ACQUISITIONAL PATTERNS OF THE SPANISH COPULAR VERBS *SER* AND *ESTAR*: DATA FROM L2 BEGINNING LEARNERS IN FAVOR OF THE DECLARATIVE/PROCEDURAL MODEL

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ABSTRACT. *By following the predictions of the Declarative/Procedural model for L2 late learners, this study analyzed the oral and written production on the Spanish copular verbs from nine beginning learners at college during their first year of formal instruction, from a purely morphological point of view. The distribution of* ser *and* estar *verb forms across regularity groups showed a heavy reliance on the declarative memory, i.e. greater number of irregular tokens with higher accuracy rates. Regular and irregular forms supported the existence of associative learning mechanisms only, such as regular verb forms in memorized chunks of information or the appearance of suppletive irregulars not yet taught. There is also a vague tendency to shift reliance towards rule learning mechanisms when tracking changes over time. It will be concluded that the initial stages of acquisition of* ser/estar *are also morphological in nature, not only a semantic challenge.*

KEY WORDS. *Copular verbs, regular, irregular, SLA, declarative memory, procedural memory, to be, Spanish, morphology.*

RESUMEN. *Siguiendo las predicciones del modelo Declarativo/Procedural para estudiantes adultos de segundas lenguas, este estudio analizó la producción oral y escrita en los verbos copulativos del español por nueve estudiantes universitarios principiantes durante su primer año de instrucción formal, únicamente desde un punto de vista morfológico. La distribución de las formas verbales de* ser *y* estar *en base a su regularidad mostró un mayor uso de la memoria declarativa: mayor número de formas irregulares con mayor precisión. Las formas regulares e irregulares apoyaron la existencia de mecanismos de aprendizaje por asociación solo, p. ej.: formas regulares en expresiones idiomáticas memorizadas o presencia de formas irregulares que todavía no se han enseñado. También hay una leve tendencia hacia el uso de mecanismos de aprendizaje por reglas si analizamos cambios con el paso del tiempo. Se concluirá que las etapas iniciales de* ser/estar *no son solo un reto semántico sino también un reto morfológico.*

PALABRAS CLAVE. *Verbos copulativos, regular, irregular, ASL, memoria declarativa, memoria procedural, ser, estar, español, morfología.*

1. INTRODUCTION

1.1. *The copular verbs in Spanish*

A copular verb is the one that is used simply as a link or mark of relationship between one element and another in the sentence. For example, the Spanish verb form *es* 'be-PRES-3SG' is a copula in (1) where it links the subject *ella* 'she' and the predicative element *una profesora* 'a teacher'.

(1)   *Ella   es   una   profesora.*
       she   be-PRES-3SG   a   teacher.
       'She is a teacher.'

The Spanish copular verbs *ser* and *estar* 'be (both)' correspond to a single verb in several languages, such as the English verb *to be*. Second language (L2) learners need to learn the distinction in meaning of each verb as well as its use in context if they want to develop their communicative competence. The selection of the incorrect copular verb in a conversation could lead not only to a confusing message but also to an erroneous interpretation from the listener. In example (2), the interpretation of the predicative element is that Carmen is boring even though the intention of the speaker was simply to state that Carmen is bored. The erroneous interpretation was triggered by the wrong choice of copular verb and it clearly denotes a low proficiency level in L2 Spanish.

(2)   *Carmen   es   aburrida.*
       Carmen   be-PRES-3SG   boring.
       'Carmen is boring.'

(3)   *Carmen   está   aburrida.*
       Carmen   be-PRES-3SG   bored.
       'Carmen is bored.'

Finnemann (1990) also pointed out that there are some English constructions that are expressed with the copular verb *to be* that cannot be expressed in Spanish with the verbs *ser* or *estar* (e.g., *there is a house* requires the use of the verb *haber*; *it's sunny* and other weather conditions require verbs such as *hacer* or *llover* 'rain'; *I'm hungry* is expressed with the verb *tener* 'have').

In sum, L2 learners of Spanish will have problems with the copular verbs during their initial stages of acquisition, not only from a purely Spanish-English contrastive analysis, but also from the greater cognitive demands necessary to discriminate between *ser* and *estar* during online processing.

1.2. *Previous research on the acquisition of Spanish ser and estar by L2 learners*

The great majority of studies on the acquisition of Spanish copular verbs by L2 learners has centered around the order of acquisition as well as around exhaustive

analyses on the semantic features of the elements following the copula choice. The main findings from each line of research will be mentioned in this section.

In relation to the order of acquisition that L2 learners follow, the first account was provided by VanPatten (1985, 1987). He found five stages of acquisition the L2 learners follow irrespective of their first language (L1): (1) omission of copular verb; (2) use and overgeneralization of *ser* for most of the functions of both copulas; (3) use of *estar* in the progressive; (4) use of *estar* with locatives; and (5) use of *estar* with adjectives of condition. These stages were observable with regards to the grammatical accuracy in the use of the copular verbs and also considering the function of the predicate in which they appeared. Subsequent studies tended to corroborate most of these stages even if the participants were recruited from different learning environments, such as a study abroad context in Spain by university students (Ryan & Lafford, 1992), or a natural context in Central America by Peace Corps volunteers (Guntermann, 1992).

