Origins and development of adjectival passives in Spanish: A corpus study

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Abstract

So far it has been assumed that most uses of Spanish estar ‘be.LOC’ arise some time later than ser ‘be’, and that the former eventually takes over most uses of the latter. Previous analyses of change in estar claim that this verb generalizes its usage as a result of some reanalysis or grammaticalization change, presumably taking over result state and locative uses of ser (see, for example Pountain (1985)). In this paper we want to go one step further and investigate the questions of how adjectival passive estar + participle emerges in Old Spanish, and how it extends its usage taking over ser, based on the empirical analysis of data coming from a large corpus of Spanish containing texts from the 12th to the 20th century. In this paper we propose that the first and more frequent uses of estar determine the way the participial construction emerges and further extends taking over ser, and that the language change mechanism which drives this development is analogy. Specifically, we argue that this development is driven by the analogical relations established between participles appearing with this verb and locative prepositional modifiers.

Keywords: Analogy, Copula, Language change, Locative, Adjectival Passives

1 Introduction

This paper addresses the origins and development of adjectival passives expressed by estar ‘be.LOC’ plus past participles (estar + PP) in Spanish. Although nowadays this participial construction forms adjectival passives with a large subset of predicates, historical and synchronic evidence indicate that this situation has only
gradually arisen over the past centuries. In the earliest centuries *estar* + PP shared the passive domain with *ser* ‘be’ in combination with past participles (*ser* + PP), which in Modern Contemporary Spanish expresses verbal passives. Diachronic developments since then have created a two-way passive system analogous with other Indo-European languages, such as Greek, German or Hebrew.

Besides the passive domain, there were other contexts, such as individual-level (IL) and stage-level (SL) adjectives and locative sentences, also shared by both verbs in the earliest centuries. Batllori and Roca (2011) state that *ser* is the only auxiliar verb attested in 12th-century Old Spanish for both verbal and adjectival passives, (1), and IL and SL adjectives, (2). Adjectives only combine with *ser* (and certain forms of *sedere* ‘sit’), but not with *estar.*

(1)  
| a.   | Esso fue apriessa hecho (Cid, v. 1506) |
| b.   | Moros en paz, ca escripta es la carta. (Cid, v. 527) |

‘This was made quickly’
‘The Moorish (are) peaceful, because the letter is already written’

(2)  
| a.   | Longinos era ciego, que nuquas vio alguandre (Cid, v. 352) |
| b.   | canssados son de ferir ellos amos ados (Cid, v. 2745) |

‘Longinos was blind, since he never saw anybody’
‘They are both tired of hurting...’

However, already in the 13th century, both *ser* and *estar* are possible in adjectival passives, compare (3-a) and (3-b).

(3)  
| a.   | El libro es acabado (Calila e Dimma: 355) |
| b.   | et está ligado de su onbligo (Calila e Dimma: 117) |

‘The book is (already) finished’
‘And he is tied up by his navel’

Similarly, in addition to *ser*, *estar* is already attested with SL adjectives in the 13th century. Sometimes it is even the same adjective which is found with both copulas, see (4-a) with *ser* and (4-b) and (4-c) with *estar*.

(4)  
| a.   | et por qué eres triste [et] demudado (Calila e Dimma: 286) |
| b.   | ¿por qué estás demudada? (Calila e Dimma: 353) |
| c.   | ¿por qué estás triste? (Calila e Dimma: 177) |

‘and why are you sad and upset?’
‘why are you upset?’
‘why are you sad?’

In locative sentences, both *ser* and *estar* are also found since the earliest cen-

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1 Examples (1-7) are taken from Batllori and Roca (2011).
turies, (5).

(5)  a. Hya salieron al campo do eran los moiones (Çid, v. 3588)
    ‘They already went to the field, where the boundary stones were’
  b. Aqui esta con myo Çid el obispo don Iheronimo (Çid, v. 2512)
    ‘Here he is with myo Çid, the bishop Mister Iheronimo’

The two copulas also coexist in locative sentences in the 13th century. This
coexistence is specially clear in sentences where the predicate is exactly the same,
as in (6).

(6)  a. et el cañó era del pozo cerca (Calila e Dimna: 111)
    ‘and the spout was near the well’
  b. el cañó que está cerca del pozo (Calila e Dimna: 111)
    ‘The spout was near the well’

Interestingly, Batllori and Roca (2011) do not found examples of the progres-
sive periphrasis with ser. In progressive sentences, only estar (as in Modern
Contemporary Spanish) and certain forms of sedere are attested in the earliest
centuries, (7).

(7)  a. Myo Çid don Rodrigo en València esta folgando (Çid, v. 2090)
    ‘Myo Çid Mister Rodrigo is being at leisure in Valencia’
  b. Ala puerta dela eclegia sediellos sperando (Çid, v. 2239)
    ‘He was waiting for them at the church door’

The scenario as just described is summarised in Table 1 (adapted from Table
4 in Batllori and Roca (2011)). From this table it is clear that estar is taking over
ser from the 13th century in adjectival and passive sentences, whereas estar was
already common with locatives (albeit never outnumbering ser) since the earliest
centuries.

Previous analyses of change in estar claim that the participial construction
formed with this verb generalizes its usage as a result of some reanalysis or gram-
maticalization change, presumably taking over result state and locative uses of ser
‘be’; see, for example, Bouzet (1953), Mendeloff (1964), Pountain (1985) and,
more recently, Batllori and Roca (2011).

More generally, the origins and development of passives and copulas have
been explored in typological or crosslinguistic studies; see Haspelmath (1990),
Heine and Kuteva (2002) and McWhorter (1994), among others. Despite the fact
that the development of participial morphology remains a mistery, the change of
verbs describing sitting or staying to copular functions is well documented. Heine
and Kuteva (2002) document this change in Latin, and also in the Indonesian
language Imonda, the African Creole language Sango and the Australian language
Table 1: Uses of *ser*, *estar* and *SEDERE* in Old Spanish. Table adapted from Batllori and Roca (2011).

