbs is the possibility of *irrealis* modalization in the stimulus argument. In a causative event, the change of state subevent begins immediately after the causer subevent ceases. Consequently, the causer must refer to an existing entity, a *realis* eventuality, temporally antecedent to the change of state. For that, causer arguments of change of state verbs cannot receive *irrealis* modalizers, as we show in (4). Stimulus arguments of ObjExp verbs, however, can. Thus, they can be *irrealis* eventualities. The modal expressions of possibility in the stimulus argument, shown in (5) and (6), indicate that a causer event did not happen, and just the thought about something is enough to trigger, not a change of state, but the activation of a psychological state of worry/distress/sadness in the experiencer. The stimulus of BP ObjExp verbs, thus, is temporally simultaneous to the mental experience, it is connected to the experiencer, being part of his/her thoughts:

- (4) *A **possibilidade** de cair uma chuva de granizo **quebrou/abriu** as janelas.
the possibility of fall a rain of hail broke opened the windows
- (5) “A **possibilidade** de haver grampo nas linhas telefônicas sempre
the possibility of be tap in.the lines telephone always
preocupou os governos.”
worried the governments
(Linguatca)⁴
‘The possibility of wiretapping telephone lines has always worried governments.’

⁴ Accessible at linguateca.pt/ACDC.

- (6) “E **essa possibilidade** de não ter nem o pouco me **atormenta**,
and this possibility of not have nor the little me torments
me **entristece**.[...]”

me saddens

(Corpus do Português)

‘And this possibility of not having the least torments me, saddens me.’

Furthermore, BP ObjExp verbs do not allow an agentive interpretation, differently from change of state verbs. When a noun originally describing a human is placed in subject position of these sentences, it is metonymically interpreted as some property of that person. For instance, in *o filho preocupou/angustiou/entristeceu a mãe* ‘the son worried/distressed/saddened his mother’, the son is interpreted as some property of him (his health, his behavior, etc.); *o filho* ‘the son’ can never be interpreted as an agent, in this sentence. The non-agentive interpretation can be further verified by the impossibility of these sentences to combine with purpose subordinate clauses.

- (7) *O filho preocupou/angustiou/ entristeceu a mãe para que ela lhe
the son worried anguished saddened the mother to that she you.DAT
desse atenção
give.PST.SBJV attention

Additional evidence for the stative interpretation of the sentences in (1) can be provided by aspectual tests for the classes proposed by Vendler (1967). First, as is well known, states, which lack a final result or telic point, cannot be combined with *in x time* adverbial expressions, but must accept adverbials like *for x times* (Vendler, 1967; Dowty, 1979).

- (8) A partida do filho preocupou/angustiou/ entristeceu a mãe por alguns
the departure of.the son worried distressed saddened the mother for some
*dias/ *em poucos dias.*

days in few days

‘The son’s departure worried / anguished / saddened the mother for a few days.’

As change of state verbs describe telic events, they are naturally compatible with *in x time* adverbial expressions. Thus, the examples in (8) further demonstrate that ObjExp verbs in BP are not change of state verbs. However, this test does not eliminate the possible activity nature of ObjExp

verbs. Rozwadowska and Bondaruk (2019) remark that there is a lot of divergence about stativity tests. The authors argue, following Maienborn (2019), that a most convincing test for non-eventivity is the incompatibility of stative expressions with the predicate *to happen* (*acontecer* in BP). Still, this test also fails with BP ObjExp verbs because the stimulus argument can be a happening, some event in the world, which can be predicated by *to happen* in the test. This fact allows for sentences such as: *a partida do filho preocupou a mãe; isso aconteceu ano passado* ‘the son’s departure worried his mother; this happened last year’, in which the happening is the son’s departure, and not the worriedness of the mother. But, following the idea that a state cannot happen in the world, we propose another test: only eventive verbs can be combined with aspectual expressions which predicate of a situation which is about to happen, and which have scope only over the verb. Examples with accomplishment, achievement and activity verbs with the expression *estar para* ‘to be about to’ are easy to find on Google, but they cannot be found with *preocupar/angustiar/entristecer* ‘worry/distress/sadden’ or even with *amar/detestar* ‘love/hate’, which are proven to be simple states.

- (9) No início do mês, Mark Zuckerberg disse que a rede social **estava para construir** o melhor “jornal personalizado” para seus usuários.
 was to build the best newspaper personalized to its users
 (accomplishment)⁵

‘Earlier this month, Mark Zuckerberg said that the social media was about to build the best personalized newspaper for its users.’

- (10) “O cofundador da Microsoft previu que uma pandemia **estava para chegar.**” (achievement)⁶
 the co-founder of the Microsoft predicted that a pandemic was to arrive

‘Microsoft co-founder predicted a pandemic was about to come.’

- (11) Um ano entretanto passou e ainda **estou para abraçar**
 one year however passed and yet be.1.SG.PRS to hug
 o Bruno Cabral. (activity)⁷
 the Bruno Cabral

‘A year has passed in the meantime and I am still about to hug Bruno Cabral.’

⁵ Found at <https://exame.com/tecnologia/facebook-deve-adotar-hashtags-em-breve-diz-wsj/>. Accessed in Oct 20, 2020.

⁶ Found at <https://www.uol.com.br/tilt/noticias/redacao/2020/08/09/otimista-gates-espera-crise-do-coronavirus-controlada-ate-o-fim-de-2022.htm>. Accessed in Oct 20, 2020.

⁷ Found at <https://www.facebook.com/LuisFilipeBorges/photos/a.401815969853/10158338061934854/?type=3>. Accessed in Oct 20, 2020.

(12) *O rapaz ainda **estava para amar/detestar** a atual namorada.

the boy yet was to love hate the current girlfriend

(13) *A partida do filho **estava para preocupar/angustiar/entristecer** a mãe.

the departure of.the son was to worry distress sadden the mother

Finally, we also provide evidence for the causation relation between the stimulus and experiencer arguments of BP ObjExp verbs. According to Pinker (1989) and Parsons (1990), recurrent paraphrases in recurrent groups of verbs can be considered evidence of the semantic content of these items. As verbs are complex semantic elements (Dowty, 1979; Levin and Rappaport Hovav, 2005; Croft, 2012), their meaning can also be expressed through complex periphrastic expressions. We can associate sentences with ObjExp verbs with causative paraphrases, as in (14):

(14) A partida do filho preocupou/angustiou/ entristeceu a mãe.

the departure of.the son worried distressed saddened the mother

‘The son’s departure worried / anguished / saddened the mother.’

‡ A partida do filho causou a preocupação/a angústia/ a tristeza

the departure of.the son caused the concern the anguish the sadness

da mãe.

of.the mother

‘The son’s departure caused the mother’s concern/ anguish/ sadness.’

Contrastively, the same type of paraphrases is not possible with SubjExp verbs, which do not describe a causal relation between the arguments. A sentence such as *O João ama a Maria* ‘João loves Maria’ does not mean that *a Maria causou o amor do João* ‘Maria caused João’s love’; in this case, Maria is only the target of João’s love.

In conclusion, BP ObjExp verbs describe an eventuality composed of two substates causally related, resulting in a complex state, as proposed by Pylkkänen (1997 cited in Arad, 1998) and Arad (1998). We have given the following evidence for the complex stative nature of BP ObjExp verbs: the modalization of the stimulus argument, the lack of an agent, aspectual tests, and causative paraphrases.

