THE CONTINUOUS CONSTRUCTING OF LINGUISTIC PATHWAYS IN THE EARLY STAGES OF SLA

Fernando G. Ferreira-Junior[1]

Resumo: *A aprendizagem de uma língua é regida por processos gerais de diferenciação e generalização, cujos mecanismos cognitivos também operam em outros tipos de aprendizagem. Tal processo envolve a percepção de tokens altamente frequentes no insumo; dentre estes um se tornará mais prototípico, facilitando assim o desenvolvimento de uma dada categoria balizado pela frequência de types em espaços representacionais específicos. O presente artigo busca fornecer evidências adicionais de aprendizagem de L2 baseada no uso à luz de dados empíricos recentes. Com este intuito é feita, inicialmente, uma síntese da teorização acima delineada; seguem-se uma re-análise e discussão, na forma de redes de colocações de palavras, de dados longitudinais de aprendizes de L2 publicados recentemente (FER-REIRA-JUNIOR, 2008; ELLIS; FERREIRA-JUNIOR, 2009a, 2009b). As conclusões evidenciam que o desenvolvimento linguístico dos aprendizes é caracterizado por uma construção contínua de 'rotas linguísticas' alternativas ao longo do processo de constante mapeamento entre função e forma.*

Palavras-chave: *insumo, freqüência, categorização, construções, aquisição de segunda língua, aprendizagem de línguas.*

1. INTRODUCTION

First and second language acquisition (L1 and L2) studies seem to be recently converging on central or universal cognitive aspects involved in the learning of languages. Once kept apart by ideal-izations about a Universal Grammar (UG) and critical periods in language learning, research in L1 and L2 learning is breaking the boundaries between language use and abstract knowledge of language structure. The traditional distinction between lexis and grammar is no longer taken as a dogma as constructionist and us-age-based approaches of language learning and use present more and more empirical evidence (mainly based on corpora) that ab-stract language structure is continuously constructed from small concrete pieces of language.

In this paper I present the results of a more qualitative analysis of English L2 learner longitudinal data recently published (FERREI-RA-JUNIOR, 2008; ELLIS; FERREIRA-JUNIOR, 2009a, 2009b). In what follows, I briefly explain the concept of *construction* and com-ment on some recent theorizing about grammatical knowledge and the roles of token and type frequencies in language learning. Then, some collocational networks analyses are carried out, results pre-sented and discussed[2].

2. CONSTRUCTIONS

Constructions, recurrent and entrenched pairings of form and meaning/function, constitute the basic building blocks throughout the entire process of language learning. As claimed by Goldberg (2006), constructions are learned (or induced) on the basis of input exposure and driven by general cognitive, pragmatic, and process-ing constraints (i.e., by general psychological principles of category learning). Examples of constructions, after Goldberg (2003:220), are provided in Figure 1:

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2   Although I'm the only author of the present paper, I understand it's the result of previous col-
    lective research and that is the reason why the pronouns *I* and *we* are used throughout it.

Construction	Form/Example	Function
root words	e.g., *book, dog, or*	
Complex word	e.g., *Daredevil, shoo-in*	
Idiom (filled)	e.g., *go nuts*	
Idiom (partially filled)	e.g., *drive* <someone> *crazy*	
Covariational-Conditional construction	Form: The Xer the Yer (e.g., the more you think about it, the less you understand	Meaning: linked independent and dependent variables
Ditransitive (double object) construction	Form: Subj [V Obj1 Obj2] (e.g., *He baked her a carrot cake.*)	Meaning: transfer (intended or actual)
Passive	Form: Subj aux VPpp (PP$_{by}$) (e.g., *The house was hit by lightening*)	Discourse function: to make undergoer topical and/or actor non-topical

Figure 1: Some constructions, varying in size and complexity; notice that function need not be specified when form is transparent

The creative and infinite aspects of language come from the un-limited possibilities of (re)combinations of chunks of language in our mental stock of constructions. Constructions freely merge with other constructions in order to express new and different meanings. So, what is *grammatical competence* from such a perspective? Simply put, it can be understood as a collection of constructions - a *constructicon* – gradually built up throughout our lifetime. So, time with language seems to be fundamental in language learning; indeed, as commonsensically put by Ortega; Iberri-Shea (2005:26), SLA 'can be most meaningfully interpreted only within a full longitudinal perspective'. Grammatical competence is thus understood here as a huge collection of constructions along a *continuum* (which varies in specificity and complexity from concreteness to abstractness) ranging from morphemes, words, complex words, idioms, semi-productive patterns and, ultimately, fully abstract phrasal patterns. That is the rationale behind recent empirical and theoretical investigations conducted by Goldberg and colleagues in 2008, 2006, 2004, 2003; Bybee, 2008; Ellis, 2008, 2009; Lieven and Tomasello, 2008; Gries and Wulff, 2005; Tomasello, 2003; to name a few.

3. THE EMERGENCE OF GRAMMAR: CHUNKING AS A CATE-GORIZATION BY-PRODUCT

Bybee (2008) suggests that grammatical knowledge is procedural knowledge. This cognitive organization of our linguistic experience is made possible through processes of chunking. Chunking enables the creation of constructions. Such memory mechanisms operate slowly and govern processes of categorization, generalization and knowledge differentiation (as advocated by MCCLELLAND; ROGERS, 2003). These sequences, which are neuromotor in nature, lead to chunking which leads in turn to *grammaticization*. So, grammaticization is a procedural memory phenomenon. In the same vein Ellis (2002, 2003) suggests that both native and proficient speakers know an enormous amount of linguistic sequences in different levels (phonological, morphosyntactic) and, through the unconscious learning of the regularities present in the linguistic input, end up learning as well the sequential probabilities of a particular language in all these levels. Chunking processes seem to be at the heart of language learning and, from a constructionist perspective, the much idealized grammatical competence can be conceived as just strings of crystallized or entrenched patterns. These 'patterns' are the constructions themselves, i.e., recurrent and entrenched pairings of form and meaning/function of various degrees of specificity and complexity, as noted before.