Taking together the results of previous research, there are four developmental processes that can explain the existence of these stages of acquisition for the Spanish copular verbs. The first one is the low communicative value of copular verbs in Spanish. Consequently, it is reasonable to discover omission as the first stage. In fact, there are some world languages that do not need a word to mark the relationship between a subject and the predicative element linked to it. Arabic is an example of these languages in which all it is needed to introduce yourself is the personal pronoun and the proper name, i.e. *ana Peter* 'I am Peter'. The second developmental process is a simplification strategy that facilitates communication for those learners with lower competence in the L2. Since the English equivalent for both copular verbs in Spanish is the verb *to be,* beginning learners will tend to mark everything with only one verb, the verb *ser* 'to be' in this case. The third developmental process, markedness, is related to the second one because it is usually the unmarked form that it is used initially for all the functions (Finnemann, 1990). Since the verb *estar* 'to be' is the marked form, it appears later in the production of the participants. Finally, the fourth developmental process is the varying amounts of input L2 learners receive. The verb *ser* 'to be' appears more frequently in the input than *estar* 'to be,' and, as a consequence, it appears earlier and with higher accuracy on the L2 learners' production. However, none of the studies just mentioned took the time to analyze L2 input in any objective and quantifiable way.

The other line of research on the acquisition of Spanish copular verbs by L2 learners is based either on the semantic functions the verbs convey, or on the semantic features of the predicative elements following the verb. Finnemann (1990) suggested that, when paying attention to the predicate, the only thing that clearly differentiates the verbs *ser* and *estar* 'to be' is the fact that a noun phrase with an identification function can be preceded only by the verb *ser* 'to be' (* *Ella está doctora* 'She is a doctor'), and that only the verb *estar* 'to be' can be followed by another verb in the present participle to form the progressive (* *Es comiendo en casa* 'He/She is eating at home'). For the rest of the functions, both verbs can have similar predicates (*Soy feliz / Estoy feliz,* both examples followed by an adjetival phrase, indicating description with the verb *ser* and

condition with the verb *estar*). However, Finnemann studied the distinction between those students with an orientation to meaning or to form. He found out that Jeff, the only student in his study with an orientation to meaning, used more frequently and with higher accuracy the verb *estar*. According to Finnemann (1990), the distinction between the verbs *ser* and *estar* belongs more to the field of semantics than to syntax. Guntermann (1992) analyzed data from L2 learners with varying proficiency levels and who lived one year in a Central American country. He discovered that the choice of one of the two Spanish copular verbs depended upon the topic the L2 learners were expressing as well as on their proficiency level. For example, his beginning participants only could define, describe, and identify in the FL, what justified their overproduction of the verb *ser*; while his advanced participants were the only ones using the verb *ser* in passive constructions.

In sum, most L2 studies on the acquisition of Spanish copular verbs concentrated on semantics and syntax, whether from the point of view of the predicate's function in which they were inserted, or the types of phrases or semantic features of the elements following them. And part of the difficulty of the acquisition of Spanish copular verbs lies on the meaning the learners want to convey, especially if their L1 does not have such semantic distinctions. It's the same challenge as with the preterite/imperfect distinction, the indicative/subjunctive difference, or the different contexts in which the prepositions *por/para* appear.

A recent interdisciplinary agenda was opened by Kimberly Geeslin who incorporated discourse, sociolinguistic, and pragmatic variables into the investigation of Spanish copula choice. In 2002a, Geeslin used two sociolinguistic variables to explain potential factors that promote the use of the verb *estar*: the frame of reference and the susceptibility to change variables. In her data from 77 English-speaking learners of Spanish, she found that the variables [+individual] and [+change] favored the use of the verb *estar*. In a different study, Geeslin (2002b) applied the semantic transparency variable to data collected from 72 L2 learners of Spanish. She found that the distribution of copula choice in relation to copula + adjective tokens varied significantly from one semantic category to the others. This new variable was also a significant predictor of the use of *estar* for learners at higher proficiency levels. In another study, Geeslin (2003) found that advanced learners applied pragmatic constraints (the frame of reference and the experience with referent variables), even in contexts in which native speakers did not. She observed that these pragmatic features were not acquired as early as the semantic ones, such as susceptibility to change, by beginning and intermediate learners.

Contrary to the main interests of Spanish L2 researchers, the other part of the difficulty with Spanish copular verbs lies on the paradigms of these verbs. Tutored learners need to learn to conjugate verbs correctly in the FL because they will be tested on specific verb forms, and they will probably be penalized if they fail to produce or provide the correct answer. Morphological features such as regularity play an important role in the acquisition of inflectional paradigms by L2 learners. Housen (2002) provided empirical evidence that the first stages of SLA are usually lexical in nature, what can

explain why irregulars have an advantage at first. After analyzing 29,000 verb phrases from 46 learners of English, he proposed three stages for the acquisition of inflectional morphology. The first was characterized by missing verbs or verbs appearing in memorized formulaic expressions, e.g., *I don't know.* In the second one, verbs showed up in morphologically invariant forms such as bare infinitives, progressive forms, and highly frequent irregular past forms, e.g., *want, dancing,* and *got.* The last stage showed formal diversification. In fact, regularity is at the center of a long-standing debate about the mental representation and production of inflectional morphology, to which I turn now.