2.2 “Change of state” psych verbs and “psych” change of state verbs

As we have shown in the previous section, BP ObjExp verbs are stative. Some ObjExp verbs, however, 10 verbs out of 170, can also have an eventive reading, with agent (15a) or causer (15b) subjects:

- (15) a) O menino travesso assustou/ amedrontou o cachorro por querer.
the boy mischievous frightened scared the dog for will
‘The mischievous boy intentionally frightened/ scared the dog.’
- b) O disparo da arma assustou/ amedrontou o cachorro.
the firing of.the gun frightened scared the dog
‘The gunfire frightened/ scared the dog.’

In (15a), an agent acts intentionally and causes a change of state in someone or even in some animal; and in (15b), an event causes a change of state in someone or even in some animal. Both sentences describe a causal relation between two subevents not completely simultaneous, in which there is a result subevent immediately following someone’s action or a causer subevent. The result is that the dog gets frightened or scared, temporally after the boy’s action and the gunfire; we could even say that this result is physically perceived on the dog’s facial expression, bodily reaction etc.

Other verbs which behave as *assustar* ‘frighten’ and *amedrontar* ‘scare’ are (the data below are from VerboWeb):

- (16) *acalmar* ‘calm down’, *alegrar* ‘cheer up’, *aporrinhar* ‘annoy’, *atazanar* ‘annoy’, *atemorizar* ‘scare’, *aterrorizar* ‘terrorize’, *consolar* ‘comfort’, *distrair* ‘distract’, *entreter* ‘entertain’, *tranquilizar* ‘calm down’

But, as we have already pointed out, these verbs also have a stative reading, like all other 160 BP ObjExp verbs. In (17), we show an example of *assustar* ‘frighten’ in the stative reading. Note that the stimulus argument is the possibility of a happening, an *irrealis* eventuality, as previously argued, not an actual event. In contrast, (18), a sentence with the same verb in the eventive reading, does not allow the causer argument to be an *irrealis* eventuality, as expected.

- (17) “A perspectiva de uma volta da Guerra Fria, com Jirinovski no poder, **assustou** a perspectiva of a return of.the War Cold with Jirinovski in.the power frightened os Estados Unidos.” (Linguatca)
the States United

‘The prospect of the Cold War comeback, with Jirinovski in power, frightened the United States.’

- (18) *A **possibilidade** da arma disparar **assustou** o cachorro.
the possibility of.the gun fire.INF frightened the dog

In (17), there is no change of state immediately following some causer subevent; the event could not even have happened, but just the thought about it triggers, not a change of state, but the activation of a psychological state of fright, whenever the Americans think about it. It is interesting to note that this activated mental state cannot occur with animals, as in (18). This means that in the stative reading the object must refer to a human being, the only experiencer that can hold a mental state. In the eventive reading, however, the experience seems to be more physical and punctual, which allows the occurrence of an animal as a patient.

Many authors have shown the same type of dual behavior for ObjExp verbs in English (Arad, 1998; Grafmiller, 2013), Finnish (Pylkkänen, 2000), Spanish (Marín and McNally, 2011), Greek and Romanian (Alexiadou and Iordăchioaia, 2014), Polish (Biały, 2005; Rozwadowska, 2012), BP (Cançado, 2012), and others. For instance, in Spanish, Marín and McNally (2011) show examples in which ObjExp verbs appear in stative or agentive interpretations, depending on the case assigned to the object arguments. Verbs assigning dative case are stative, while those assigning accusative case are associated with an agentive interpretation:

- (19) a) Marta lo molesta.
Marta him.ACC bothers
‘Marta (actively) bothers/is bothering him.’
b) El humo le molesta.
the smoke him.DAT bothers
‘The smoke bothers him.’
[Marín and McNally (2011:468)]

Alexiadou and Iordăchioaia (2014) also show that in Greek and Romanian there are some verbs like *enohlise* and *enervat* ‘annoy’, for example, which can have both interpretations: the eventive reading, with agent or causer subjects (as in (20a) and (21a)), and the stative reading (as in (20b) and (21b)). The authors assert that this behavior is due to the ambiguous nature of the aspect of ObjExp verbs.

- (20) a) O Janis/ to pehnidi enohlise ti Maria se deka lepta.
the John/ the game annoyed the Maria in ten minutes
‘John/the game annoyed Mary in ten minutes.’
b) I Maria/ to kurema tis Marias ton enohlise to Jani ja mia ora.
the Maria/the haircut the Mary.GEN him annoyed the John.ACC for an hour
‘Maria/Maria’s haircut annoyed John for an hour.’
- (21) a) Ion/ jocul a enervat-o pe Maria în cinci minute.
John/ game.the has annoyed-her ACC Mary in five minutes
‘John/The game annoyed Mary in five minutes.’
b) Ion/ Freza lui Ion a enervat-o pe Maria timp de o oră.
John/ haircut the.GEN John has annoyed-her ACC Mary time of an hour John
‘John’s haircut annoyed Mary for an hour.’
[Alexiadou and Iordăchioaia (2014:61)]

Finally, Arad (1998) argues that, in English, verbs such as *frighten* may present the eventive reading (with agent or causer subjects), as in (22), and the stative reading, as in (23):

- (22) Nina/ The explosion frightened Laura.
(23) The nuclear war frightened Nina.
[Arad (1998:6)]

The author proposes that these ObjExp verbs have three semantic readings, which correlate with different syntactic structures. As Alexiadou and Iordăchioaia (2014), Arad (1998) assumes that aspectual properties are the set of lexical properties which enable these verbs to appear in these distinct syntactic structures.

Thus, it seems that in many languages some ObjExp verbs have the eventive and stative readings, just like in BP. However, our analysis differs from those for other languages in affirming that all BP ObjExp verbs allow for the stative reading, and only some of them also allow for the eventive reading. Those few ones that allow for the eventive reading behave, in this interpretation, as canonical change of state verbs. As argued for by Arad (1998), ObjExp verbs in their eventive reading lose all their special psychological syntactic behavior. Also, Alexiadou and Iordăchioaia (2014) affirm, for Greek and Romanian, that, in this case, ObjExp verbs occur in the causative alternation, as shown below with BP data:

- (24) a) O menino travesso/ o disparo da arma assustou/ amedrontou o cachorro.
the boy mischievous the firing of.the gun frightened scared the dog
‘The mischievous boy/ the firing of the gun frightened/ scared the dog.’
- b) O cachorro se assustou/ amedrontou.
the dog SE frightened scared
‘The dog got frightened/ scared.’

Going now on the other direction, many BP eventive verbs can also be used in a psychological interpretation:

- (25) a) O menino malvado sufocou o gato.
the boy mischievous suffocated the cat
‘The mischievous boy choked the cat.’
- b) A proteção excessiva da mãe sufocou o filho.
the protection excessive of.the mother suffocated the son
‘His mother’s excessive protection suffocated him.’
- (26) a) O excesso de vinho embriagou o rapaz.
the excess of wine intoxicated the boy
‘The excessive consumption of wine intoxicated the boy.’
- b) A beleza da jovem embriagou o rapaz.
the beauty of.the girl intoxicated the boy
‘The beauty of the young girl intoxicated the boy.’