4. CRACKING THE CODE: PATHBREAKING VERBS

With the help of large corpora it is becoming more and more possible to study the statistical regularities of linguistic structure. Recent studies have shown that some verbs (highly frequent ones) seed the development of argument structure constructions. These are called *prototypical* or *pathbreaking* verbs (GOLDBERG, 2006; GOLDBERG et alii., 2004) in the sense that they are the best cue to overall sentence meaning, i.e., who does what to whom.

Research by Goldberg and colleagues (2006; 2004) on L1 acquisition of verb argument constructions (VAC) provide evidence on how meaning and form correspondences involving intransitive motion (VL label for verb locative), caused-motion (VOL label for verb object locative)

and ditransitive or double-object (VOO label) constructions[3] have their genesis in verb-centred categories or what Tomasello (2003) named *verb island hypothesis*. The developmental pattern found for the acquisition of these VACs basically follows this fashion: first children conservatively produce syntactic patterns on a 'verb island' basis. It means that one single verb occurs with very high frequency when compared to the other types found in the same constructional pattern; that is, a 'prototype verb' takes the lion's share of a specific construction, i.e., *go* for VL, *put* for VOL and *give* for VOO. Next, argument slots begin to be slowly filled with other verbs in the ultimate process of generalising over specific verbs, thus forming children's knowledge of argument structure patterns. Results on mothers' data also show the preponderance of a single verb dominating a construction type (see Goldberg et alii., 2004). Ellis and Ferreira-Junior (2009a, 2009b) tested the 'verb island hypothesis' with L2 English learners. Results show a similar pattern for L2 learning as far as the VACs investigated are concerned. They also lend support to an important cross-sectional study on the role of constructions in SLA reported by Gries and Wulff (2005), thus strengthening the ontological status of constructions in second language acquisition (SLA) research.

5. INPUT FREQUENCY AND ZIPF'S LAW

One of the first to point to the statistical (or probabilistic) nature of language was the American philologist George Zipf in 1935. Zipf proposed that highly frequent words account for most linguistic tokens in a text. And verb frequency results for VL, VOL and VOO constructions found in our data seem to confirm what came to be known as Zipf's Law. And there is indeed a preponderance of highly frequent verbs for each construction investigated here. It aids the learner tremendously during communication, because, as these verbs are much more frequent, they become more relevant in differing contexts of use. This Zipfian family profile later facilitates the learning of the meaning of the abstract pattern. This happens because some verbs in isolation have low cue validity as predictors of sentence meaning. So learners will ultimately rely on *constructions* because sometimes these are better predictors of overall meaning than many verbs.

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3   Please check the Appendix for further explanation of the VL, VOL and VOO constructions discussed along these pages.

Lieven and Tomasello (2008) point to frequency as a crucial factor in language learning. For instance, *weird-word order experiments* in which non-canonical orders are presented show that children tend to correct mostly to canonical word order with verbs they know than with novel verbs. There are different kinds of frequency and they have differential effects. Token frequency 'entrenches' the comprehension and use of concrete pieces of language - items and phrases, as a chunk. Type frequency, on the other hand, promotes generalization, i.e., type frequency allows for the understanding of the internal structure of a given utterance, leading the learner to noticing that different items may serve the same function within the context of the very same construction. It is a necessary condition to the development of abstract language structures (grammar): "the difference between token and type frequency is between entrenching specific words or phrases and creating slots in which a range of words or phrases can occur" (LIEVEN; TOMASELLO, 2008, p.174).

In order to refine previous analyses (FERREIRA-JUNIOR, 2008; ELLIS; FERREIRA JUNIOR, 2009a, 2009b) we present in the remainder of this paper some collocational network analyses carried out on the same longitudinal data, i.e., from learners of English as a Second Language (ESL) in the European Science Foundation Project – henceforth ESF Project (see PERDUE, 1993). In the original publications aforementioned the reader will find the methodological details, results, and previous analyses.
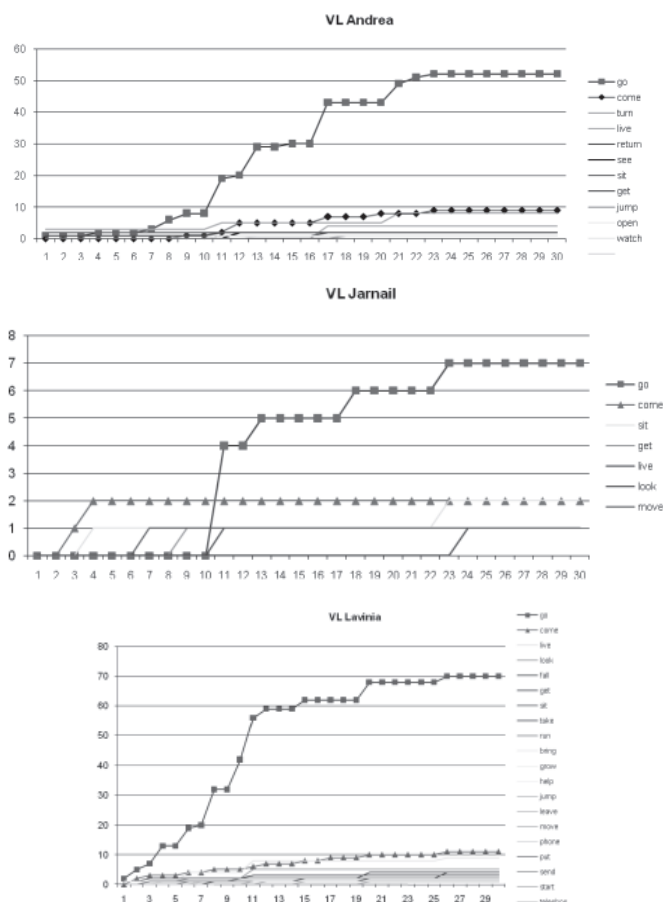
6. INDIVIDUAL CUMULATIVE ACQUISITION CURVES