1.3. *The Declarative/Procedural model for L2 learners*

In the field of theoretical linguistics, psycholinguistics and more recently neurolinguistics, there is an ongoing debate about the mental representation and production of inflectional morphology. There are two broad theoretical frameworks which could be identified as the "single system" models and the "dual system" models. The Network model by Bybee (1995) and the Connectionist model by Rumelhart and McClelland (1986) are among the two best known single system models, while the Words and Rules model by Pinker (2000) and the Declarative/Procedural (DP) model by Ullman (2001a, 2001b) are two of the best known dual system models.

The dual system models claim that there is dissociation for regularly and irregularly inflected verb forms because two different mental systems are involved. Regular morphology depends on symbolic rule computation, e.g., the bound suffix *-s* [2SG] is attached to the word stem *esta-* 'be' to form the regular verb form *está-s* 'be-PRES-2SG'. Irregular morphology depends on associative memory, e.g., *fue* 'be-PAST-PRET-3SG' is a new word form and we know the fact that it makes reference to a state that happened in the past.

The DP model of lexicon (the list of memorized arbitrary pairings between sounds and meanings) and grammar (a set of rules, including operations and constraints, that specifies how words may be arranged into possible and meaningful combinations) proposed by Ullman (2001a, 2001b, 2004, 2005) suggests that morphological transformations can be computed by either of two components, the memory system (declarative) or the rule system (procedural). The declarative memory system is implicated in the learning, representation, and use of knowledge about facts and events (Squire 1994). Consequently, irregular verb forms are handled by this memory system for native speakers. On the other hand, the procedural memory system is implicated in the learning of new, and the control of long-established, motor and cognitive skills or habits (Ullman 2001b). The procedural memory is nonconscious or implicit (Squire 1994). This memory system handles the mental operations necessary to attach multiple suffixes to regularly inflected verb forms. For adult L2 learners, the DP model (Ullman 2001b) proposes the following acquisitional patterns: (a) late L2 learners may differ from earlier learners in that they will tend to shift reliance from procedural memory in L1 to declarative memory in L2; (b) some rules may be consciously learned in declarative memory because of the role of explicit

instruction; and (c) the greater the amount of practice with L2 the greater the learner's dependence on procedural memory for grammatical computations. As a consequence, linguistic verb forms that are compositionally computed by grammar in L1 may simply be memorized in the L2 lexicon. Additionally, increased reliance on the procedural memory is a result of developing automaticity and an increased use of the implicit memory system because of greater practice with the L2. These predictions may explain part of the problem why L2 learners display such variability with inflectional morphology in their developing grammars or interlanguages (IL). In fact, Montrul (2004) has claimed that inflectional morphology is "one of the most fragile areas of linguistic development in which second language (L2) learners display considerable variability" (2004: 25). These predictions, in turn, provide the basis for new predictions in relation to regularity for L2 learners. What follows are the main claims from the DP model (Ullman 2001b) I will use for this study: (a) L2 speakers should show less separability than L1 speakers between regular and irregular verb forms posited to rely on either lexicon or grammar; (b) both types of forms may be learned in and computed over associative memory so that frequency and phonological neighborhood effects may be shown by both; and (c) both types of forms should tend to pattern with facts and events handled by the declarative memory system, and neither with skills and habits which are handled by the procedural memory system.

The debate on the mental representation and production of inflectional morphology has not been settled and its main focus had centered for the most part on the representation and processing of regular and irregular English past tense verb morphology by native English speakers. Yaden (2003, 2007) has pointed out that there is a limited number of studies testing the main claims of the two theoretical models (single-system and dual-system models) using languages with a richer verbal inflectional system than English; specifically she mentioned Romance languages, as well as the scant work in the area of L2 speakers.

1.4. *Research Questions*

By following the predictions of the DP model for L2 late learners, this study will analyze the oral and written production on the Spanish copular verbs from beginning learners of Spanish at college during their first year of formal instruction, from a purely morphological point of view. In doing so, I will further expand the boundaries of recent work on both, the predominantly only-semantic account on the acquisition of the Spanish copular verbs in SLA, and the predominantly only-English past tense account on inflectional morphology. In order to address some of the issues discussed by the DP model, this study sought to answer the following research questions:

1. What is the distribution of *ser* and *estar* verb forms across regularity groups in the production of beginning learners? Does this distribution support the claims of the DP model in relation to the predicted acquisitional patterns of verb morphology for adult beginning L2 learners?

2. Do the results of this study support the existence of associative learning mechanisms for irregular *ser* and *estar* verb forms and rule learning mechanisms for regular *ser* and *estar* verb forms in the production of beginning learners of Spanish as a foreign language?

2. THE PRESENTE STUDY

2.1. *Participants and data elicitation*

This study analyzed the oral and written production of nine (three male and six female) first-year learners of Spanish at the university level. All participants filled out a background information questionnaire in which they reported being native speakers of English with no significant exposure to Spanish outside the classroom and that they did not receive instruction in Spanish during their high school years.