This phenomenon is pointed out, for instance, by Arad (1989) in English (*shake, agitate, disturb, hit, strike, move, hurt, bother*), and also in French by Ruwet (1972) (*agiter* ‘shake’, *briser* ‘break’, *épater* ‘impress’, *blessar* ‘hurt’, *gêner* ‘hinder’, *heurter*, ‘collide’). Bouchard (1995) goes further, and assumes that any eventive verb can be interpreted as a psych verb, if certain requirements are fulfilled.

Thus, we have the following picture in different languages: few ObjExp verbs may allow for an eventive reading, and many eventive verbs may allow for a psychological reading. Maybe the aspectual ambiguity analysis proposed by Arad (1998) and Alexiadou and Iordăchioaia (2014) can afford for the eventive and stative readings described above. For Arad (1998), for example, change of state and agentivity are the relevant properties for the interface between the lexicon and syntax. ObjExp verbs can present such distinct syntactic structures because of the existence or the absence of these properties. Thus, in her view, the experiencer nature of the argument is not a relevant property

for argument structure. This seems to explain part of the psychological reading of eventive verbs. But, certainly, it cannot explain the very productive metaphorical process behind this phenomenon. It is worth to note that the “ambiguity” presented by eventive verbs in their psychological reading is a very systematic and broad process across languages, motivated by a more general cognitive principle, metaphor. Grafmiller (2013), based on a corpus analysis, shows that verbs from different semantic classes behave similarly to psych verbs, when they get psychological interpretation in proper contexts. The author affirms that there is a very productive tendency for verbs denoting physical activities to be employed metaphorically as psychological states. To assume that so many eventive verbs can present two possible aspectual readings does not seem to be a plausible explanation.

Besides the vast occurrence of this metaphorical process, an aspectual ambiguity proposal cannot account for another intriguing characteristic of ObjExp verbs in BP: the inverse structure in which they all occur, which obligatorily brings both arguments of the verb, experiencer and stimulus. We go into the details of this phenomenon in the following section.

2.3 The inverse form of ObjExp verbs in BP

One interesting phenomenon of BP ObjExp verbs is that they can occur in an inverse structure, with the experiencer in subject position:

- (27) a) A partida do filho preocupou/angustiou/entristeceu a mãe.
the departure of.the son worried distressed saddened the mother
{Stimulus, Experiencer}
‘The son’s departure worried/distressed/saddened his mother.’
- b) A mãe se preocupou/angustiou/entristeceu com a partida do filho.
the mother SE worried distressed saddened with the departure of.the son
{Experiencer, Stimulus}
‘The mother got worried about/ distressed by/sad about her son’s departure.’

This process is very regular and productive: all 170 analyzed verbs, in their stative reading, show the inversion with an experiencer in subject position, and with the stimulus argument in adjunct position, marked by the preposition *com* ‘with’. The reflexive clitic *se*, typical mark of many argument structure inversions and alternations in BP, is also present. But this is not a causative alternation, generally attributed to psych verbs in different languages (Biały, 2005; Alexiadou and Iordăchioaia,

2014), or a lexical ambiguity, as proposed by Pesetsky (1995) for English.

Let us start our analysis with Pesetsky (1995)'s well-known proposal for English. The author, in a fine-grained semantic investigation, describes the difference between SubjExp and ObjExp verbs in terms of semantic roles. The stimulus, generally assumed for both classes, is divided into three basic semantic roles: causer, subject matter and target. He argues that verbs like *worry* establish a causal relation between their arguments, and the first DP in (28) bears a causer thematic role. However, these verbs present an alternated counterpart, in which the experiencer appears in subject position. For the author, *the television set* in (29) bears a subject matter thematic role, and there is a stative interpretation:

(28) The television set worried John. {Causer, Experiencer}

(29) John worried about the television set. {Experiencer, Subject Matter}

[Pesetsky (1995:57)]

In (28), the subject of John's worry might not be the TV set itself, but events related to the TV cause John to worry about other matters. Thus, the first DP of the sentence cannot be the subject matter or the target of the analyzed verb. In (29), otherwise, the DP in subject position is the subject of the emotion. The author argues that the two alternate sentences have different meanings, and, as so, different argument structures. One piece of evidence for this analysis, according to the author, is the distinct truth conditions of these alternate sentences:

(30) The television set worried John, but John did not worry about the television set.
(noncontradiction)

(31) John worried about the television set, but the television set did not worry John. (contradiction)
[adapted from Pesetsky, 1995:59]

The author argues that in (30) it is sufficient that the television set causes John to experience worry, but the subject matter of his thoughts while experiencing worry could have nothing to do with the television set. Assuming that interpretation, (30) is not contradictory. On the other hand, in (31), whenever John thinks about the television set, he activates his worry state. So, it is contradictory to affirm the sentence in (31) because whatever is the nature of John's specific worry, the television set is the subject matter of his emotion.

Alexiadou and Iordăchioaia (2014) argue that in Greek and Romanian ObjExp verbs also have alternated forms. But the alternation is different with the two different types of ObjExp verbs:

eventive and stative. The alternation with eventive ObjExp verbs forms a more frequent alternation than in English, shows morphological marks and has a systematic behavior. Alexiadou and Iordăchioaia (2014) propose that, in these languages, the alternation of eventive ObjExp verbs is a sub-case of the causative alternation, which involves a change of state. Greek regularly uses non-active morphology and realizes causers with the preposition *me* ‘with’ in non-psych and psych verbs’ alternated forms, as in (32). Romanian employs reflexive morphology and the preposition *de la* ‘from’ for causer arguments in the derived form, as in (33).

- (32) a) Ta nea *enohlisan* ti Maria.
the news annoyed.ACT the Mary.ACC
‘The News annoyed Mary.’
b) I Maria *enohlithike* me ta nea.
the Mary annoyed.N.ACT with the news
‘Mary got annoyed with the news.’
- (33) a) Stirile *au enervat-* o pe Maria.
news.the have annoyed-her ACC Mary
‘The News annoyed Mary.’
b) Maria *s-a enervat de la/*de catre* stiri.
Mary REFL-has annoyed of at/*by news
‘Mary got annoyed with/*by the news.’
[Alexiadou and Iordăchioaia, 2014:63]

Still, Alexiadou and Iordăchioaia (2014) argue that stative ObjExp verbs in both languages do not present the causative alternation. The two alternate sentences exist, but, as in English, they propose that this is not an alternation with a change of state, rather, these examples are few idiosyncratic alternate forms that are available in the language. The authors argue that in English alternation pairs are few and do not show a regular pattern. Also, each specific verb appears with a different preposition in the alternated form: *worry about*, *bore with* etc. So, they assume that in English the two forms must be different verbs, and have distinct meanings, as proposed by Pesetsky (1995). In the same way, for stative ObjExp verbs in Greek and Romanian, they note that the object of emotion of an alternated verb is introduced by different markers: in Greek by *de* ‘of’ or *ja* ‘about’, not marking a causer, while in Romanian several prepositions can appear, depending on the verb.