<table>
<thead>
<tr>
<th>Type of sentence</th>
<th>Verb used</th>
<th>12th century</th>
<th>13th century</th>
</tr>
</thead>
<tbody>
<tr>
<td>Copulative</td>
<td>Individual-level</td>
<td><em>ser/SEDERE</em></td>
<td><em>ser</em></td>
</tr>
<tr>
<td></td>
<td>Stage-level</td>
<td><em>ser</em></td>
<td><em>ser/estar</em></td>
</tr>
<tr>
<td>Locative</td>
<td></td>
<td><em>estar/ser</em></td>
<td><em>estar/ser</em></td>
</tr>
<tr>
<td>Passive</td>
<td></td>
<td><em>ser</em></td>
<td><em>ser/estar</em></td>
</tr>
<tr>
<td>Progressive gerund</td>
<td></td>
<td><em>estar/SEDERE</em></td>
<td><em>estar</em></td>
</tr>
</tbody>
</table>

Jiwarli (see also Coromines (1954), Seiler (1985), Thornell (1997) and Austin (1998), respectively, for the original sources).

In this paper we explore the origins and development of adjectival passive *estar* + PP in Spanish. We argue that the first and more frequent uses of *estar* determine the way the participial construction emerges and further extends taking over *ser*, and that the language change mechanism which drives this development is analogy. Specifically, we argue that this development is driven by the analogical relations established between participles appearing with this verb and locative prepositional modifiers. We provide corpus evidence for these ideas coming from a large diachronic corpus of Spanish, which will allow us to explore the complete period of development from the 12th to the 20th century.

The paper is structured as follows. Section 2 describes the realization of adjectival passives in Old and Modern Contemporary Spanish as well as other uses of *estar* and illustrates this with examples from the corpus. After presenting the corpus in Section 3, Section 4 presents quantitative evidence from the corpus about the development of adjectival passives. Section 5 introduces the theoretical account and, finally, Section 6 concludes.

## 2 The point of departure

### 2.1 Passives in Modern Contemporary Spanish

In Modern Contemporary Spanish (MCSp), roughly from the 20th century until now, adjectival passives are expressed by the copula *estar* in combination with the past participle. An example of an adjectival passive in MCSp is found in (8),
which describes the result state (están escritas) involving an entity coded as the subject (todas sus leyes).

(8) Esta asociación posee una jerga particular, no comprendida por otro mortal alguno, y en ella están escritas todas sus leyes. ‘This association has a special jargon, which is not understood by any other human, and its laws are written in this language.’ (Lexesp)

Sentence (9) illustrates the verbal passive in Modern Spanish. The verbal passive interpretation of this sentence is clear from the use of an agentive by-phrase (por el asesino de Cuéllar) and from the fact that the subject is a patient (Jiménez). The fact that there is an active sentence with the same meaning as well (El asesino de Cuéllar asesinó brutalmente a Jiménez ‘The Cuéllar killer brutally murdered Jiménez’) further confirms this analysis.

(9) Jiménez fue brutalmente asesinado por el asesino de Cuéllar. ‘Jiménez was brutally murdered by the Cuéllar killer.’ (Lexesp)

Adjectival passives can also appear with event-related modifiers, such as by-phrases, instruments and other adverbials, but they are different from event-related modifiers combining with verbal passives (Gehrke and Sánchez Marco, submitted). In particular in the case of by-phrases, with verbal passives we find more strongly referential nominals (e.g. proper names, pronouns, demonstratives, regular definites), whereas with adjectival passives, we mainly find weakly or non-referential nominals (e.g. indefinites, bare nominals, weak and generic definites); see for example (10).

(10) El régimen está aceptado por millones de ciudadanos. ‘The regime is accepted by millions of citizens.’

The striking fact is that some examples suggest a different division of labour at the beginning of the 20th century. Corpus data shows that as recently as at the beginning of the 20th century estar + PP could also appear in contexts where the verbal passive interpretation seems more logical. See, for example, (11) ((36) in Gehrke and Sánchez Marco (submitted)), where the complement of the by-phrase is a proper noun, as it is common in verbal passives, and the adverbial con cuidado ‘carefully’ describes how the folding of the clothes was done.
(11) En un antiguo arcón de madera [...] [las ropas] estaban dobladas in an old chest of wood [...] the clothes wereLOC folded con cuidado por Margalida. with care by Margalida
‘The clothes, in an old wooden chest, were carefully folded up by Margalida.’ (Los muertos mandan, Blasco Ibáñez, 1908)

This example would nowadays be expressed by a verbal passive (12) ((37) in Gehrke and Sánchez Marco (submitted)), whereas the adjectival passive would be ungrammatical.

(12) Las ropas fueron dobladas con cuidado por Margalida. the clothes were folded with care by Margalida
‘The clothes were/had been carefully folded up by Margalida.’

2.2 Passives (and perfects) in Old Spanish

As mentioned in the Introduction, adjectival passives expressed by estar appear for the first time in the 13th century; see (13).

(13) Et ellos tanto estauan enoiados que lo touieron por bien Et and they so wereLOC annoyed that it had.POSS for good and dixieron que se querien yr et nunca tan bon dia vieran said that REFLECT wanted go and never so good day saw ‘And they were so annoyed that they took it well. And they said that they wanted to leave and that they had never seen such a good day’ (Estoria de España, Alfonso X el Sabio, 1280)

Before this century, only ser + PP expressed adjectival passives, as in (14).

(14) Non se abre la puerta ca bien era cerrada. not SE open the door because well was closed
‘The door does not open because it was well closed.’ (Cid, 12th c.)

In the 13th century, the copula ser could also appear in similar contexts. Adjectival passive uses of this periphrasis in OSp are clear in contexts, such as in (15), in which the participle is modified by degree adverbials like muy ‘very’.

(15) Pensaron de folgar; ca eran muy cansados. thought of rest because were very tired
‘They thought of resting, as they were very tired.’ (Libro de Alexandre, 1240)
Besides, in OSp *ser* + PTCP could appear in contexts with weak or non-referential *by*-phrases, which suggest an adjectival passive interpretation. This is illustrated in (16), where the *by*-phrase refers to a plural abstract entity.