Data were taken from a larger group of learners who participated in a longitudinal study conducted by Dr. Joaquim Camps in which oral and written data were collected from the same learners while they were taking the first and second semester Spanish classes at the university level. From this larger group of learners, only the data from the first nine participants who completed all of the oral narratives and written compositions (as outlined in Appendix A) were included in this study. These participants were first exposed to the Spanish copular verbs *ser* and *estar* during the first semester when they received explicit instruction and practiced their distinctive uses. Oral data were collected in a language lab three times per semester. Two monologues of a maximum of five minutes each were recorded per visit for a total of 12 oral narratives. Written data were collected in their regular classroom four times per semester for a total of eight compositions. They had a maximum of 20 minutes to complete each text. For the compositions and the oral narratives, they were not allowed to receive help from any source, such as a textbook, a dictionary, or their instructor. The list of topics for the different tasks can be found in Appendix A.

2.2. *Corpus of data*

The corpus in this study includes all verb forms from the Spanish verbs *ser* and *estar* used by the participants in the oral and written tasks, for a total of 648 tokens. The corpus also included the relevant contexts for the *ser* and *estar* verb forms, i.e. those contexts where a *ser* or *estar* verb form should have been used but was not, besides those contexts where a *ser* or *estar* verb form was used, including overuse, for a total of 696 tokens.

Even though data from the participants were collected longitudinally, during their first year of formal instruction in Spanish, the data from the different tasks for each semester were clustered into two groups, namely Time1 (T1) and Time2 (T2), in order to track acquisitional changes over time.

2.3. *Data analysis*

Spanish has a rich verbal morphology. As outlined by Aguirre & Dressler (2006), the schema of any Spanish verb form is:

[Root + Thematic Vowel] + Suffix1 (TAM) + Suffix2 (NP)

The first suffix is the tense, aspect, and mood marker. The second suffix is the agreement marker, it refers to number and person and it holds throughout the conjugation but for some few exceptional verbs. In the present study, each verb form was analyzed independently and three broad categories based on regularity were considered to address the research questions. First, any verb form was considered regular if it added the regular TAM and NP suffixes to the root while keeping the thematic vowel of its infinitive form unchanged, e.g., *estabas = [est-a]-ba-s*. For a detailed list of the regular suffixes, see Aguirre & Dressler (2006), pages 92-93. Second, suppletive irregular verb forms were those which replaced the verb stem of the infinitive, or at least its root. Although some of the endings in these verb forms may still be recognized, Bauer (2003) pointed out that they "are so different from each other that they cannot be derived by general rules at all" (p. 48). E.g., in *eres* (you are), the infinitive stem *[s-e]-* is replaced by *[er-e]-*. Finally, non-suppletive irregular verb forms were those which kept the root but either suffered a thematic vowel change, like *somos* (we are) instead of the predicted regular verb form **semos,* or inserted a final vowel, such as /-i/ in *estoy* (I am) instead of the expected regular verb form **esto*. Following these criteria, Table 1 classifies all *ser* and *estar* verb forms used by the participants.[1]

Verb type	Tokens	Specific verb forms
Regular	N = 58	serás, será, estás, está, estamos, están, estaba, estabas, estábamos
Suppletive Irregular	N = 464	eres (*ses), es (*se), fui (*sí), fue (*sió), fuimos (*simos), fueron (*sieron), era (*sía), éramos (*síamos), eran (*sían)
Non-Suppletive Irregular	N = 119	soy (*so), somos (*semos), son (*sen), estoy (*esto), estuve (*esté) estuvo (*estó), estuvimos (*estamos), estuvieron (*estaron)
Does not apply	N = 7	Ser

Table 1. *Classification of* ser *and* estar *verb forms based on regularity from participants' data. The ungrammatical expected verb forms are provided for the irregular verbs (648 tokens).*

3. RESULTS AND DISCUSSION

3.1. *Overall description of the learners' production*

The overall distribution of the 648 tokens is shown in Table 2. The great majority of the verb forms used were *ser* forms, 566 tokens in total, 299 in the first semester

(Time 1) and 267 in the second semester (Time 2). In contrast, the relevant contexts for the verb *estar* were minimal, with a total of 82 tokens, from 39 to 43 over time. There were fewer tokens of *ser* and *estar* verb forms during Time 2 (310) than during Time 1 (338), which may be explained by the lower amount of input these participants may have received, given that the explicit instruction and practice on copular verbs occurred only during their first semester of formal instruction in Spanish.

	Time 1		Time 2	
Ser	82.3	(246/299)	80.9	(216/267)
Estar	66.7	(26/39)	79.1	(34/43)
Total		(338)		(310)

Table 2. *Appropriate use of* ser *and* estar *verb forms in Time 1 and Time 2, token count. Percentage (Appropriate use/Relevant contexts).*

An interesting result is the relation between the number of tokens used and the accuracy rate for each copular verb over time. As shown in Table 2, the number of correct *ser* forms decreased from Time 1 (246 tokens) to Time 2 (216 tokens) as well as the accuracy with which participants used them, from 82.3% to 80.9% in the second semester. The lower appearance of *ser* forms resulted in a smaller accuracy rate. In contrast, beginning learners used more *estar* forms in the second semester (43 tokens) than during the first semester (39 tokens), and it was also connected with a greater accuracy rate, from 66.7% to 79.1%.