Analyzing now BP ObjExp verbs, we have a different picture from English, and from Greek and Romanian. The phenomenon in this language is very productive in the stative reading: all 170 analyzed verbs show the inverse form. Recalling example (27b):

- (34) A mãe se preocupou/angustiou/ entristeceu com a partida do filho.
 the mother SE worried distressed saddened with the departure of.the son
 {Experiencer, Stimulus}
 ‘The mother got worried/distressed/ sad about her son's departure.’

For BP, Pesetsky's (1995) proposal, the existence of a distinct ObjExp verb for each alternate form, is very hard to be assumed, since all 170 BP ObjExp verbs show a very regular pattern in this process. Moreover, judgments about the inferences proposed by Pesetsky (1995) in (30) and (31), for BP translated examples, are not convergent. Pesetsky (1995) himself points out, in a footnote, that Zubizarreta (1988) argues that these inferences for English are not derived from a specific psych verb property, but are dependent on the type of the argument denoted by the subject matter, e.g. a part/whole relation, not on the psych predicate relations *per se*.

As Alexiadou and Iordăchioaia (2014) propose for Greek and Romanian, we also assume that ObjExp verbs in BP, in the stative reading, do not occur in the causative alternation. Our analysis differs, however, in assuming that the phenomenon is regular, frequent and systematic in BP. Compare the sentences:

- (35) a) O grito da soprano quebrou a taça de cristal.
 the shout of.the soprano broke the glass of crystal
 ‘The soprano's shout broke the crystal glass.’
 b) A taça de cristal (se) quebrou (com o grito da soprano).
 the glass of crystal SE broke with the shout of.the soprano
 ‘The crystal glass broke from the soprano's shout.’
 (36) a) A partida do filho preocupou/angustiou/ entristeceu a mãe.
 the departure of.the son worried distressed saddened the mother
 ‘The son's departure worried/distressed/saddened his mother.’
 b) A mãe se preocupou/angustiou/entristeceu com a partida do filho.
 the mother SE worried distressed saddened with the departure of.the son
 ‘The mother got worried about/ distressed by/ sad about her son's departure.’

In (35) we present an example of the causative alternation; in (36), we show an example of the inversion with ObjExp verbs. Despite similarities in form (the presence of the clitic *se* and the transitive object in subject position), the two phenomena have important distinctions. First, as many authors argue, the intransitive form derived from the causative alternation has no causer argument, (Rappaport Hovav & Levin, 2012, Ruiz de Mendoza, 2013, Rodriguez, 2009, Haspelmath, 1993, Martin & Schäfer, 2014). The causer can only optionally appear in adjunction. In the inverse form of ObjExp verbs, however, the stimulus cannot be omitted. To illustrate this affirmation, we can think about the following scenarios. Imagine you are at your office at the university. A student suddenly enters and says about Ana, another one of your students: “Ana se preocupou” lit. Ana worried. Your immediate reaction would probably be to ask: “Com o quê?” ‘about what?’. In a context where the stimulus is not recoverable, an utterance such as “Ana se preocupou” lacks crucial information. Differently, if the same student suddenly enters your office and says: “Ana se machucou” ‘Ana got hurt’, probably your reaction will be different. You will probably ask where is she and what can you do to help. The utterance “Ana se machucou” (an inchoative form of the causative alternation of the change of state verb *machucar* ‘hurt’) contains all the information required. We assume, thus, that, in (34), there is an inversion of the thematic and syntactic structures of ObjExp verbs, both perspectives maintain the same arguments and the same causative relation.

This difference between the alternation of change of state verbs and the inversion of ObjExp verbs is also shown in the related forms of adjectival and stative passives; change of state verbs cannot occur with the causer argument in these structures, even in adjunction, whereas for ObjExp verbs, the presence of the stimulus is obligatory (if not explicit in syntax, it must be recoverable in near context).

(37) a) *A taça de cristal ficou quebrada com o grito da soprano.

the glass of crystal became broken with the shout of.the soprano

b) *A taça de cristal está quebrada com o grito da soprano.

the glass of crystal is broken with the shout of.the soprano

(38) a) A mãe ficou preocupada/angustiada/entristecida com a partida do filho.

the mother became worried distressed saddened with the departure of.the son

‘The mother got worried/ distressed/sad about/with her son's departure.’

b) A mãe está preocupada/angustiada/entristecida com a partida do filho.

the mother is worried distressed saddened with the departure of.the son

‘The mother is worried about/ distressed by/ sad about her son's departure.’

These facts are validated in a quantitative search in Corpus do Português (Davies, 2016). We have found that, for the seven most frequent ObjExp verbs in the corpus (*angustiar* ‘distress’, *comover* ‘move’, *decepcionar* ‘disappoint’, *deslumbrar* ‘dazzle’, *frustrar* ‘frustrate’, *magoar* ‘hurt’, and *preocupar* ‘worry’), with no possibility of eventive reading, in 67,51% of the times the stimulus argument will appear headed by a preposition in the inverse form. Contrastively, for ten also frequent change of state verbs (*quebrar* ‘break’, *ativar* ‘activate’, *consolidar* ‘reinforce’, *danificar* ‘damage’, *manchar* ‘stain’, *consagrar* ‘establish’, *fechar* ‘close’, *romper* ‘break’, *poluir* ‘pollute’, and *trancar* ‘lock’), the prepositioned causer only occurs in inchoatives 3,88% of times. Also, the few cases of ObjExp verbs’ inverse structures which occur with no PP adjunct in the corpus can be explained by the recoverability of the stimulus in context, such as in the cases below:

- (39) “preocupou-se **em encontrar um homem de Deus para mim**. E não só
worried SE in find a man of God to me and not only
se preocupou, mas encontrou”
SE worried but found
‘He worried about finding a man of God for me. And not only did he worry, but he actually found one.’
- (40) “o Tom Zé riu **com essa história** e não **se aborreceu**, ao contrário do Décio”
the Tom Zé laughed with this story and not SE annoyed to contrary of the Décio
‘Tom Zé laughed at this story and did not get annoyed, unlike Décio’

Thus, we conclude from these data that the inverse form of ObjExp verbs is not the inchoative form of the causative alternation.

A similar proposal is made for Polish by Rozwadowska and Bondaruk (2019) (in opposition to Biały’s 2005 proposal). The authors show that the stative ObjExp verbs (41a) have an alternate form, which present the reflexive clitic *się*, and an obligatory instrumental DP (41b), marked morphologically. When the instrumental DP is missing, the sentence becomes ungrammatical. This DP functions as a complement of these verbs and represents a target or a subject matter, not a causer. As a consequence, the alternate form cannot be the result of a causative alternation. Evidence for that is that the instrumental DP cannot be replaced with *od*-PPs (41c), which is a preposition that typically introduces the causer argument in the inchoative form of change of state verbs:

- (41) a) Matematyka/Maria interesuje Marka
maths-NOM/ Mary-NOM interests-IMPERF Mark-ACC

‘Maths interests Mark.’

- b) Marek interesuje się *(matematyka)/(Maria).
 Mark-NOM interests-imperf REFL *(maths-instr)/(Mary-instr)

‘Mark is interested in maths/in Mary.’

- c) *Marek interesuje się (od matematyki)/(od Marii).
 Mark-NOM interests-IMPERF REFL (from maths) / (from Mary

‘*Mark is interested from maths/from Mary.