As noted, our analyses are based on longitudinal data for seven ESL learners from the ESF Project living in Britain at the time of data collection (an approximately 30-month period in the early 1980's), whose native languages were Italian (four of them) and Punjabi (the other three). Their conversational data transcriptions were carefully analyzed after being downloaded from the *Max Planck Institute for Psycholinguistics (MPI), in* Nijmegen, The Netherlands[4]. We decided to look at learners' individual developmental patterns through their cumulative acquisition curves for the prototypical verbs and their collocations (highly frequent word co-occurrences) in each construction (VL, VOL and VOO). Such analyses might
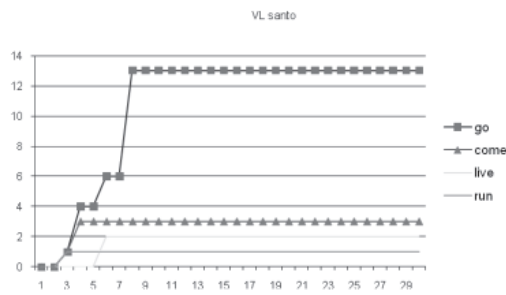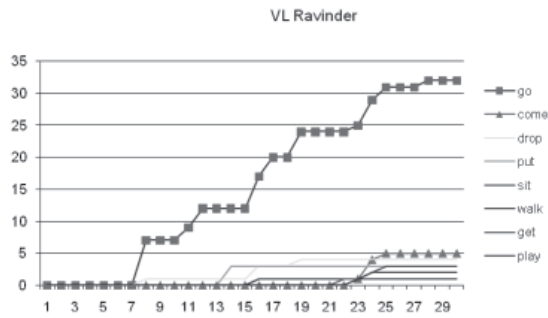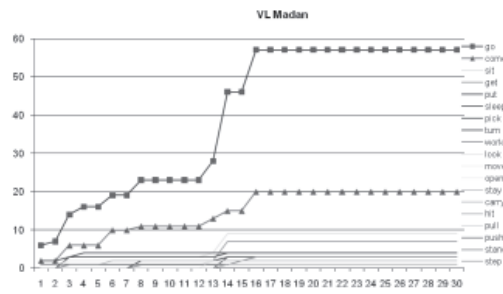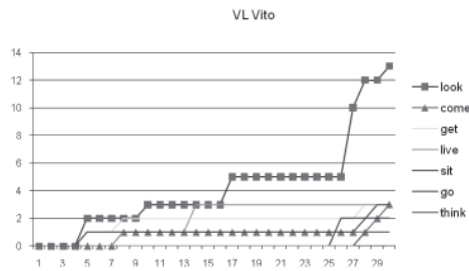
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4   The reader can have access to the set of data analyzed here from the MPI webpage at http://corpus1.mpi.nl/ds/imdi_browser/ . In the IMDI Browser one can find, *inter alia*, the ESF Corpus from the ESF Project (along with a detailed description of it).

reveal a more accurate picture of important aspects of interlanguage development as far as collocations and constructions are concerned.
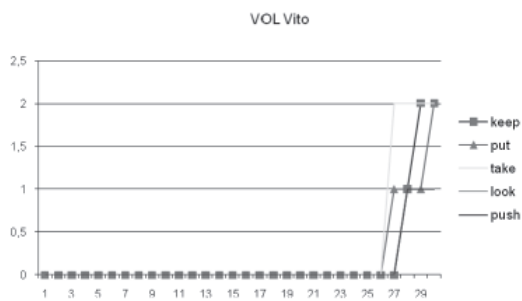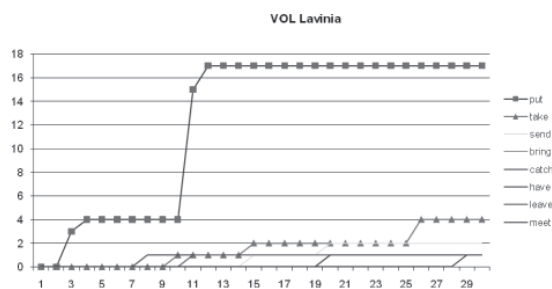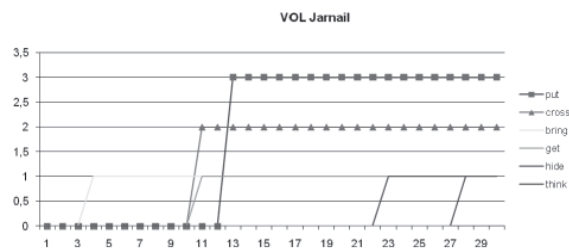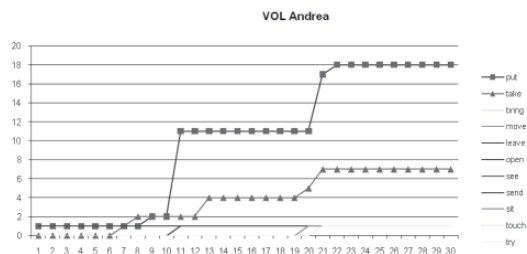
6.1 Graph results for VL, VOL and VOO individual cumulative acquisition curves

In this section we present a set of 19 small graphs for the individual acquisition curves in the three constructions analyzed. Each individual cumulative curve graph represents a learner's constructional development. Such graphs present the two most frequent verbs in each construction. The reader finds in Figure 3 further below a list of the most frequent verbs in each construction for all seven learners with percentages.