(16) Et assi el emperado leo releuo el imperio romano el qual era and so the emperor Leo relieved the empire roman the which was opremido por muchas miseries oppressed by many miseries
   'And so the emperor Leo relieved the Roman empire, which was oppressed by much misery' (*Grant cronica de Espanya*, Fernández de Heredia, 1270)

But the picture from the earliest centuries gets more complicated than this. Past participles in combination with *estar* in Old Spanish (OSp) could also express, if only scarcely, perfects and verbal passives. (17) shows an example of an unaccusative predicate, *llegar* ‘arrive’, in combination with the locative copula describing a perfect event.

(17) Quando vieron los turcos aquellos vellacos que estauan ya when saw the turks those wicked that were.LOC already llegados al muro vinieron de todas partes come to the wall came of all parts
   ‘When the turks saw those wicked men who had already come to the wall, they came from everywhere.’ (*Gran conquista de Ultramar*, 1290)

Since the earliest centuries *ser* also combines with intransitives describing change of state or of location such as *entrar* ‘enter’, as in (18). This contrasts with Modern Spanish, when only the auxiliary verb *haber* is used in this context.²

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²Both (17) and (18) are ungrammatical to native ears nowadays. The corresponding grammatical sentences are as follows (where the spelling has been normalized):

(i) Cuando vieron los turcos a aquellos vellacos que habían llegado ya al muro, when saw the turks to those wicked that had arrived already to the wall vinieron de todas partes. came of all parts
   ‘When the turks saw those wicked men who had already come to the wall, they came from everywhere.’

(ii) Y desde que hubo llegado a la ciudad, ellos no quisieron entrar. and since that had arrived to the city they not wanted go in
   ‘And since he had arrived in the city, they did not want to go in there.’
(18) E desque fue llegado alas ciñbat ellos non quisieron y entrar and since was come to the city they not want there come ‘And since he had arrived in the city, they did not want to go in there.’ (Crónica de Alfonso X, Alfonso X el Sabio, 1280)

In turn, (19) expresses a verbal passive, which is clear from the fact that the predicate is embedded in the perfect and that it shows a referential by-phrase. Recall also that examples like the latter can still be found at the beginning of the 20th century, as in (12). Both examples (17) and (19) are ungrammatical to Spanish native ears nowadays.

(19) Et quieren dezir algunos auctores que el consul hauie estado and want say some authors that the consul had been.LOC restaurado por un sieruo ligurieno restored by a servant local ‘And some authors want to say that the consul had been restored by a local servant.’ (Grant cronica de Espanya I, Fernández de Heredia, 1270)

To sum up, Table 2 illustrates the usages of participial constructions formed with both copulas in OSp. In the earliest centuries, both estar and ser in combination with past participles could express adjectival passives, verbal passives and perfects.

<table>
<thead>
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<tbody>
<tr>
<td>estar + PP</td>
<td>+</td>
<td>+</td>
</tr>
<tr>
<td>ser + PP</td>
<td>+</td>
<td>+</td>
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</table>

Table 2: Readings of estar + PP and ser + PP in Old Spanish.

This contrasts sharply with MCSp (at least from the second half of the 20th century), as illustrated in Table 3, when estar + PP expresses adjectival passives and ser + PP verbal passives.

<table>
<thead>
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<th></th>
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</thead>
<tbody>
<tr>
<td>estar + PP</td>
<td>+</td>
<td></td>
</tr>
<tr>
<td>ser + PP</td>
<td></td>
<td>+</td>
</tr>
</tbody>
</table>

Table 3: Readings of estar + PP and ser + PP in Modern Contemporary Spanish.
It seems that over time there was some kind of regularization process whereby 
\textit{estar} + PP becomes the only expression of adjectival passives, whereas \textit{ser} + PP only describes verbal passives.\footnote{Perfects would eventually be expressed by \textit{haber} + PP, but this falls out of the scope of this paper.} In this paper we want to explore how this change happens over time using quantitative data coming from a large diachronic corpus of Spanish (as described in 3).

### 2.3 Other uses of the copulas in Old Spanish

To understand this change it is important to remind of the other uses of \textit{estar}. One of the main ideas we want to argue for in this paper is that the semantics of this verb in the earliest centuries influenced the way it later extended as an adjectival passive. As mentioned before, in earliest Spanish \textit{estar} was a locative verb describing ‘stay’ or ‘stand’. It could appear with prepositional phrases, as in (20-a), or without, as in (20-b). The latter usage is rare nowadays.

\begin{enumerate}
\item[(20-a)] Su mugier & sus fijas en medina estan  
   his wife and his children in Medina.\footnote{Perfects would eventually be expressed by \textit{haber} + PP, but this falls out of the scope of this paper.}  
   ‘His wife and children are in Medina.’ (Cid, 12th c.)
\item[(20-b)] Assi estando dedes me uuestra amor que lo oyan quantos aqui so being.loc give me your love that it hear how many here  
   ‘Being like this, give me your love so that everyone here can hear it.’ (Cid, 12th c.)
\end{enumerate}

Besides, \textit{estar} could also combine with gerunds, as in (21), and SL adjectives, as in (22). The use of \textit{estar} to form the progressive is the standard in MCSp, and so are sentences with SL adjectives.

\begin{enumerate}
\item[(21)] Myo Cid don Rodrigo en valencia esta folgando  
   ‘Mio Cid don Rodrigo in Valencia is.loc enjoying’ (Cid, 12th c.)
\item[(22)] Siempre estaua biuo. nunca fue amatado.  
   always was.\footnote{Perfects would eventually be expressed by \textit{haber} + PP, but this falls out of the scope of this paper.} alive never was killed  
   ‘He was always alive. He was never killed.’ (\textit{Libro de Alexandre}, 1240)
\end{enumerate}

Interestingly, \textit{ser} could appear in similar contexts in the earliest centuries. Examples with gerunds, as in (23), are found in our corpus, albeit very rarely.
(23) E si fuere el sennor del ascendente caydo de angulo maguer and if were.LOC the lord of the ascendant fallen of angle although que sea llegando a planeta que sea en angulo... that is arriving to planet that is in angle ‘And if the Lord were fallen angular from the ascendant despite the fact that He is arriving to the a planet which is angular...’ (Judizios de las estrellas, Alfonso X el Sabio, 1250)

With adjectives, it is well known that estar and ser divide their terrain in MCSp between IL and SL predicates. This division was also clear from the earliest centuries; but there are also some examples where ser appears in combination with SL predicates as well; see (24) (recall also (4)[a]).