3.2. *The distribution of* ser *and* estar *verb forms across regularity groups*

The first research question investigated if the distribution of *ser* and *estar* verb forms across regularity groups by beginning L2 learners supported the claims of the DP model in relation to their initial stages of acquisition. As stated before, the DP model predicted that late L2 learners may differ from earlier learners in that they will tend to shift reliance from procedural memory in L1 to declarative memory in L2 and that the greater the amount of practice with the L2 the greater the learner's dependence on procedural memory for grammatical computations. This simply means that irregular verb forms will be favored during the initial stages of acquisition and that regular verb forms will be learned initially as unanalyzed forms, as new lexical items irrespective of their internal structure. In addition, regular verb forms should appear later in their production, when they rely heavier on the procedural memory. Information on the distribution of the *ser* and *estar* verb forms across regularity groups is provided in Table 3.

	Time 1		Time 2	
Regular	65.0	(13/20)	68.4	(26/38)
Suppletive Irregular	84.9	(203/239)	83.1	(187/225)
Non-suppletive Irregular	70.5	(55/78)	75.6	(31/41)
Total		(337)		(304)

Table 3. *Appropriate use of* ser *and* estar *verb forms in Time 1 and Time 2 across regularity groups, token count. Percentage (Appropriate use/Relevant contexts).*

As shown in Table 3, the great majority of verb forms used were suppletive irregular, 239 and 225 tokens during Time 1 and Time 2, respectively. Verb forms such as *fue*, *es* or *era* were also used with the highest accuracy rate (84.9% appropriate use and 83.1% for Times 1 and 2, respectively). According to the DP model, suppletive irregular forms are thought of being handled by the declarative memory. Learners may have memorized them as unanalyzed tokens and inserted them into their utterances as if they were any other lexical item or word, irrespective of their internal structure. When looking up their mental lexicon, if learners found a suppletive irregular form that satisfied the desired semantic need, such as [moving from one place to another], that may explain why they have inserted it into their utterance with great accuracy.

Table 3 also shows that there is a small but essential change in the production of this group of participants over the course of the year. The greater the amount of practice with Spanish, the greater the number of regular verb forms they employed. Even though the numbers are still minimal, regular forms almost doubled from Time 1 to Time 2 (from 20 to 38 relevant contexts). The opposite is true for both types of irregular forms, the greater the amount of practice with Spanish, the lesser the number of irregular forms (from 78 to 41 for non-suppletive and from 239 to 225 for suppletive irregulars). This is an indication that over time L2 learners may be shifting reliance from declarative memory to procedural memory for those verb forms that are the result of grammatical computations (the addition of a set of regular suffixes to regular stems).

When considering the distribution of *ser* and *estar* verb forms by individual participants, shown in Table 4, there is an interesting result: only regular verb forms are absent in the early stages of acquisition of some learners (P5 T2, P6 T1, P7 T1, and P9 T1). On the other hand, all participants used both types of irregular verb forms from the beginning. A crucial result is that most of the learners who employed regular forms with no errors during the first semester (P2, P3, P5, and P8), increased the number of regular forms during the second semester but the accuracy rate decreased. In fact, it seems that after an initial omission stage, an error-free stage is followed with a limited number of tokens before learners start to increase the number of tokens with a varying accuracy rate. This may be an indication that during the first stages of acquisition of regular forms, L2 learners also rely on the lexicon, showing less separability for regular and irregular

verb forms, as predicted by the DP model for late L2 learners. It will be interesting to study the individual verb forms used by these participants in order to evaluate the learning mechanisms they may have employed.

	Regular		Suppletive Irregular		Non-suppletive Irregular	
	T1	**T2**	**T1**	**T2**	**T1**	**T2**
P1	37.5 (3/8)	50.0 (1/2)	90.5 (38/42)	66.7 (22/33)	37.5 (3/8)	75.0 (3/4)
P2	100.0 (5/5)	87.5 (7/8)	86.7 (26/30)	92.7 (38/41)	100.0 (8/8)	60.0 (3/5)
P3	100.0 (1/1)	83.3 (5/6)	64.0 (16/25)	82.9 (29/35)	62.5 (5/8)	77.8 (7/9)
P4	0.0 (0/2)	33.3 (1/3)	90.9 (10/11)	86.7 (13/15)	100.0 (8/8)	100.0 (4/4)
P5	100.0 (3/3)	– –	55.6 (10/18)	85.7 (36/42)	66.7 (2/3)	100.0 (1/1)
P6	– –	100.0 (3/3)	92.0 (23/25)	62.5 (10/16)	58.3 (7/12)	60.0 (3/5)
P7	– –	100.0 (3/3)	81.8 (18/22)	92.3 (12/13)	69.2 (9/13)	71.4 (5/7)
P8	100.0 (1/1)	57.1 (4/7)	100.0 (20/20)	76.9 (10/13)	92.3 (12/13)	75.0 (3/4)
P9	– –	50.0 (3/6)	91.3 (42/46)	100.0 (17/17)	20.0 (1/5)	100.0 (2/2)
Total	65.0 (13/20)	68.4 (26/38)	84.9 (203/239)	83.1 (187/225)	70.5 (55/78)	75.6 (31/41)

Table 4. *Distribution of* ser *and* estar *verb forms across regularity groups. Percentage (Appropriate use/Relevant contexts) from the first to the second semester of instruction, displayed by individual participants (641 tokens).*

Overall, the distribution of *ser* and *estar* verb forms from these beginning L2 learners of Spanish support some of the claims of the DP model in relation to their predicted initial stages of acquisition. There is a heavy reliance on the declarative memory in L2 as well as a vague indication of greater dependence on procedural memory for grammatical computations over time as a result of greater amount of practice with the L2.