VL Andrea

VL Jarnail

VL Lavinia

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VL Vito

VL Madan

VL Ravinder

VL santo

VOL Andrea

VOL Jarnail

VOL Lavinia

VOL Vito

VOL Madan

VOL Ravinder

VOO Andrea

VOO Lavínia
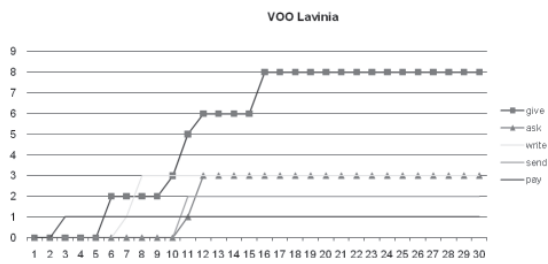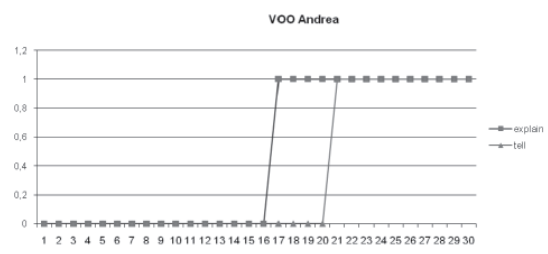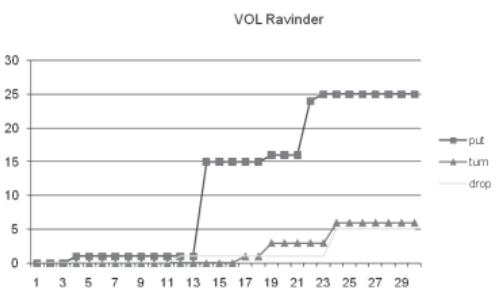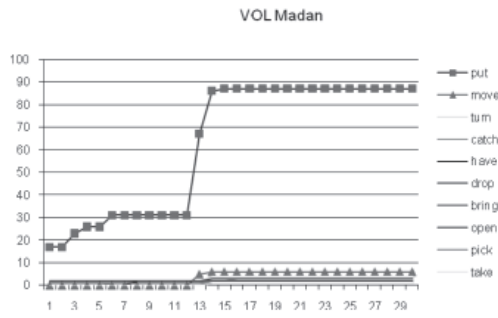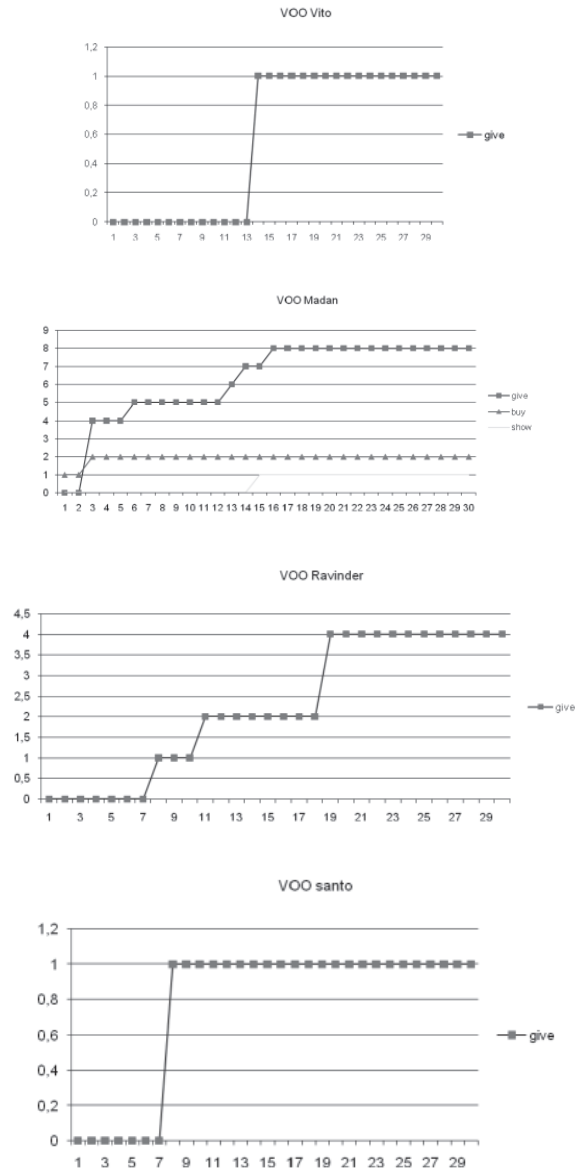
Figure 2: Set of 19 small individual acquisition curves for the three constructions analyzed. Note that axis X shows subject's study month while axis Y shows cumulative type frequency

The graphs for individual cumulative curves exhibited above are important in providing evidence for the role of pathbreaking verbs in seeding the development of VACs. In fact it is possible to confirm that the frequency distribution of verbs in the verb islands is Zipfian and that the first verbs to emerge in each VAC are those most frequent, prototypical and more distinctively associated with a given construction island in the input. Although these graphs are quite helpful in identifying the gradual emergence of pathbreaking verbs along the first months of SLA, they are not a good index of the emergence of collocations and their dynamics. The above graphs reflect a somewhat static and linear state of language development. In order to get a glimpse into some of the dynamics of SLA we will focus our analysis on collocational networks based on our ESF data. In closing this section, Figure 2 below provides a summary of the most frequent verbs in each construction for each learner. Then a discussion section presents some word collocation networks for charting language development through the emergence of associative networks.