[Rozwadowska and Bondaruk, 2019:83]

Another distinction between the inverse form of ObjExp verbs and the inchoative form of the causative alternation relies on aspectual and event structure properties. While inchoatives describe a telic change of state in a patient, without an external force (Rappaport Hovav and Levin, 2012, Ruiz de Mendoza, 2013, Rodriguez, 2009, Haspelmath, 1993, Martin and Schäfer, 2014), the inverse sentences with ObjExp verbs are stative, as we have argued. To demonstrate that, we apply once more the aspectual tests from the previous section. First, in (42), we show that these inverse forms, as states, accept adverbials like *for x times* and cannot be combined with *in x time*; second, we show, in (43), that they cannot accept expressions denoting eminence to happen:

- (42) A mãe se preocupou/ angustiou/ entristeceu com a partida do filho
 the mother SE worried distressed saddened with the departure of.the son
*por muitos dias/ *em muitos segundos.*
 for many days in many seconds

‘The mother got worried about/ distressed by/ sad about her son’s departure for many days.’

- (43) *A mãe estava para se preocupar/angustiar/entristecer com a partida do filho.
 the mother was to SE worry distress sadden with the departure of.the son

At last, we argue that stative ObjExp verbs in BP still entail a causation relation between the stimulus and experiencer arguments in the inverse form. Evidence can be given by the same type of paraphrases presented in the previous section:

- (44) A mãe se preocupou/angustiou/ entristeceu com a partida do filho.
 the mother SE worried distressed saddened with the departure of.the son
 ‘The mother got worried about/ distressed by/ sad about with her son’s departure.’
 †† A partida do filho causou a preocupação/ angústia/ tristeza da mãe.

the departure of.the son caused the worriedness/distress/sadness of.the mother
'The son's departure caused the mother's preoccupation/anguish/sadness.'

Hence, the inverse form of ObjExp verbs in BP describes a complex state, with two substates causally related. Since both forms of ObjExp verbs present the same aspect, and the same thematic roles, this behavior cannot even be captured by aspectual ambiguity proposals, such as Arad's (1998) and Alexiadou and Iordăchioaia's (2014), nor by the idiosyncratic meanings proposed by Pesetsky (1995). The inverse sentences differ from their non-inverse counterparts in the perspective they present for the eventuality: in non-inverse sentences, the eventuality is described from the perspective of the stimulus, and inverse forms the eventuality is described from the point of view of the mental experience, attributing prominence to the experiencer. Consequently, we can conclude that we are dealing with a pragmatic factor.

Summing up, BP ObjExp verbs describe complex states in which a stimulus state activates a mental state in an experiencer. A few of these verbs may also have eventive change of state readings, and many change of state verbs may also have psychological stative readings. Also, all ObjExp verbs appear in an inverse form, with the experiencer in subject position.

As we have mentioned, an aspectual ambiguity analysis does not account for the dual behavior of these verbs. Furthermore, the systematic nature of the inversion in BP presents a problem for current proposals in the literature, which analyze the phenomenon as an idiosyncrasy. Configurational approaches, such as the one proposed by Arad (1989), also do not predict the inverse psych stative perspective in BP, nor the systematic metaphorical process of the psychological reading of many eventive verbs. All these facts suggest that a better approach for the phenomenon would take into account pragmatic and cognitive factors which are relevant for syntax. Therefore, in the next section, inspired by Arad's (1998) initial stative analysis, we propose a constructionist approach to deal with BP data, taking into account pragmatic and cognitive motivations for the processes under investigation.

3 A constructionist proposal for ObjExp verbs in BP

The next sections are dedicated to explaining in further details our account of the behavior of ObjExp verbs in BP, in a constructionist perspective. First, we lay out the theory adopted, The Lexical-Constructional Model, which proposes that subsumption (lexical-constructional integration) is constrained by internal factors (the semantics of verbs and constructions), and external factors (more

general cognitive processes and pragmatics). Second, we propose the form and meaning of the psych argument structure constructions: the psych stative causative construction and the psych stative Exp-inverse construction. ObjExp verbs are naturally integrated into the psych stative causative construction, because of internal factors. The pragmatic prominence of the experiencer (an external pragmatic factor) enables these verbs to be integrated into the psych stative Exp-inverse construction, presenting a re-construal of the eventuality described by the verb. This explains the inversion of ObjExp verbs. Finally, we show that change of state verbs can also be integrated into the psych stative constructions and that ObjExp verbs can be integrated into the causative and inchoative constructions. These lexical constructional integrations are cases of coercion, motivated by metaphor (an external cognitive factor).

As already discussed, the different interpretations of ObjExp verbs and their alternation are normally attributed to aspectual ambiguity, intrinsic meaning distinctions in the lexical items *per se*. But we argue that such proposal cannot explain the systematicity of the PB facts and also the ample occurrence of eventive verbs with a psychological interpretation. Thus, our claim is that the different readings of BP ObjExp verbs and their inverse form are attributable to the argument structure constructions into which they can be integrated. This theoretical standpoint accounts for BP data, explaining the meaning distinctions, the systematicity, and the inversion process, besides providing the cognitive and pragmatic mechanisms which constraint these verb-construction integrations.

3.1 A constructionist account of argument structure

In our account of BP ObjExp verbs, we assume a cognitive/constructional view of language and grammar, and consequently, of argument structure. We follow mainly the Lexical-Constructional Model, or LCM (Ruiz de Mendoza and Mairal, 2008; Mairal and Ruiz de Mendoza, 2009; Ruiz de Mendoza, 2013; Cervel, 2015; Ruiz de Mendoza and Miró, 2019). We choose this model because the LCM is a theory of construction grammar, which offers a series of conditions for the integration of verb and argument structure constructions. The LCM differs from other constructionist accounts in recognizing the complexity of verb meaning and its important role in this integration and in the meaning of the sentence as a whole. This theory provides a more complex analysis of the verb and different levels of constraints for lexical-construction integration. Differently from Goldberg (1995), for instance, which is concerned with finding the conditions an argument structure construction imposes on a verb, the LCM investigates the role of verbs in this integration. Since we are dealing with verb classes and the possible integration of these verbs into argument structure constructions, through distinct processes, this is the adequate theory for the analysis of our data.

In the LCM, along with many cognitive constructionist theories (Fillmore et al. 2003; Goldberg, 1995, 2006; Croft, 2012; Langacker, 2008), a construction is defined as a form-meaning (function) pairing, “where form affords access to meaning and meaning is realized by form” (Ruiz de Mendoza, 2013:238). Constructions are recognized when they are replicable in the language, which means that they have become entrenched in the speaker’s mind. In this view, argument structure is also constructional and argument structure constructions are thus form-meaning pairings of this type, where the form is regarded as the structure of a sentence in terms of distribution of arguments in syntactic functions and the meaning is the description of an event structure (Goldberg, 1995; Croft, 2012, Ruiz de Mendoza, 2013, Kalm et al. 2019).

Argument structure constructions are the backbones of the sentences, which are formed by the combination of verbs and other lexical items through argument structure constructional meaning. Verbs are projected into syntax through argument structure constructions. According to Ruiz de Mendoza (2013), full formal language expression requires, as a first step, subsumption of a verbal predicate into an argument structure construction. But subsumption (the lexical-constructional integration) is a constrained process. Since Fillmore’s (1970) first findings, in Lexical Semantics literature, many works have been dedicated to explaining why some verbs are or not allowed in some types of argument structure constructions, viewed as types of argument structure alternations (Pinker, 1989; Levin, 1993; Levin and Rappaport Hovav, 2005).