3.3. *Associative vs. rule learning mechanisms*

The second research question investigated whether the *ser* and *estar* verb forms used by these participants were created through associative or rule learning mechanisms in relation to their regularity type. As mentioned earlier, according to the DP model, L2 learners should show less separability than L1 speakers between regular and irregular verb forms because both types of forms may be learned in and computed over associative memory during the initial stages of acquisition. Both, a descriptive analysis of the internal structure of the specific verb forms used by these participants as well as an account on the predicates and utterances in which these copular verbs are inserted, will help in answering this second research question.

Before turning to a more qualitative analysis of the data, Table 5 displays the specific *ser* and *estar* verb forms used by the participants over time and arranged by the total number of tokens employed.

As shown in Table 5, 366 of the tokens are the verb form *es*, which account for more than half of the dataset, i.e. 57.1% of the 641 inflected tokens are the verb form *es*. This verb form is favored in the production of beginning L2 learners for several reasons: (a) it is a suppletive irregular verb form that can be easily learned in and computed over associative learning mechanisms (see Figure1), (b) it is a short word to remember with no additional suffixes attached to it, (c) the data collection topics are mostly descriptive, which may favor its frequent appearance, (d) some of the tasks ask participants to narrate the daily routines of a specific character and, as a consequence, 3rd person singular forms may also be elicited with higher frequency, (e) L1 transfer and similarity effects play a role because in English this verb form is translated as is and it will not create any problem in the learning and/or access of this form with automaticity from the earlier stages of acquisition, and (f) the verb *ser* 'to be' appears more frequently in the input than *estar* 'to be,' and, as a consequence, it usually appears earlier and with higher accuracy on the L2 learners' production, as mentioned in section 1.2.

	Verb *ser*					Verb *estar*			
	T1		T2			T1		T2	
Es (366)	85.8	(188/219)	91.8	(135/147)	*Está* (14)	85.7	(6/7)	57.1	(4/7)
Son (56)	81.1	(30/37)	78.9	(15/19)	*Estás* (14)	100.0	(5/5)	100.0	(9/9)
Fue (46)	81.3	(13/16)	83.3	(25/30)	*Estoy* (14)	100.0	(9/9)	100.0	(5/5)
Soy (34)	54.5	(12/22)	50.0	(6/12)	*Estaba* (10)	100.0	(1/1)	77.8	(7/9)
Era (19)	–	–	52.6	(10/19)	*Están* (8)	33.3	(1/3)	40.0	(2/5)
Eres (14)	–	–	57.1	(8/14)	*Estuvo* (6)	40.0	(2/5)	100.0	(1/1)
Fui (10)	0.0	(0/2)	37.5	(3/8)	*Estamos* (4)	0.0	(0/4)	–	–
Ser (7)	100.0	(1/1)	83.3	(5/6)	*Estuvimos* (4)	100.0	(2/2)	100.0	(2/2)
Fueron (4)	100.0	(2/2)	100.0	(2/2)	*Estuvieron* (3)	0.0	(0/3)	–	–

	Verb *ser*					Verb *estar*			
	T1		T2			T1		T2	
Eran (3)	–	–	100.0	(3/3)	*Estábamos* (2)	–	–	100.0	(2/2)
Será (2)	–	–	100.0	(2/2)	*Estabas* (2)	–	–	50.0	(1/2)
Serás (2)	–	–	0.0	(0/2)	*Estuve* (1)	–	–	100.0	(1/1)
Éramos (1)	–	–	0.0	(0/1)					
Fuimos (1)	–	–	100.0	(1/1)					
Somos (1)	–	–	100.0	(1/1)					

Table 5. *Appropriate use of specific* ser *and* estar *verb forms in Time 1 and Time 2, token count. Percentage (Appropriate use/Relevant contexts).*

Except for the 1st person singular, all present tense *estar* forms are regular forms if we pay attention to morphology only. However, this does not necessarily mean that they are good examples of a rule learning mechanism used by the learners. In fact, from the 14 examples of the verb form *estás*, all but two tokens were used for the greeting *¿cómo estás?* It is reasonable to argue that learners memorized this fixed expression as an unanalyzed chunk of information they inserted into their speech without applying any grammatical rule, what explains the perfect accuracy rate on this verb form. The other two present tense *estar* forms with a final agreement suffix appeared in fewer tokens: 8 for *está-n* and 4 for *esta-mos*. These forms appeared in a wider variety of contexts (followed by a PP, a noun, a gerund or an adjective and for different functions) and, as a consequence, the accuracy on these forms suffered.