Learners	VL	VOL	VOO
Andrea	go 52/76 (68%) come 8/76 (10%)	put 18/33 (54%) take 7/33 (21%)	tell 1/2 (50%) explain 1/2 (50%)
Ravinder	go 32/51 (62%) come 5/51 (9%)	put 25/36 (69%) turn 6/36 (16%)	give 4/4 (100%)
Lavinia	go 70/123 (56%) come 11/123 (8%)	put 17/28 (60%) take 4/28 (14%)	give 8/17 (47%) ask/write 3/17 (17%)
Madan	go 57/123 (46%) come 20/123 (16%)	put 87/109 (79%) move 6/109 (5%)	give 8/11 (72%) buy 2/11 (18%)
Vito	look 13/28 (46%) come/get/live/sit 3/28 (10%) go 2/28 (7%)	put/keep/take 2/8 (25%) look/push 1/8 (12%)	give 1/1 (100%)
Santo	go 13/19 (68%) come 3/19 (15%)	no construction found	give 1/1 (100%)
Jarnail	go 7/15 (46%) come/sit 2/15 (13%)	put 3/9 (33%) cross 2/9 (22%)	no construction found

Figure 3: Summary of the two most frequent verbs in each construction for each learner with percentages

7. DISCUSSION

7.1 Charting language development through the emergence of collocational networks

One very useful way to understand some language learning processing phenomena is through the use of collocational networks. That is

what we will do in this section as we try to better understand the graphs shown in the section before. Ellis, Ferreira-Junior and Ke (unpublished manuscript) and Ke (2007) provide some additional evidence on how structure may emerge from the dynamics of an emergent mental lexicon, as proposed by Elman (2004) in the realm of lexical representation. These associative nets, called *egonets*, were originally developed for the analysis and interpretation of complex social and human relations. Such networks may thus provide a new way to look at and understand the old problem of language development. First, three nets representing VL, VOL and VOO constructions were created. They were built by simply feeding all the constructions found in the ESF study into a computer program[5]. The words are taken as nodes and the adjacent collocations are the links. Collocational strength is measured by the thickness of the links. Collocation networks like these may reveal the genesis of abstract argument structure constructions of a given language. For example, Figure 4 below shows a network generated for VL constructions in our ESF data:
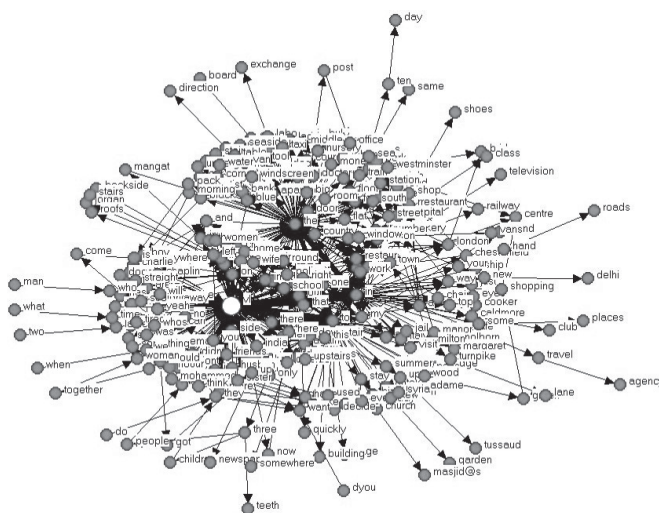

Figure 4: Collocational network for all words in the 436 VL learner constructions

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As seen above, the emerging network is rather chaotic. Perceiving the internal collocational patterning is something impossible due to vocabulary overlapping in multidimensional spaces. Now look at a sub-net for all VL constructions revolving around the lemma *come*, i.e., including the forms *come*, *coming* and *came* (Figure 5). The net below is in fact embedded into the connections of the net shown before.
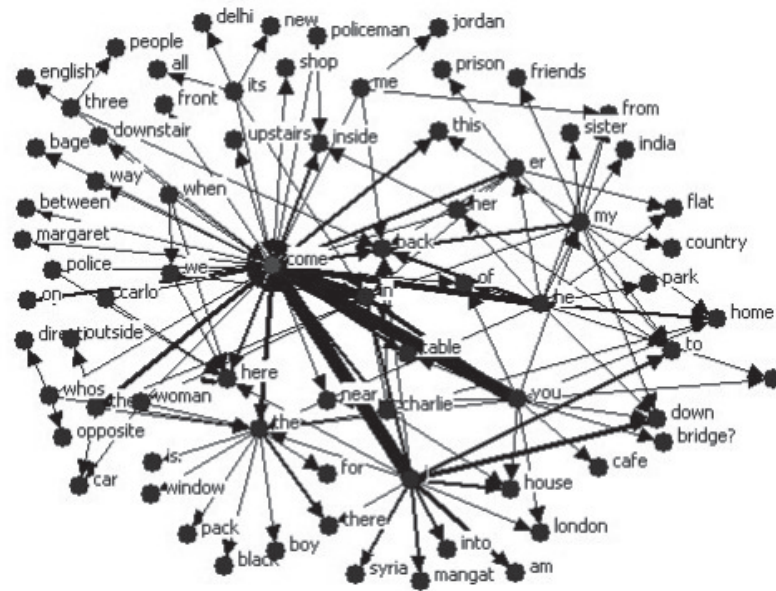
Figure 5: Collocational network for all words in all VL learner constructions with the verb *come*