(24) aquellos que fueron presentes quando se fizo la denunciac¸ıon those that were present when SE made the denunciation ‘... those who were present when the denunciation was made...’ (Castigos e documentos de Sancho IV, 1293)

Interestingly, cases of estar with IL-adjectives are inexistent from the earliest centuries. In these contexts we only find ser, see (25).

(25) ella que era mortal et tomo todos los sagramentos dela santa eglesia she who was mortal and took all the sacraments of the saint church ‘She, who was mortal, took all the sacraments in the Saint Church.’ (Grant cronica de Espanya III, Fernández de Heredia, 1270)

Table 4 and 5 summarise the use of ser and estar with gerunds and adjectives in OSp and MCSp, respectively. As can be seen from these tables, estar eventually becomes the only verb that can combine with SL adjectives.

<table>
<thead>
<tr>
<th></th>
<th>Progressive</th>
<th>IL-adjectives</th>
<th>SL-adjectives</th>
</tr>
</thead>
<tbody>
<tr>
<td>estar</td>
<td>+</td>
<td>+</td>
<td>+</td>
</tr>
<tr>
<td>ser</td>
<td>(+)</td>
<td>+</td>
<td>+</td>
</tr>
</tbody>
</table>

Table 4: Other contexts of use of estar and ser in Old Spanish.

Before we turn to the corpus analysis, let us briefly introduce in the following section the theoretical point of departure to explain this change.
<table>
<thead>
<tr>
<th>Progressive</th>
<th>IL-adjectives</th>
<th>SL-adjectives</th>
</tr>
</thead>
<tbody>
<tr>
<td><em>estar</em></td>
<td>+</td>
<td>+</td>
</tr>
<tr>
<td><em>ser</em></td>
<td>+</td>
<td></td>
</tr>
</tbody>
</table>

Table 5: Other contexts of use of *estar* and *ser* in Modern Contemporary Spanish.

### 2.4 The theoretical point of departure

There is a longstanding debate in the literature on the categorization of (past) participles. In the generative tradition, at least since Wasow (1977), research has focused on trying to categorize past participles either as verbs or adjectives.

According to Coussé (2011), participles are fundamentally ambiguous (or vague) between an eventive (verbal) and a stative (adjectival) reading, as in (26):

(26)  
- a. The swimming pool is closed.
- b. The swimming pool has been closed.

Observe that in Spanish this ambiguity is drastically reduced thanks to the distinction between the copulas *ser* and *estar*, see (27).

(27)  
- a. La piscina *es/está* cerrada.
  the swimming pool is/is.LOC closed
  ‘The swimming pool is closed.’
- b. La piscina ha *sido/estado* cerrada.
  the swimming pool has been/been.LOC closed
  ‘The swimming pool has been closed.’

As a general rule, MCSp *ser* + participle constructions can be considered eventive (or verbal) passives, while *estar* + participle constructions can be considered stative (or adjectival) passives. Thus, in (27) there is no ambiguity between verbal and adjectival passives; yet, the ability of the participle to refer to these two situations turns out to be clearer in Spanish than in English. Recall, as Coussé (2011) does, that only participles from telic verbs show the kind of ambiguity illustrated in (26). Analogously, these are the sole participles that can be constructed with both *ser* and *estar* in MCSp. Participles from atelic verbs can only be combined with *ser*, see (28).

(28)  
- a. El gato ha *sido/estado* acariciado/golpeado.
  the cat has been/been.LOC caressed/beaten
  ‘The cat has been caressed/beaten.’
b. El carro ha sido/*estado empujado.
the car has been/*been.LOC pushed
‘The car has been pushed.’

In OSp this ambiguity existed, as in nowadays English. As we saw before, ser was the only verb used to express passives in the earliest centuries. However, it did not take long for estar to be used as passive as well: in the 13th century we can find both verbs in combination with past participles forming passives. Over time, however, this ambiguity has disappeared and in nowadays Spanish we have a two-way passive system where ser + PP expresses verbal passives and estar + PP adjectival passives. The question is whether this can also be seen in the differences between underlying predicates in participial constructions.

3 Corpus & data retrieval

The data for this study has been obtained from a diachronic corpus of Spanish, which is formed by documents from the 12th to the 20th century consisting of approximately 40 million words and comprising a wide variety of genres (both fiction and non-fiction). The documents forming this corpus come from different sources. Data from the 12th century to the 1950s were collected from the electronic texts transcribed and compiled by the Hispanic Seminary of Medieval Studies (HSMS) (26 million words),\(^4\) the Gutenberg project (10 million words),\(^5\) and the Biblioteca Cervantes (0.4 million words).\(^6\) Additional texts from the years 1978 to 1995 were obtained from the Lexesp corpus (5.6 million words) (Sebastián-Gallés, 2000). In order to facilitate the statistical analysis of the data, we divided the corpus into four main periods, following the customary division determined by external historical events: Middle Spanish (1100-1492), Modern Spanish (1493-1788), Contemporary Spanish (1789-1974), and Late Contemporary Spanish (1975-2000).

All the words in this corpus are enriched with linguistic information of lemma and part of speech. The Lexesp corpus is originally lemmatised and part-of-speech tagged, and texts coming from the other collections were automatically annotated with linguistic information using the open-source language analyser FreeLing (Padró et al., 2010; Padró and Stanilovsky, 2012).\(^7\) An Old Spanish tagger, which is an expanded version of the Freeling morphological analyzer for standard

\(^5\)http://www.gutenberg.org/
\(^6\)http://www.cervantesvirtual.com/
\(^7\)http://nlp.lsi.upc.edu/freeling/
modern Spanish, was used in order to annotate Old Spanish texts (Sánchez Marco et al., 2011; Sánchez Marco, 2012).