For the most part, preterite, imperfect and future tense *ser* and *estar* verb forms were either correctly or incorrectly used, especially when in a limited amount of tokens per semester. For example, *eran* appeared in 3 tokens during Time 2 with 100% accuracy while *estuvieron* appeared in 3 tokens during Time 1 with 0% accuracy. The interesting result is that some of these verb forms should have not appeared in the production of these learners at all since the imperfect, the future and the preterite[2] tenses were not taught during the first semester of formal instruction. Verb forms such as *fue, fui, fueron, estaba, estuvo, estuvimos* or *estuvieron* should have been absent in their production for the first semester. These tokens can be better understood if we think of them as unanalyzed vocabulary items in the declarative memory (see Figure 1) which were inserted in the production of these participants when they had to provide a word with the semantic feature [+ past]. Sometimes their choice was right, others it was not. In fact, a challenge for beginning L2 learners is the selection of the correct words for the desired meanings. With this I am talking about the frequent dilemmas… "Do they say in English *bill, ticket, receipt,* or *invoice* for this context?" or "Is it *consist of* or *consist in*?" For beginning L2 learners, sometimes the word selected is right, others it is not. For example, once a student wrote in a composition that his computer has a *rata* (rat), when making reference to the mouse. We can interpret most of the preterite, imperfect and future tokens as right or wrong lexical selections made by these participants rather than the result of the application of memorized

rules. Additional evidence that most of these forms were not retrieved by rule formation is that preterite and imperfect tokens appeared in greater amounts the simpler the verb form in its overt morphological structure. Verb forms which required adding one of the overt suffixes –s, –mos or –n appeared in a limited number of tokens per semester in comparison to those verb forms which did not add an overt agreement suffix. As shown in Table 5, *fue, era, fui, estaba* and *estuvo* were used more frequently by these learners than *fueron, eran, éramos, fuimos, estuvimos, estuvieron, estábamos,* and *estabas.*
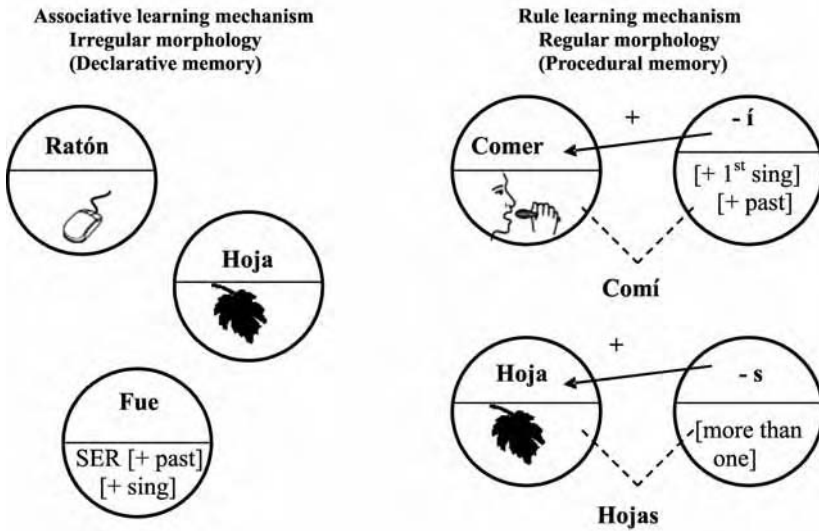
Figure 1. *Representation of associate vs. rule learning mechanisms in relation to inflectional morphology (nouns and verbs).*

In sum, even though there was an increase in the number of regular forms used from Time 1 to Time 2, the present analysis showed that both types of forms, regulars and irregulars, may be learned in and computed over associative memory, handled by the declarative memory. There is no strong evidence in favor of greater use of procedural memory during the second semester in relation to the first one. Consequently, we can conclude that there is less separability between regular and irregular forms in the beginning stages of acquisition for L2 learners.

4. LIMITATIONS AND SUGGESTIONS FOR FUTURE RESEARCH

This study has examined the production of Spanish copular verbs by late L2 learners taking the role of morphological type as a key variable in their acquisitional development. But its conclusions should be seen as limited and exploratory in nature.

First, this was a descriptive study in nature without statistical analyses. If we want to claim that these results will be repeated in different instructed contexts, we need to nuance the hypotheses and check the probability level for significance.

A second limitation in this study is that L2 production data only covered the first two semesters of formal instruction in Spanish. Future studies employing the DP model should consider a wider time-span in order to track change over time. Our scope was limited to the beginning stages of acquisition, but if we want to claim that there is a change from declarative memory to procedural memory for regular verb forms, we need a greater sample.

Not taking modality as a key variable may be considered as another limitation for the present study. Ellis (1987) discovered that accuracy on regular past tense morphemes used among 17 early intermediate EFL students declined as a function of less planning time being available on 3 tasks involving story telling. Conversely, irregulars maintained a constant level of accuracy. The belief was that rule application requires a high degree of on-line computation during language production. As a consequence, when planning time was limited, attention to form decreased and the accuracy on regulars suffered. Irregulars were not affected because they do not require a high degree of processing.

Even with these limitations, there are reasons to have confidence in the validity of the findings of this study. The materials were carefully selected and data were collected from the participants at regular intervals to track development. Each verb form was analyzed by its morphological composition and special attention was paid to its internal structure, irrespective of other verb forms for the same verb. Results were strong in showing less separability between regular and irregular verb forms for the initial stages of acquisition for L2 learners.