The probabilistic tuning of the co-occurrence of words (as shown in Figure 5) enables the identification of collocations, pivot schemas and verb islands in a given construction (note that such schemas are identifiable by the thickness of links among words). By using this kind of representation we can more easily identify and better understand the patterning behavior of collocations in the early stages of SLA. So, the further fine-tuning of Figure 5 leads to Figure 6 below in which a VL schema (i.e, agent + verb + locative or subject + verb + preposition) is clearly identifiable; this emergent constructional

pattern results from the frequency of occurrence of a group of pronouns in the agent slot and a group of prepositions in the locative slot. As a result of being continuous, this network behavior ultimately leads to entrenchment.

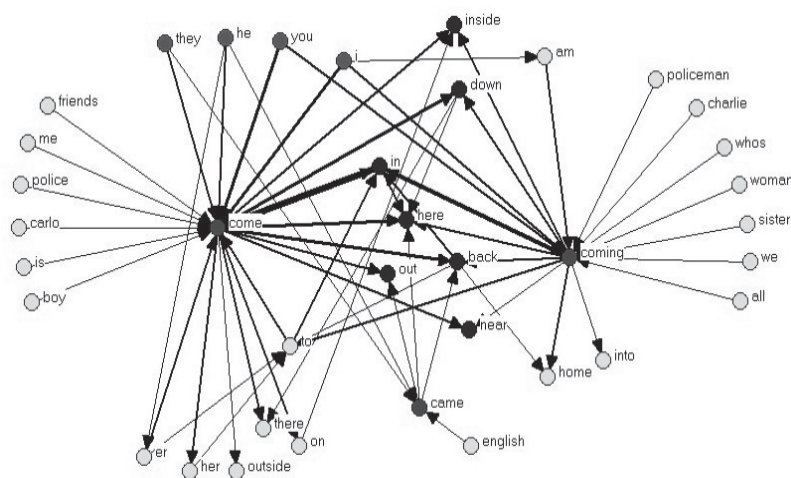
Figure 6: Collocational network for all pronouns and prepositions in all VL learner constructions with the verb *come* in the ESF corpus

As discussed before, these pivot schemas and verb islands seem to be the genesis of abstract constructional categories. Next we take a brief look at some collocational networks for all VL, VOL and VOO constructions. Note that they follow the same pattern shown in the example given above for VL constructions with the lemma *come*.

7.2 The continuous constructing of linguistic pathways

In this section we provide three collocational networks for all verb constructions from the ESL corpus. They are not lemmatized but revolving around an abstract verb island schema. Note that the structural combinations at this point (30 month or a two and half years) of ESL acquisition are quite interesting and some entrenchment can easily be identified. First, in Figure 7, the collocations network for VL constructions:
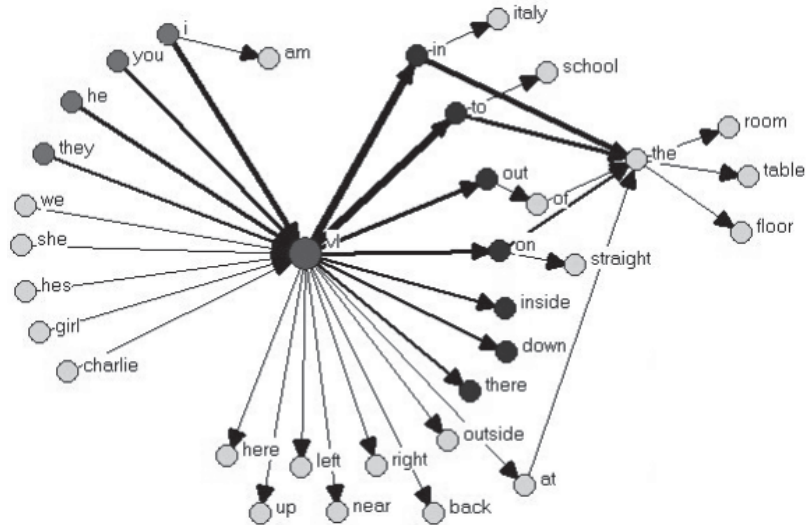
Figure 7: Collocational network for 436 VL learner constructions in the ESF corpus

As can be seen, the constructing process is initially verb-based but then, at a certain point, becomes chunked in a collocation-based fashion. At that stage there is a deconstruction of some initial pathways (thin lines) as alternate pathways (thick lines) starts to be built. Then VAC utterances gradually emerge and become longer as time passes; also notice it happens in tandem with the constructing of new pathways (adjacent lines). Thus based on the VL collocational network shown in Figure 7 we can chart in Figure 8 the emergence of the VL construction along the 32 month period analyzed so as to check at what point new pathways are chosen and linguistic restructuring occurs. If we do this, we find out that initially two or three-word VAC utterances gets longer on average as time passes:

Subjects' acquisition month	bare VL construction
1	go out
1	sit down
1	come here ?
1	come here
3	police come here