In light of these assumptions, the LCM proposes that there are both internal and external constraints which regulate subsumption. Internal constraints are related to the conceptual structure and inherent meaning of verbs and constructions. And external constraints are related to more general cognitive principles, such as metaphor and metonymy, and pragmatics, such as the prominence of an eventuality participant.

According to Ruiz de Mendoza (2013) and Kalm et al. (2019), verbs and argument structure constructions are made up of the same type of event structure elements. Thus, considering only internal factors, subsumption occurs when the lexical-semantic meaning of the verb is entirely compatible with the meaning of the construction, and both “match”. The integration of verbs into argument structure constructions may occur through the identification of lexical and constructional features, when verb and argument structure construction describe the same event structure, with equal number of verb participants and argument structure arguments. In this case, there is conceptual compatibility, verb and argument structure construction are directly compatible.

We can illustrate these postulates with a classic example: the causative construction. The causative construction is well described in the literature for many languages and constitutes the prototype of event conceptualization (Talmy, 1988; Croft 1991), the “billiard-ball” model of event

construal (Langacker, 1990). In BP the causative construction has a transitive form, with two arguments, agent/causer and patient, and describes a causal relation between them, or between two subevents which contain them. Based on Goldberg (2013), we propose that the causative construction can be represented as in (45). The first line of the representation relates form (syntactic functions) with the argument semantic labels; the second line expresses the event structure described by the construction, the third and last line expresses the nature of the event structure described by the V element in the construction:

(45) CAUSATIVE CONSTRUCTION

$$\left\{ \begin{array}{lll} \text{SUBJ}_{\text{Causer/Agent}} & \text{V} & \text{OBJ}_{\text{Patient}} \\ \text{EVENT} & \text{CAUSE} & \text{EVENT} \\ \text{V}_{\text{Change of state}} & & \end{array} \right\}$$

It is also well established in the literature that some verbs are lexically causative (Fillmore, 1970; Levin, 1993; Goldberg, 2013; Ruiz de Mendoza, 2013, Kalm et al. 2019). The well-known change of state verbs construe the event they describe in the same way as the causative construction. These verbs describe the most prototypical event, one in which an agent or causer causes a change of state in a patient participant. In BP these verbs constitute by far the larger class in the language, with over 460 verbs listed in VerboWeb.

(46) a) *change of state* v: {Causer/Agent, Patient}

b) *change of state* v: [[X ACT (volition)] CAUSE [BECOME [Y <STATE>]]]

(adapted from Cançado et al., 2017)

Change of state verbs are, thus, integrated naturally into the causative construction, for there is full conceptual compatibility between verb and argument structure construction, as in the example below:

(47) A soprano quebrou a taça de cristal.

the soprano broke the glass of crystal

‘The soprano broke the crystal glass.’

(Cançado et al., 2017)

As is well known, however, change of state verbs also occur in other argument structure constructions. Kalm et al. (2019) argue that an eventuality described by a verb can have more than one construal, depending on the available argument structure constructions. One example is the inchoative construction. For Ruiz de Mendoza and Miró (2019), in the inchoative construction, the situation described by change of state verbs is construed as if the patient is responsible for the change of state, without external intervention. This gives rise to the causative-inchoative alternation (Fillmore, 1970; Lakoff, 1970; Levin and Rappaport Hovav, 1995), a typical property of these verbs.

(48) INCHOATIVE CONSTRUCTION

$$\left\{ \begin{array}{l} \text{SUBJ}_{\text{Patient}} (se) V \\ \text{EVENT} \\ V_{\text{Change of state}} \end{array} \right\}$$

(49) A taça de cristal (se) quebrou.

the glass of crystal SE broke

‘The crystal glass broke.’

[Cançado et al., 2017]

In constructionist approaches, so-called “alternations” result from the possibility of a single verb to be integrated into related, but different, argument structure constructions (Goldberg, 1995, 2013; Croft, 2012; Ruiz de Mendoza and Mairal, 2011). In some cases, argument structure constructions describe only part of the event structure described by the verb (Kalm et al., 2019) and verbs are “adapted” to fit the construction. In the case of the inchoative construction, Ruiz de Mendoza (2013) argues that a re-construal takes place. The inchoative construction presents a different perspective of the event structure described by the verb, and also deprofiles one of the verbal event participants. Re-construal, differently from entire conceptual compatibility, occurs when the construction presents a different type of construal for the same eventuality described by the verb in its lexical meaning. External constraints go into work in this type of subsumption. Rodríguez (2009) argues that the inchoative construction is possible with change of state verbs through a metonymy of the type RESULT for ACTION. Pragmatic factors also take part in this process, since inchoatives are only possible in contexts where the agent/causer participant is unknown, not relevant, or is even intentionally omitted by the speaker (Rappaport Hovav, 2014; Levin, 2015).

Furthermore, in some other cases of the subsumption process, the constructional meaning can be imposed on the lexical item; this is known in the literature as coercion (Goldberg, 1995; Michaelis, 2006) and is one of the main arguments for a constructionist approach to language. Coercion takes

place in argument structure when there is a “mismatch” between the event structure described by the verb and the event structure described by the argument structure construction, and constructional meaning is imposed over lexical meaning. Coercion occurs, for example, when an intransitive activity verb is integrated into the causative construction. The verb describes a simple one-participant activity event, but the construction has two arguments and describes a causal relation between them:

- (50) “Novo líder de Bolsonaro na Câmara é aquele que casou a filha debaixo
 new leader of Bolsonaro in.the Chamber is that.one which married the daughter under
 da chuva de ovos.”⁸
 of.the rain of eggs
 ‘Bolsonaro’s new leader in the House of Representatives is the one who married his daughter
 while being egged.’

Lexical classes and verb meaning cannot entirely predict this process; we cannot affirm that all verbs of the *casar* ‘marry’ type can be integrated into the causative construction. Thus, external factors, cognitive and pragmatic, are responsible for this type of subsumption. In (50), the event structures of verb and construction are not even partly compatible, but we know from experience that parents generally help their children to get married, providing financial assistance for the ceremony and other kinds of support. Thus, it seems that the event can be construed as a causative event, in which the parent (construed as an agent) causes the son or daughter (construed as a patient) to be married. The verb meaning, however, is not completely surpassed. In the example, this fact can be observed in the agentive features that still resist in the patient argument (the agentive participant in the event structure described by the verb). The agentivity of the argument construed as a patient can be evidenced in the well-known *what x did was* test of Jackendoff (1972). Both sentences in (51) could be applied to the situation in (50).

- (51) a) O que ele fez foi casar a filha.
 the what he did was marry the daughter
 ‘What he did was provide means for his daughter to get married.’
 b) O que a filha fez foi casar.
 the what the daughter did was marry
 ‘What the daughter did was get married.’

⁸ Found at <https://www.diariodocentrodomundo.com.br/essencial/novo-lider-de-bolsonaro-na-camara-e-aquele-que-casou-a-filha-debaixo-da-chuva-de-ovos/>. Accessed in Oct 20, 2020.