Sánchez Marco (2012) reports an accuracy of 96 percent for the class of word for the Old Spanish tagger used in this study to process Old Spanish texts. On the other hand, for the Gutenberg project part of the corpus, which was annotated using the tools for standard modern Spanish, we expect to have an accuracy in the tagging closer to state-of-the-art taggers for modern language varieties, that is over 97%, which means that approximately 3 in 100 words are assigned an incorrect morphological category; see, for example, Collins (2002); Toutanova et al. (2003); Spoustová et al. (2009); Søgaard (2010). Both accuracies are sufficient to conduct statistical analyses over quantitative data. Even if some parts of the corpus are manually corrected (at least the part of the Lexesp corpus), some amount of error is expected to appear in any annotated corpus. In this corpus the given accuracies indicate that there are presumably 3 or 4 out of 100 cases considered in the quantitative study which are false positives, for example because some participle or copula was incorrectly labeled with this category and was therefore obtained automatically in the queries, as well as false negatives, that is cases not obtained in the queries, despite the fact that they should have been obtained. It should be mentioned that these accuracies are just indicative for the present case study, as it could very well be the case that accuracy varies across morphological categories.

Before analysing the corpus data, frequency counts of all occurrences of ser + PP, and estar + PP were obtained from the corpus. The frequency counts were obtained using the IMS Open Corpus Workbench\(^8\) and analysed with the open-source statistical software R (R-Development-Core-Team, 2010). In the queries used to obtain these occurrences we allowed a number and a variety of words to appear between ser and estar and PP, and also different word orders of both elements.\(^9\) In addition, we also obtained frequency counts of other phrases formed by ser and estar in combination with gerunds, adjectives and locative prepositional phrases introduced by en ‘in’ (en-phrases). In these cases the copulas are immediately next to gerund, adjectives and prepositional phrases, in order to keep the size of the corpus manageable.

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\(^8\)http://cwb.sourceforge.net/

\(^9\)Being periphrastic expressions, the automatic retrieval of participial constructions is a challenging task per se, since in Spanish the participle can be placed both after or before the auxiliary and a number of elements can be placed between both elements. Due to the differences of Old Spanish with respect to standard Modern Spanish syntax, different queries were used to obtain data before the 16th century.
4 Corpus study

The corpus analysis of the development of *estar* + past participle proceeds in three steps. First, we will present the general development of *estar* and *ser* from the 12th to the 20th century (section 4.1). Secondly, we will explore change in the frequencies of *estar* with past participles over time, and then we will show how this change takes place some time after change of *estar* with locative *en*-phrases, and almost at the same time as SL adjectives (section 4.2). As it will be shown, this provides evidence for our account that the development of *estar* with past participles was influenced by *estar* with *en*-phrases. Lastly, in 4.3, we will focus on exploring the development of *estar* with past participles and show how the change of *estar* over time takes place first with some aspectual classes of verbs and later with others.

4.1 *Ser* and *estar* over time

The results of the frequency study from the 12th to the 20th century for *ser* and *estar* (in any context) are illustrated in Figure 1. Each point in the graphs corresponds to a single text from the corpus, showing time of composition on the x-axis and the relative frequency of the corresponding construction on the y-axis.

The solid line in these graphs is a locally smoothed average emphasizing systematic trends hidden behind the random variation. This line was obtained using the lowess smoother function (available in R), based on locally-weighted polynomial regression (Cleveland, 1981).

As can be seen from the graphs in Figure 1 the frequency of *estar* notably increases from the 12th to the 20th century. This is expected from the change undergone by this verb from a predicate describing the location of some entity in space to a verb used in combination (i) with past participles to form adjectival passives, (ii) SL adjectives, (ii) prepositional phrases describing locations and (iii) gerunds to form the progressive (greater functional meaning). Conversely, as can be seen from the right graph, the frequency of *ser* decreases dramatically over time. This is expected as well under the idea that *ser* loses the ability to form perfects, adjectival passives, progressives and combine with SL adjectives and locative adverbials over time. Changes in the frequencies of *estar* and *ser* are highly significant (Generalized Linear Model with binomial family and logit link, p < .001).

---

10Texts in Lexesp corpus do not have a specific date of composition. Hence, dates (x-axis) in the Late Contemporary period were randomized in order to plot relative frequencies from the part of the corpus coming from the Lexesp collection.
Figure 1: Relative frequency of *estar* (left) and *ser* (right) from the 12th to the 20th century.

4.2 *Ser* and *estar* with past participles, *en*-phrases, adjectives and gerunds over time

Figure 2 illustrates the results of the frequency study from the 12th to the 20th century for *estar* with *en*-phrases (top) and with past participles (bottom graphs). As in Figure 1, the frequencies here are obtained by calculating the proportions of *ser* and *estar* in each document. The boxplots (right) compare pooled data for the four periods considered in the corpus, as presented in section 3. Boxplots facilitate the statistical analysis of the data, as the size of the boxes gives a general impression of the dispersion of the frequency data. The lines in the boxplots show the median for each period.

As can be clearly observed from these plots, we can distinguish two stages for changes in the usage frequency of *estar* with past participles and *en*-phrases. First there is a significant increase in the frequencies during the Middle and Modern period (between the 15th and 17th centuries) and then the frequency increases more steadily until the 20th century. Besides, *estar* shows a steady increase of the usage frequency with past participles until the 19th century, similarly to *en*-phrases, but then frequency decreases from the 19th to the 20th century.

It is also clear from the top graphs that *estar* is more frequent with *en*-phrases than past participles from the earliest centuries and that its usage frequency increases dramatically from 1400. In the 20th century *estar* is almost the only verb used in combination with these phrases. We interpret this as evidence for the idea that the extension of *estar* in combination with *en*-phrases might have influenced the development of adjectival passives with *estar*, as the former preceded the latter and it has always outnumbered adjectival passives. In analogical processes it is well known that the usage frequency of a given pattern (model) might influence the target (Bybee and Cacoullos, 2008).
Interestingly, we do not see any changes of *ser* and *estar* with IL-adjectives neither with gerunds. From the earliest centuries *estar* is used with the latter to form the progressive (recall example (21)) and examples with *ser* are only very rarely found (as in (23)). In contrast, *ser* is used almost exclusively with IL-adjectives and examples with *estar* are scarce. However, the usage frequency of *estar* with SL-predicates increases steadily after the 15th, until almost replacing *ser* in this context by the 20th century.\(^\text{11}\)

![Figure 2: Relative frequency of *estar* with *en*-prepositional phrases (top) and past participles (bottom) from the 12th to the 20th century.](image)

Table 6 summarises the findings as just presented. In this table the changes in


16
the proportions (in percentages) of *ser* and *estar* with each category per century are shown.