3	you put here
3	you sit down
4	he going out
4	he go out quickly
7	look out in my house
8	i go to the restaurant
8	i went to a bakery
10	he went to the dentists
11	she went in the room
12	go to the police station
12	you go to Birmingham
13	back side move to front
14	he go to inside the shop
14	he go to the police station
15	three children they go off to work
15	i used to go to my friend house
16	me come back from Jordan
17	the chemist is in the turnpike lane road
21	mohammed go to church masjid@s
22	he went in the rrestaurant
22	whos coming the opposite direction
23	come in this way between the table
26	my sister coming to in this country from india
26	i am coming into mangat house
29	look in the round and round the in the room
30	look in the number in the calendar
32	look at the windscreen
32	coming in the shop

Figure 8: A sample of VL VAC utterance length as related to subject's study month

The very same pattern is found in the analysis carried out on VOL constructions. Figure 9 below shows a collocational network for all 224 VOL learner constructions. Again, the constructing process is initially verb-based but then, at a certain point, becomes chunked in a collocation-based fashion (though, for the VOL data we have, not so robust as seen in the precedent discussion). At this stage, there is a deconstruction of some initial pathways (thin lines) as alternate pathways (thick and darker lines) start to build up. Figure 11 further below demonstrates how VAC utterances get longer as time passes and the constructing of new pathways takes place. Later, VAC utterances tend to get shorter again (maybe due to the continuous repackaging process) by chunking.
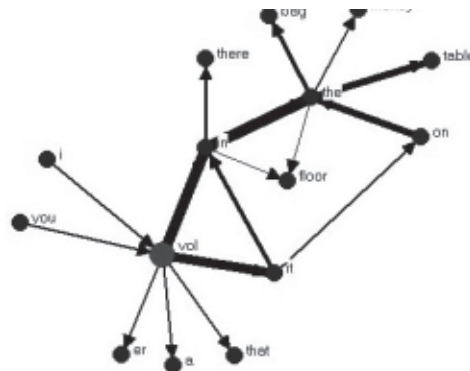
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Figure 9: Collocational network for 224 VOL learner constructions in the ESF corpus

Figure 10 below allows an interesting comparison of collocational patterns for VOL constructions found in learners' and NS's constructions. Remember that in VOL constructions a verb is followed by an object and a location. We can see in Figure 10 that the pronouns *you* and *I* are the most frequent words in the construction's subject slot. By comparing learners' and NS's collocations network we can see an interesting difference: in the learners' network there is a strong connection between the verb and the preposition *in*, whereas in the interviewer's network there is no such a connection; instead, the strongest connection is between the verb and the object pronoun, which is not present in the learners' network. This difference is illustrated by the arrows. Such a difference may be due to learners' ungrammatical constructions such as *put in the table* (as seen in Figure 11), in which the object pronoun in the VOL construction is missing.
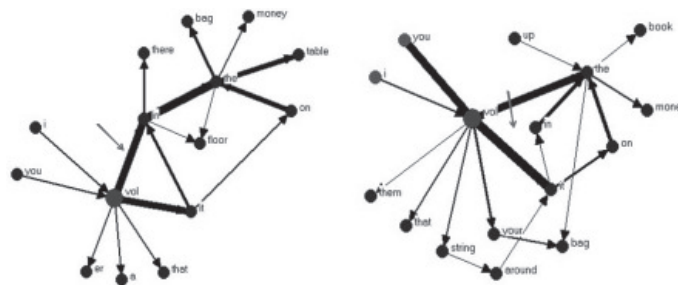

Figure 10: Comparing collocations network for learners' and NS's VOL constructions in the ESF corpus

Subjects' acquisition month	Bare VL construction
1	put in there money
1	put in the table
1	put it up the book
1	money put in there
1	put in the table
1	put in there
1	scrap job put in there
3	you put in your bag
4	bring bag here
4	top put in the book
6	put it er top the table
6	put in the floor bag
6	he put in the till the money
7	you take the coach for birmingham ?
8	catch the seventy eight from byron road to culver lane
8	after come down [/?] coming # by m walking
11	put the bag with the silver over the cuscino
11	put that bag in the last place on the shelf
11	put the bag with the money in that bag
11	there is one green bag on the floor
11	put the bag in the corner near the cupboard
12	put the sink on the other next to the door
13	move this er dust bin please this way
13	move the finger the on finger on in the photo
13	move from backside more from here put in the back side
13	keep it newspaper put in the bag
15	i put in all money my daughter name
16	catch the coach from turkey to antakia
22	to send one letter into the postal box
23	touch with your leg the box on the floor
23	sit down in the chair behind the table
23	put that near the legs of seige behind the table
28	take me here the policeman
29	take up the bag in the floor
30	to think them over at home
30	keep it bread in the van
30	push charlie chaplin in the van
30	look the police in the street
31	to have a look at the leaflet
31	keep the money in ?
32	put in this room all picture

Figure 11: VOL VAC utterance length as related to subject's study month

Finally, a similar pattern is found in the analysis carried out on VOO constructions. Figure 12 below exhibits a collocations network for all 36 VOO learner constructions. Note that the number of VOO constructions found in our data is quite small. Indeed, all of them are listed in Figure 13 further below
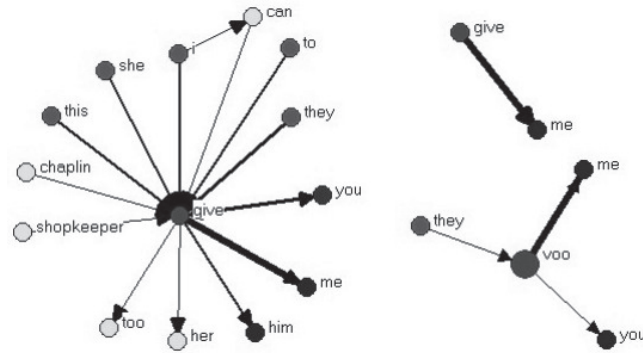
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Figure 12: Collocation networks for 36 VOO learner constructions found in the ESF corpus

The constructing process is essentially verb-based for the data shown here. It did not reach a robust collocation-based pattern as observed in the two preceding discussions, though there is a deconstruction of some initial pathways (thin lines) as alternate pathways (thick lines) starts to be built. VAC utterances would certainly become longer as time passed and the constructing of new pathways took place. But we only have VOO construction data related to a 23-month period (less than two years) and very few instances of them. According to Goldberg et alii. (2004), VOO constructions are more complex and demand more time to be learned. But along the process of SLA the developmental pattern will certainly follow those found for the VL and the VOL constructions discussed earlier.