In our analysis of ObjExp verbs in BP, we adopt the LCM, assuming that the conceptual structure of verbs, lexical classes and constructions are constraints on lexical-constructional integration, together with a set of other external factors, in different levels. In the next section, we go into the details of the psych stative causative and psych stative Exp-inverse constructions. We show their formal and functional properties, and how the processes of subsumption integrate types of verbs into these constructions (via conceptual compatibility, re-construal, and coercion). We follow the LCM path and we stipulate different types of constraints imposed on lexical-construction integration, specifically for the psych stative constructions.

3.2 The psych stative causative construction and the psych stative Exp-inverse construction

BP ObjExp verbs have a stative reading, as shown in Section 2. In a constructionist account of argument structure, we propose that this reading emerges when ObjExp verbs are integrated into the psych stative causative construction. Recall example (1) below:

- (52) A partida do filho preocupou/angustiou/ entristeceu a mãe.
 the departure of.the son worried distressed saddened the mother
 ‘The son’s departure worried/distressed/saddened his mother.’

As already described, the sentence in (52) is interpreted as the thought about the son’s departure activating an existent mental state of worry/distress/sadness in his mother. There is no change of state immediately following some action or causer event. The sentence presented in (52), thus, is not an instance of the causative construction, despite the similarity in form and despite maintaining the same causal construal. We propose that the utterance is an instance of a different construction: the psych stative causative construction. This is a transitive causative construction, as the causative construction, but it describes a stative situation.

Following Arad’s (1998) first insights, although assuming a different theoretical perspective, we propose that the psych stative causative construction describes a causal relation between two states, or two substates, in a complex state (generally without physically apparent effects). As Pylkänen (1997 apud Arad 1998) argues, the experiencer perceives some stimulus, and this perception activates a mental state, whenever it takes place. Or as Arad (1998) explains, the causation in these verbs is brought about by the dependency held by the mental state in relation to a stimulus; both are

simultaneous in time. We illustrate this semantics, once more, with the following schema, adapted from Arad (1989:5):

(53) perception of stimulus: _____ stop
 mental state:stop

The schema in (53) represents the type of causation, the event structure, described by the psych stative causative construction. In this construction there is a stimulus which activates an existent mental state in an experiencer, simultaneously, that is, the mental state ceases when the stimulus stops. Our analysis leads us to consider the semantic pole of the psych stative causative construction as a kind of complex stative psychological eventuality, in which a mental state holds in the experiencer argument while a stimulus state is active, simultaneously. The construction can be represented as follows:

(54) PSYCH STATIVE CAUSATIVE CONSTRUCTION

SUBJ _{Stimulus}	V	OBJ _{Exp}
STATE	CAUSE	STATE
V _{Activation of psych state}		

As we have already described, ObjExp verbs in BP denote the same type of event structure that is represented in (53) and (54). Thus, for subsumption to take place, through conceptual compatibility, the verb must be an ObjExp verb, as we represent in the structure of the construction in (54). Consequently, all ObjExp verbs can be directly integrated into the psych stative causative construction, by means of internal constraints, that is, the compatibility of the event structure described by both verb and construction.

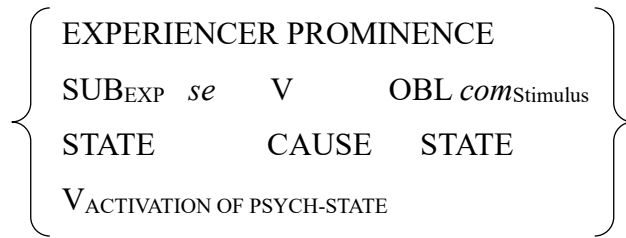
But one more issue remains regarding the argument structure of ObjExp verbs: the inversion process, as we have shown in Section 2.

(55) A mãe se preocupou/angustiou/entristeceu com a partida do filho.
 the mother SE worried distressed saddened with the departure of.the son
 ‘The mother got worried about/ distressed by/ sad about her son’s departure.’

As we have demonstrated, this process is not an alternation of the causative-inchoative type. Thus, we propose that the inverse form of ObjExp verbs arises when these lexical items are integrated

into the psych stative Exp-inverse construction. In formal terms, the construction presents subject, the clitic *se*, verb, and a prepositional phrase headed by *com* ‘with’. Semantically, there are two arguments, experiencer and stimulus, and a stative reading. The experiencer holds a mental state activated by the stimulus, and the construction describes a situation in which two substates are causally related. Differently from the psych stative causative construction, the psych stative Exp-inverse construction highlights the experiencer’s mental state, in a re-construal of the event described by the verb, without missing any participants. The construction can be represented as follows:

(56) PSYCH STATIVE EXP-INVERSE CONSTRUCTION



In the representation above, besides the functions and roles of the arguments, the general event structure, and the nature of the event structure described by V, we add the discursive-pragmatic element EXPERIENCER PROMINENCE. The psychological event structure of both verb and constructions (with experiencer and stimulus) can be seen as internal factors for subsumption in this case; all ObjExp verbs can be integrated into the psych stative Exp-inverse construction. The difference between both constructions, (54) and (56), lies in the syntactic organization (since there is no deprofiling process, and the event and thematic structures are the same). To motivate this construction, we assume that discourse may have a role in argument structure constructions, which present alternate options for highlighting participants (Langacker, 2008). Thus, an external factor also comes into play in the integration of ObjExp verbs into the psych stative Exp-inverse construction: the pragmatic prominence of the experiencer. The psych stative Exp-inverse construction re-construes the event structure described by the ObjExp verb, attributing prominence to the experiencer participant.

We assume here the relational view of prominence, as proposed by von Heusinger and Schumacher (2019). Prominence of a participant in relation to another in discourse is coded in the construction with the syntactic prominence of the subject argument. As many authors have proposed in the literature, pragmatically more prominent participants tend to occupy the subject position in the sentence (Chafe 1976; DeLancey 1981, 1987; Talmy, 1985; Givón 1983, 1990, 1992; Hopper and Thompson 1980; Langacker 2006; Marín-Arrese 2009; Thompson 1987; among others). Some specific features of participants are responsible for their prominence. First, humans tend to be more

cognitively salient than abstract and inanimate entities (Langacker, 1993; Kövecses and Radden, 1998). Also, real eventualities are more salient than virtual ones (Langacker, 2008). Besides, according to Verhoeven (2014), to be in a psychological state is also an important feature for prominent participants. Experiencers are, consequently, strong candidates for pragmatic prominence in relation to the stimulus participant.

Thus, we argue that being an experiencer is a relevant characteristic for syntactic configuration, contrarily to Arad's (1998) assumption. According to Croft (2012) and Croft et al. (2018), the experiencer is not a passive participant. It is someone who is able to intentionally direct his/her attention to the stimulus. Croft (2012) argues that the variation in argument structure of psych verbs results from this bidirectionality. The psychological state may be construed as the stimulus as the activator of the mental state or as the experiencer directing mental attention to the stimulus. The author claims that the subject experiencer form is associated with more control on the part of the experiencer: "a person is assumed to be able to control an event in which s/he is involved, even if the event affects that person" (Croft, 2012, p. 265). Kövecses (2008) also argues that experiencers have some type of control over their emotions.