<table>
<thead>
<tr>
<th></th>
<th>12th c.</th>
<th>13th c.</th>
<th>14th c.</th>
<th>15th c.</th>
<th>16th c.</th>
<th>17-18th c.</th>
<th>19th c.</th>
<th>20th c.</th>
</tr>
</thead>
<tbody>
<tr>
<td><em>estar</em></td>
<td>7%</td>
<td>6%</td>
<td>6%</td>
<td>7%</td>
<td>9%</td>
<td>20%</td>
<td>22%</td>
<td>20%</td>
</tr>
<tr>
<td><em>ser</em></td>
<td>93%</td>
<td>94%</td>
<td>94%</td>
<td>93%</td>
<td>91%</td>
<td>80%</td>
<td>78%</td>
<td>80%</td>
</tr>
<tr>
<td>Total</td>
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<td>138,464</td>
<td>208,652</td>
<td>134,827</td>
<td>24,787</td>
<td>126,203</td>
<td>145,587</td>
</tr>
<tr>
<td><em>estar</em> + PP</td>
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<td>4%</td>
<td>3%</td>
<td>5%</td>
<td>10%</td>
<td>37%</td>
<td>45%</td>
<td>34%</td>
</tr>
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<td><em>ser</em> + PP</td>
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<td>96%</td>
<td>97%</td>
<td>95%</td>
<td>90%</td>
<td>63%</td>
<td>55%</td>
<td>66%</td>
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<td>68528</td>
<td>35793</td>
<td>3797</td>
<td>18421</td>
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<td>19%</td>
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<td>33%</td>
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<td><em>ser</em> + <em>en</em>-phrase</td>
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<td>82%</td>
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<td>67%</td>
<td>35%</td>
<td>27%</td>
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<td>17%</td>
<td>35%</td>
<td>71%</td>
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<td>93%</td>
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<td>65%</td>
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<td>923</td>
<td>209</td>
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<td>1360</td>
</tr>
<tr>
<td><em>estar</em> + IL-adjective</td>
<td>-</td>
<td>-</td>
<td>-</td>
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<td>-</td>
<td>-</td>
</tr>
<tr>
<td><em>ser</em> + IL-adjective</td>
<td>100%</td>
<td>100%</td>
<td>100%</td>
<td>100%</td>
<td>100%</td>
<td>100%</td>
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</tr>
<tr>
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<td>1405</td>
<td>923</td>
<td>200</td>
<td>1050</td>
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</table>

Table 6: The frequency of *ser* and *estar*, *ser/estar* + PP, *ser/estar* + *en*-phrases, *ser/estar* + SL-adjectives and *ser/estar* + IL-adjectives from the 12th to the 20th century.

### 4.3 Aspectual classes of verbs with *ser* and *estar* over time

To see whether the aspectual type of the underlying predicate in adjectival and verbal passives plays a determining role in the origins and development of adjectival passive *estar* + PP, we investigated *estar* with different semantic types of predicates separately. If change in Spanish adjectival passives was mainly driven by semantics, then we expect to find differences in the frequency changes of *estar* with different types of predicates over time. In contrast, if the development of adjectival passives with *estar* responds to other factors, we will expect to see that
the frequencies with these semantic types of predicates are relatively steady over time.

In order to explore this, we compiled lists of verbs belonging to different aspectual classes following standard tests (Dowty 1979). The list of atelic predicates, containing 100 verbs, includes 50 individual (IL-)level states (e.g. abundar ‘abound’, admirar ‘admire’, adorar ‘adore’, agradar ‘please’, saber ‘know’, significar ‘mean’,....), and 50 activities (acariciar ‘caress’, andar ‘walk’, bailar ‘dance’, buscar ‘search’, circular ‘circulate’, pasear ‘wander around’,....). The list of telic predicates includes 50 locative (25 locatum and 25 location) verbs, e.g. encarcelar ‘jail’, encadenar ‘chain’, and 26 change of state verbs, e.g. abrir ‘open’, romper ‘break’. Lastly, we considered other predicates, with variable aspectual behaviour. In particular, this list includes 100 degree achievements, e.g. congelar ‘freeze’, alargar ‘lengthen’, and 100 object experiencer psychological verbs, e.g. enfadar ‘get angry’, asustar ‘frighten’.

Table 7 summarises the findings obtained from the corpus. The first column in this table indicates the type of predicate and the first line in each row shows the relative percentage of estar within each century. The second line shows the proportion of ser with the same group of predicates. The third line in each row indicates the total number of ser and estar with each predicate type. As can be clearly seen from this table, the proportion of estar with atelic predicates (both IL states and activities) is mostly stable over time. This is expected as atelic predicates cannot appear in adjectival passives (recall from examples in (28)), whereas they can appear in verbal passives.

In contrast, the frequency of estar with telic (locative and change of state), object experiencer psychological verbs and degree achievements significantly increases over time, almost outnumbering ser. In particular, starting from a very low frequency in the 13th century (lower than 8 percent for all predicate types), the frequency of these predicates with estar increases over time surpassing or almost matching that of ser in the 20th century. Estar with object experiencer psychological verbs reached 66% in the 20th century and 52% with locative and change of state verbs.

Besides, the numbers in Table 7 suggest that the development of estar with these predicates occur at different moments over time. In particular, the verb classes with which the frequency of estar increases first and more dramatically are locatum and location verbs (in the 16th century), object experiencer psychological verbs (17th century) and change of state verbs (19th century). Later it extends (but without outnumbering ser) to degree achievements. This is summarised in (29).