5. CONCLUSIONS

This study started with a simple premise, that the selection and accuracy rate on Spanish copular verbs by beginning late L2 learners may be determined by the morphological class of the verb forms. This premise was heavily based on the predictions provided by the DP model in relation to the acquisitional patterns by late L2 learners. For the most part, these predictions were supported by the oral and written production data of the participants. Regular verb forms were limited, showed lower accuracy rates, some of them were even inserted in memorized chunks of information, and verb forms with more suffixes (+ NP suffix) were either disfavored or were used with lower accuracy rates. On the other hand, the more suppletive a verb form was, L2 learners used it with greater accuracy and in more tokens, as it happened with the verb form *es*. In addition, there were some suppletive forms which should not have appeared in the production of these L2 learners but their presence shows that they must have been memorized as a new pairing between sounds and meaning, i.e. as a new lexical item. These results favor the predictions made by the DP model for the initial stages of

acquisition for tutored L2 learners of Spanish. There is a need to conduct additional research to determine if and when L2 learners shift reliance from declarative memory to procedural memory for regularly inflected forms.

This study showed that the initial stages of acquisition of Spanish copular verbs by L2 learners may also be determined by the internal structure of the verb forms used, and not only to the semantic predicate in which these forms will be employed. This development needs to be present for any verb in any tense if we want to claim that the predictions of the DP model are strong. By now, the analysis used provides new insights into the initial stages of acquisition for these challenging verbs for L2 learners, a challenge that we can safely say is not limited to their semantic distinction but a challenge that extends to the verb forms themselves, a knowledge L2 learners will have to show and will be tested on in an instructed setting.

NOTES

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1. Although the verb forms *está, están* and *estás* are usually treated as irregular because of the stress placement and the accent mark, they are treated as regular in this study because they take the regular TAM and NP suffixes while also keeping the root intact.

2. The regular endings to form the preterite were introduced at the end of the first semester of Spanish at this university. The preterite and imperfect paradigms for the verbs *ser* and *estar* were introduced during the second semester of Spanish. The future tense is not part of the first-year Spanish program at all.

3. For some of the tasks a picture story sequence was used to elicit the data from the participants.

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Appendix 1. Topics for the oral narratives and the written compositions[3]

Topics for the oral interviews during the first semester of Spanish:

Day 1: Topic 1: Talk about your life at UF, your activities, classes, schedule, entertainment, housing, etc. Topic 2: Talk about what your friends at UF do.

Day 2: Topic 1: Look at the pictures on the page in front of you, and describe first what José does and then what María does on a regular day. Incorporate as much vocabulary as you can, mention time of the day, use adjectives, etc. If you don't know the Spanish verb for some action, try to explain it another way, or skip that one. Notice that José's story in #1 lasts a whole day, whereas María's lasts only until noon. Topic 2: Look at the pictures on the page in front of you and compare what José and María do to what you do, e.g. "José no estudia. María estudia mucho, y yo también."

Day 3: Topic 1: Talk about what you like to do for your vacations, where you go, when, with whom, the activities you do, etc. Topic 2: Talk about your schedule of meals, the food you eat and the places where you eat when you are at school. Compare that to what you do when you are at home with your family, and when you go on a vacation.

Topics for the compositions during the first semester of Spanish:

Topic 1: Write about life at UF: activities, classes, schedule, housing, fun, and your friends and the things you do with them.

Topic 2: Describe in detail the house or apartment where your family lives. Write about the activities that different members of your family usually carry out in the different parts of the house.

Topic 3: Write about your schedule of meals, the type of food you eat, and the places where you eat when you are in school. Compare that to what you do when you are at home with your family, and when you go on a vacation.

Topic 4: Write about the best vacation you ever took.

Topics for the oral interviews during the first semester of Spanish:

Day 1: Topic 1: Talk about what you and your family did during the winter break. Topic 2: Talk about the things you used to do when you were 16 years old. Give examples of specific events.

Day 2: Topic 1: College life. Talk about the advice your friends and family give you about life in college. Also talk about the advice you give to fellow students and to friends who are preparing to go to college. Topic 2: Talk about what you did last weekend, and compare that to what you used to do on weekends when you were in high school.

Day 3: Topic 1: Look at the pictures on the page in front of you, and describe first what José did and then what María did last Friday. Incorporate as much vocabulary as you can, mention time of the day, use adjectives, etc. If you don't know the Spanish verb for some action, try to explain it another way, or skip that one. Notice that José's story in # 1 lasted a whole day, whereas María's lasted only until noon. Topic 2: Look at the pictures on the page in front of you and compare what José and María did to what you did last Friday. Also explain the reason for your actions e.g. "José no estudió. María estudió mucho, y yo también, porque teníamos un examen."

Topics for the compositions during the second semester of Spanish:

Topic 1: Write about the best vacation you ever took.

Topic 2: Write a letter to a friend who is about to move to Gainesville to start school, and give him/her advice about where to live and what to do in and around Gainesville. Share some experiences that you've had as a student here.

Topic 3: Look at the pictures on the page in front of you, and explain first what José did last Friday and then what María did last Friday. Incorporate as much vocabulary as you can, mention time of the day, use adjectives, etc. If you don't know the Spanish verb for some action, try to explain it another way, or skip that one. Do not use the numbers in the pictures to tell the story step by step. Write a normal narration of events. Notice that José's story in #1 lasted a whole day, whereas María's lasted only until noon.

Topic 4: Your best friend is crazy in love, and wants to quit school (university) and get married. You think that he/she is making a bad decision. Write a letter to your friend giving him/her your advice.