Interestingly, in a search on Corpus do Português (Davies, 2016), we found that the seven most frequent ObjExp verbs (the same we have investigated in Section 2.3) occur only 17,35% of the time in instances of the psych stative causative construction, while 82,65% of the time they occur in instances of the psych stative Exp-inverse construction (average frequency, considering all seven verbs: *angustiar* 'distress', *comover* 'move', *decepcionar* 'disappoint', *deshumbrar* 'dazzle', *frustrar* 'frustrate', *magoar* 'hurt', and *preocupar* 'worry'). We may hypothesize from this result that, in comparison to the stimuli, experiencers have more "agentive" properties (are conscious entities, with control over their emotions), which grants them the possibility of pragmatic prominence.

However, even if the experiencer subject in the current BP data is most frequent, the morphosyntactic marks *se* and *com* indicate that the construction in (56) is an inversion type of reconstrual of the event structure described by the verb. *Se* is originally a reflexive marker in the language (Lima, 2006), and, although it has a number of different functions, such as marking reflexives, middles and inchoatives (Haspelmath, 1993; Lima, 2006; Cançado and Amaral, 2016), it indicates that the marked construction is an inversion of the original event structure organization. Croft (1991, 2012) argues that prepositions equivalent to *com* mark the Antecedent Oblique, a participant which causally precedes the transitive object in the causal chain. These marks are also additional evidence of the causative nature of both types of psych stative constructions.

3.3 “Change of state” psych-verbs and “psych” change of state verbs: an explanation

Additional evidence for the existence of the psych stative constructions proposed here relies on the fact that several verbs may be coerced by them. As we have pointed out in Section 2, many eventive verbs, in less prototypical uses, systematically allow a stative psychological interpretation. Recall the examples in (25) and (26):

- (57) a) A proteção excessiva da mãe sufocou o filho.
the protection excessive of.the mother suffocated the son
‘His mother’s excessive protection suffocated him.’
b) A beleza da jovem embriagou o rapaz.
the beauty of.the young intoxicated the boy
‘The beauty of the young girl intoxicated the boy.’
- (58) a) O filho se sufocou com a proteção excessiva da mãe.
the son SE suffocated with the protection excessive of.the mother
‘He was suffocated by his mother’s excessive protection.’
b) O rapaz se embriagou com a beleza da jovem.
the boy SE intoxicated with the beauty of.the young.
‘The boy was intoxicated by young girl’s beauty.’

To explain these cases, we propose that (57) and (58) are also instances of the psych stative causative construction (in a) and the psych stative Exp-inverse construction (in b). But subsumption does not result from conceptual compatibility. Change of state verbs occur in psych stative constructions, acquiring a metaphoric psychological interpretation through coercion. In this case, the causation relation between subevents (agent/causer and patient), described by the verb, is metaphorically construed as a causation relation between substates (stimulus and experiencer). Metaphor is a coercing element that licenses lexical-constructional subsumption, as proposed by the LCM. Kövecses (2008) proposes the metaphor EMOTION IS A PHYSICAL FORCE as an instantiation of the prototypical force-dynamic causative event construal. Bouchard (1995) and Ruwet (1972), for French, and Arad (1998) and Levin and Grafmiller (2013), for English, already note that a change of state verb, given the adequate context, can be interpreted as a psychological verb.

Through a similar metaphorical process, coercion can also explain the reverse occurrence: an ObjExp verb acquiring a change of state meaning, in the causative and inchoative constructions:

(59) a) O bandido assustou o cachorro.

the thug frighten the dog

‘The thug frighten the dog.’

b) O cachorro se assustou.

the dog SE frighten

‘The dog got frightened.’

Most ObjExp verbs, such as *preocupar* ‘worry’, can only occur in psych stative constructions (only allowing the stative reading). However, some ObjExp verbs (10 out of 170 verbs in BP), as in (57)-(58), can have a more physical interpretation. We argue that this interpretation is the result of coercion, when these verbs are integrated into the causative construction, or even into the inchoative construction. In the case of the causative construction, the causation relation between substates (stimulus and experiencer), described by the verb, is metaphorically construed as a causation relation between subevents (agent/causer and patient). In the inchoative construction, the causation relation between substates (stimulus and experiencer), described by the verb, is metaphorically construed as a change of a state in a patient. In both cases, despite the frightening being a mental change, it is physically perceived, as we can observe in the dog’s body a physical expression of the result (note that animals cannot be experiencers in psych stative constructions). Subsumption is allowed by an external cognitive process, metaphor.

To explain why change of state verbs regularly occur in the psych stative constructions, and only few ObjExp verbs occur in the causative and inchoative constructions, we shall remark that metaphorical processes are asymmetrical (Lakoff and Johnson, 1980; Croft and Cruse, 2009; Kövecses, 2008), and, also, in the metaphorical mapping, the source domain is typically a more concrete domain than the target domain (Lakoff and Johnson, 1980; Kövecses, 1999). Thus, we can argue that metaphors from the physical domain to the psychological domain are expected to be more regular and productive, and a metaphorical process in the opposite direction is much rarer. This is reflected in BP data: only 10 ObjExp verbs allow a change of state reading, and these ones allow a physical expression of the mental state, which seems to enable the metaphorical process.

To sum up, in this section, we have detailed a constructionist account of the behavior of ObjExp verbs in BP. We have proposed two argument structure constructions, the psych stative constructions, to account for the stative readings of sentences with these verbs and also the inversion process. And we also established the internal and external constraints for lexical-constructional integration (via conceptual compatibility, and re-construal). Additionally, we provided a

constructionist explanation for the eventive reading of ObjExp verbs and the psych reading of change of state verbs in terms of coercion motivated by metaphor.

4 Final considerations

In this study, we have analyzed 170 BP ObjExp verbs, based on a large BP verb database (VerboWeb). We have claimed that these verbs describe complex states in which a stimulus activates a mental state in an experiencer. A few of these verbs may also have eventive change of state readings, and many change of state verbs in the language may also have psychological stative readings. Also, all ObjExp verbs appear in an inverse form, with the experiencer in subject position, and the stimulus headed by *com* ‘with’.

In order to explain the behavior of BP ObjExp verbs, we adopted the Lexical-Constructional Model, a constructional approach to argument structure. We have argued that the different readings of BP ObjExp verbs and their inverse form derive from the integration of these verbs into certain types of argument structure constructions. In this perspective, ObjExp verbs are naturally integrated into the psych stative causative construction, because of conceptual compatibility. The pragmatic prominence of the experiencer (an external pragmatic factor) enables these verbs to be integrated into the psych stative Exp-inverse construction, presenting a re-construal of the eventuality described by the verb. Change of state verbs can also be integrated into the psych stative constructions and a few ObjExp verbs can be integrated into the causative and inchoative constructions. These lexical-constructional integrations are cases of coercion, motivated by metaphor.

The constructionist account suggested here explains both readings of ObjExp verbs, and accommodates different syntactic forms in which those verbs appear. This approach also accounts for the systematicity of the inversion process in BP and the systematic occurrence of the psychological reading of change of state verbs. A final advantage of a constructionist approach is that it allows the phenomena under investigation to be analyzed as functionally motivated, as a constructionist theory predicts discourse-pragmatic and cognitive constraints for lexical-constructional integration. We believe that this account, although focused on verbs and constructions of BP, might shed light on the long-standing debate about the behavior of ObjExp verbs in other languages.

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