Subjects' acquisition month	Bare VL construction
1	i buy my daughters clothes
3	i pay you these extra
3	give me money
3	shopkeeper give me one cigar
3	you give me money
3	give me money
3	i buy my daughter er toys
6	they give me a cheque
6	they give me an apartment
6	she give me some money
7	she wrote me a letter
8	my sister wrote me a letter

8	she wrote me two or three letter
8	give me small packet
8	charlie chaplin give too money this woman
10	to give him the money
11	they give me a piece of paper
11	to give her a parcel
11	they ask you some question
11	they send him a lot of bill
11	the electricity board send us a bill
11	this give me mangat
12	they didnt ask you something
12	i can give him something
12	they ask me about this courses
13	she give me long time
14	give me one cigar
14	give me chance
15	can you show me the picture
16	they give you some questions
16	they give you some answer
16	i give you the money
17	i explain you one way very simple
21	give me hand
21	you give me hand ?
23	she tell him the same thing

Figure 13: VOO VAC utterance length as related to subject's study month

8. CONCLUSIONS

Gries and Wulff (2005), in discussing the importance of a construction-based approach to SLA, point out that

> Although foreign language learners have much less input in the foreign language than native speakers have in their native language, they are still able to arrive at generalizations that lend themselves to construction-based explanations. Therefore, accounts arguing against constructions on grounds of limited input are apparently on the wrong track. In addition, in spite of the various differences between first and second/foreign language learning, the probabilistic nature of the results and their similarity to that obtained for native speakers provide strong additional support of exemplar based theories of second/foreign language acquisition in which frequency of exposure to, and use of, constructions play a vital rule (*sic*) (GRIES and WULFF, 2005, p.196).

The analysis on the continuous constructing process presented in the above pages is complementary to our previous analysis (FERREIRA-JUNIOR, 2008; ELLIS; FERREIRA-JUNIOR, 2009a, 2009b). It provides further evidence for the role of collocations in the early stages of SLA and sheds some light on how structure may emerge from the dynamics of an emergent mental lexicon. Such collocational networks provide a new way to look at an old problem; as seen throughout this paper, a more individual qualitative analysis into the utterances produced by the learners along the whole data collection period reveal more clearly some important developmental aspects of interlanguage, characterized by chunking processes in construction learning through emergent and entrenched collocational patterns. As discussed before, the constructional processes are continuous inasmuch as they constantly allow new pathways to emerge along the structuring and entrenchment processes of SLA.

The processes of constructional development discussed here resemble those of conceptual development proposed by Rogers and McClelland (2004). In fact, the continuous constructing, deconstructing and reconstructing of linguistic pathways evidenced by our analyses parallel those found in category development, i.e., differentiation and generalization. Our discussion also finds resonance in the neurobiology of learning. In fact, the 'knowledge' of language lies in the subtle connections established locally through inhibitory or excitatory weights, very like the neurobiological principle of learning proposed in 1949 by Donald Hebb. As we know, the Hebbian learning principle postulates that if any two neurons fire together (i.e., are simultaneously excited) the connection (synapse) between them must be strengthened (which, in turn, will consequently inhibit activations among other neurons) in such a way that, in subsequent occurrences of the same stimulus, these connections will exhibit higher levels of activations in the neuronal system due to their already constituting specific neuronal configurations or cell assemblies (O'REILLY; NORMAN, 2002, p.506-507).
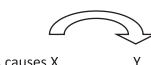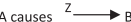
I believe constructionist claims on language development would be strengthened if informed by theorizing from other areas of investigation such as neuroscience. It would add even more evidence and endorse recent claims that language can indeed be entirely learned from scratch. So far, to my view, this is an avenue not yet fully explored as far as SLA is concerned.

Finally, echoing the words from Ortega and Iberri-Shea (2005) again, there is a scarcity of longitudinal studies in SLA, the prevalence being cross-sectional ones. Although cross-sectional studies have their place in providing important insights into the SLA processes, as the contribution by Gries and Wulff (2005) testifies, a full understanding of the processes underlying language learning is clearly dependent on time. As seen in our present discussion on construction learning by L2 English learners, time is a crucial factor in going *from tokens to types to system* in construction grammar (as put by ELLIS, 2009). Constructing a language takes time.

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APPENDIX

VL (Intransitive Motion)	VOL (Caused Motion)	VOO (Ditransitive)
In English some verbs are used to describe the movement of something or someone (X) to a new place (Y) or in a new direction.	In English some verbs are used to describe how someone (A) causes the movement of something (X) to a new place (Y) or in a new direction.	In English some verbs are used to describe how someone (A) causes someone (B) to receive something (Z)
X　　　　Y	A causes X　　　　Y	A causes　$Z \longrightarrow$ B
e.g. The fly buzzed into the room	e.g. Pat blew the feather into the drawer	e.g. Pat faxed Tom the picture

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