(29) locative > object experiencer psych > change of state > degree achievement
To sum up, there seems to be evidence suggesting that adjectival passives with *estar* occurs first with some aspectual types of verbs than others. The corpus data, as just presented, and although not conclusive, point to a possible explanation in terms of analogy, whereby locative verbs combine first and more frequently with *estar* due to their similarities with locative prepositional phrases originally combining with *estar*.

<table>
<thead>
<tr>
<th></th>
<th>Cent.:</th>
<th>13th</th>
<th>14th</th>
<th>15th</th>
<th>16th</th>
<th>17th</th>
<th>18th</th>
<th>19th</th>
<th>20th</th>
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</tr>
<tr>
<td><em>estar</em></td>
<td>2.8%</td>
<td>1.3%</td>
<td>9.5%</td>
<td>59.1%</td>
<td>46.7%</td>
<td>60%</td>
<td>61.9%</td>
<td>52.4%</td>
<td></td>
</tr>
<tr>
<td><em>ser</em></td>
<td>97.2%</td>
<td>98.7%</td>
<td>90.5%</td>
<td>40.9%</td>
<td>53.3%</td>
<td>40%</td>
<td>38.1%</td>
<td>47.6%</td>
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<tr>
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<td>5</td>
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<td></td>
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<tr>
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<tr>
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<td>3383</td>
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<td>24%</td>
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<tr>
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<td>510</td>
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<td></td>
<td></td>
</tr>
<tr>
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<td>4.5%</td>
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</tr>
<tr>
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<td>95.5%</td>
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<td>78.6%</td>
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<td></td>
</tr>
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<td>60</td>
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<tr>
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<td></td>
<td></td>
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<tr>
<td><em>estar</em></td>
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<td>1.3%</td>
<td>4.9%</td>
<td>25.5%</td>
<td>26.8%</td>
<td>33.3%</td>
<td>25.5%</td>
<td>10.5%</td>
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</tr>
<tr>
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<tr>
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<td>41</td>
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</table>

Table 7: The frequency of *ser* and *estar* with aspectual classes of verbs from the 13th to the 20th century.
5 Towards an analogical account

To account for how estar + PP emerged and developed in Spanish, we argue that the mechanism underlying the origins and development of this construction is analogy.

Models for analogy, such as Heuristic-Driven Theory Projection (HDTP) (Schwering et. al. 2009), compute analogies as a 3-phase process (retrieval, generalization by mapping, and transfer) on the basis of a matching strategy between a source and a target domain that can be described by a set of formulas. The generalized formulas constructed by this algorithm during the mapping process can be interpreted as a new domain of application of the original rules. This set of formulas is incrementally built by repeating the generalization step.

The origins of estar + PTCP are an innovation resulting from the analogical relation established through some mapping between the original uses of estar with locative PPs (source) and estar with past participles (target). In the transfer phase, there is a restructuring (or reanalysis) in the target domain on the basis of the analogical relation established, which enables estar to be combined with participles. Reanalysis in the target domain leads also to the loss of some of the uses of ser, presumably as the result of some blocking effect motivated by the competition that eventually arises between both domains after the emergence of estar + PTCP.

Analogical relations are built on the basis of both semantic and morphological similarities between locative prepositional phrases and past participles. The repetition of the innovative pattern (modelled through usage frequency) is essential for the extension of change.

Why is estar extended from locative constructions to adjectival passives? Our idea is that adjectival passives share with locatives a central part of their meaning: they both denote states which result from a change of state, that is, stage-level (SL) states (Marín, to appear).

Mangialavori (2013) proposes a semantic unified account of Spanish copular clauses with estar in the lines of the analogy between locations and states (Lyons, 1968, a.o.), supported by the so-called Localist Perspective on stative expressions (Gruber, 1965; Jackendoff, 1990), following an abstract reading of spatial relations. From the Localist Perspective, states are conceived as abstract or metaphorical locations in which an entity can be situated. In Mangialavori (2013)’s words: “In view of this, the definition of estar clauses as temporary situations, originally posited by traditional studies only for locative utterances, can be argued to apply equally to the different constructions under discussion as long as they are understood as temporally bounded (abstract) situations. Accordingly, the stative utterance is assumed to be construed in full analogy with a spatial expression (to be in a certain position), which is also in agreement with those studies positing that the same conceptual functions we use when dealing with physical
space can also be applied to our conception of abstract space (i.e. states)."

An additional parallelism between locations and states can be drawn from the claim that Conceptual Structure (Jackendoff, 1990) assigned to clauses like El gato está feliz ‘The cat is happy’ can be argued to contain a relational element introducing an abstract place which could be regarded as analogous to the (concrete) locative relation in El gato está en el patio ‘The cat is in the patio’.

Also following the Jackendovian perspective, Mateu (2002) posits that a clause like El gato está feliz features (like El gato está en el patio) the following locative structure:

(30) \[\text{[State BE [Thing CAT], [Place AT [Property HAPPY]]]}\]

This suggests that the locative semantic content of estar is not necessarily absent in attributive constructions. This possibility follows from the observation that the relational element featuring an abstract place is not aspectually trivial: even in English, a local situation like be at is assumed to hold for a delimited period of time; in other words, it conveys a temporary (or temporally bounded) coincidence between the subject and the predicate. In other words, the aspectual properties featured by estar could also be accounted for on the basis of its original locative meaning, since temporal boundedness and contrastiveness both follow from the kind of local situation conveyed by estar (entailing a transitory position, thus rendering it equivalent to be at and not just be), as (31) succinctly summarizes (see also Mangialavori (2013)).

(31) a. estar (= situation in a temporally bounded state of affairs) + A / PP → State
b. estar (= location in a temporally bounded state of affairs) + SP / Adv → Location

In fact, there is a unified way to explain the extension of estar at the expend of ser: estar has become the only auxiliar/copular verb used for expressing (temporally) bounded states. From its locative original meaning, estar started to also express states by analogy. As we have seen these states are temporally bound, and in this sense they pattern with SL states (Marín, to appear). And this is precisely what all the uses of estar have in common: the expression of SL states. This is why, starting from gerunds –the progressive is mostly viewed as a stative construction–, estar replaced ser in adjectival passives and in combination with SL adjectives. The stative denotation of adjectival passives is commonly assumed (Gehrke, 2012). Here we want to emphasize that adjectival passives denote bounded states or SL states, as defined by Marín (to appear): states presupposing an initial boundary. And this is precisely the case of resultant states: they presuppose an initial boundary, the one provided by the culmination for a previous,
telic event. Observe that defining SL states this way allows us to simply account
for otherwise problematic cases such as estar muerto ‘to be dead’, or other ‘once-
only’ verbs (Parsons, 1990) such as estar cocido ‘to be cooked’, which only have
an initial boundary. The relationship between adjectival passives and estar + SL
adjectives is quite clear. In certain cases, it is not the past participle but a related
adjectival form (e.g. lleno ‘full’, limpio ‘clean’), which are chosen to form ad-
jectival passives: la sala está llena/?llenada ‘the room is full/*filled’; el vaso
está limpio/?limpiado ‘the glass is clean/*cleaned’.

The fact that the development is leaded at different stages by locative and ob-
ject experiencer psychological verbs, which often incorporate a preposition pro-
vides further morphological evidence for this hypothesis. Location and locatum
verbs often are denominal, e.g. engrasar ‘grease’ (en ‘in’ + grasa ‘grease’), en-
carcelar ‘imprison’ (en ‘in’ + cárcel ‘prison’). Likewise, there are many denomi-
nal verbs among psych predicates, e.g. asustar ‘frigthen’ (a ‘to’ + susto) ‘fright’,
enfurecer ‘infuriate’ (en ‘in’ + furia ‘fury’). An interesting observation is that
we do not observe the same extension to other morphologically derived verbs,
which have a related adjective, that is degree achievements, instead of a noun
(e.g. alargar ‘lengthen’, ampliar ‘widen’).

The following examples from the corpus provide further evidence for the idea
that analogy was the driving force in the extension of adjectival passives expressed
by estar + PP in Spanish. In these examples, the formal and semantic similari-
ties between prepositional phrases ((a) examples) and participles ((b) examples),
that might have been the basis for the analogical change, are transparent. Exam-
amples (32) and (33) show examples of en-phrases and similar locative predicates
and (34) and (35) of prepositional phrases describing more abstract locations and
object experiencer psychological predicates.

(32) a. Ca el que es de buen coraçon sabe sofrir & lidia
because the that is of good heart knows suffer and fights
esforçada mente commo sy estudiese en Castillo
hardly as if were.LOC in castle
‘Because the one who has a good heart knows how to suffer and fights as if he were in a castle’ (Libro del Cauallero Çifar, 1214)
b. Ffablades commo omne: que esta encastellado Mas sy prender
talk like man that is.LOC in castle-d but if take
uoso puedo: de fuera de sagrado Seades bien seguro: que seredes
you can of out of sacred be well safe that be
colgado
hung
‘You talk like a man who is in a castle; but if I can take you, you
can be certain that you will be hung’ (Obras de Gonzalo de Berceo,
33. a. E so assi entraron los mezquinos malandantes en la ciudad de Toledo, por traydores & escarnidos. & fechos risos & Toledo for traitors and ridiculed and made laughed and denosto de todos. & fueron metidos en carcel pora siempre. ‘And so the mean men entered the city of Toledo, and they were considered traitors and laughed at by all, and were put in prison for always’ (Estoria de España, Alfonso X el Sabio, 1280)

b. El establió que aquellos que matarien a lures padres o asus he established that those that killed to their parents o to their hermanos que fueessen encarçerados & tormentados por manera brother that were imprisoned and tormented for way que muriessen & que perdiessen todo loque auien. that die and that loose all it that had ‘He established that those who killed their parents or brothers should be imprisoned and tormented until they die and loose everything that they had’ (Grant cronica de Espanya I, Fernández de Heredia, 1270)

34. a. conuiene al omne que sepa medida en sanna & en la is convenient to the man that knows measure in rage and in the yra. que non sea su sanna muy fuerte ni muy prolongada. anger that not be his rage very strong nor very long ‘Men should be cautious in rage and anger. Their rage should not be very strong nor for a long time.’ (Poridat de poridades, 1250)

b. Alexandre fue yrado. Manda lidiar cuemo estaua ensannado. alexandre was annoyed. order fight as was LOC in-rage-d ‘Alexandre was annoyed. He made them fight because he was enraged.’ (Libro de Alexandre, 1240)

35. a. sy el tu auer guardares en tierra syenpre el tu coraçon if the your assets keep in ground always the your heart estara en temor delo perder Ca telo comeran gusanos will-be LOC in fear of it lose because you it will-eat worms ‘If you keep your assets under the ground your heart will always be in fear of losing it, because worms may eat it’ (Castigos e documentos de Sancho IV, 1293)

b. algunos delos quales quisieran mas que el rey los mandara some of the which wanted more than the king them send yr a otra parte que al torneo. ca estauan go to other part that to the tournament because were LOC
temorizados delos terribles golpes del cauallero negro.
terrorized of the terrible blows of the knight black
‘Some of them wanted that the king sent them to a place different than the tournament, as they were terrorized of the terrible fights with the black knight’ (Oliveros de Castilla, 1499)

6 Concluding remarks

In this paper we have established a chronology for the development of adjectival passive estar + PP on the basis of corpus evidence. As we have seen, estar takes over uses of ser first in locative constructions and then with past participles and adjectives. Interestingly, estar takes over ser in its use with participles more than with adjectives. As for the use of the copula with participles, estar takes over ser with telic predicates, more than with atelic predicates. More specifically, in the following order: locative verbs (locatum and location), object experiencer psychological predicates, change of state verbs, and lastly, degree achievements.

In this paper we propose an aspectual explanation for this change: estar specializes to express adjectival passives, that is in constructions describing SL states, whereas ser specializes to express eventive constructions (verbal passives). The main mechanism for this change are the analogical relations established on the basis of semantic and morphological similarities between locative prepositional phrases and the first participles combining with estar.

References


