Toward a new understanding of syntactic CLI: evidence from L2 and L3 acquisition[1]

Running head: CLI in L2 and L3 Acquisition

1. Fundamental questions

In spite of the advances made in our principled understanding of the adult second language (L2) and multilingual (L3[2]) processes (see Bhatia and Richie 2013; Cabrelli Amaro et al. 2012; Jessner 2006), fundamental questions regarding multilingual development persist. Firstly, and maybe most importantly, we still need convincing evidence for what the nature of the initial state (S_0) in L2 and L3 acquisition is. Increasing number of studies have been carried out based on established models for language acquisition, as we briefly refer to them later in this chapter, but there is still lacking information on what particular aspects of the first language (L1) or other known languages affect subsequent language learning. Researchers do not only differ in their understanding of the S_0 for language acquisition but vary in their assumptions and hypotheses about what kind of L1 (or L_n) knowledge might affect subsequent language development (see detailed

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[1] We would like to thank the editors and reviewers for their valuable and insightful comments and questions.

[2] Based on the assumption that on a theoretical level third language acquisition already entails all those processes that guide L3 acquisition, we use L3 to refer to any L3…Ln+1 acquisition process indistinctively.

reviews on variables that affect crosslinguistic influence, e.g., Murphy 2003; Jarvis and Pavlenko 2008; Cook 2010; Rothman and Cabrelli Amaro 2010). Orthogonal to this issue, researchers also vary in terms of considering linguistic influence of this kind as facilitative or disruptive. With respect to the match or mismatch of linguistic elements of the L1 (or L_n), the term receives a positive –facilitation- or a negative –disruption- connotation. This is even more so if we consider the syntactic development of a newly learned language in an individual. An important objective here is to ascertain how non-target like structures found in learners' interlanguage relate to these learners' previous linguistic experience. More specifically, at least two fundamental questions arise here, and how they are responded to determines the acquisition theory to be applied. Firstly, it must be clear how to treat manifestations of syntactic structures in the learners' interlanguage resembling those of their L1 (or of any previous L_n). If these manifestations are considered as the result of some conscious or unconscious strategy to copy from L_n ($n \geq 1$) to L_{n+1}, we are obliged to treat them as instances of limitation with respect to development, implying a probable fossilization. On the other hand, these manifestations might be regarded as occurrences of some learning strategy to tackle yet unknown structures and by which learners legitimately draw upon their previous linguistic experience. Both (*language*) *transfer* and *crosslinguistic influence* (CLI) in the broad sense have been extensively used in language acquisition theory as general terms referring to the learner borrowing elements from a source language to

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construct the target grammar. Since the term *transfer* in second language acquisition literature seems to have acquired a connotation expressing the first meaning, we find the term *crosslinguistic influence* more fortuitous to mark a distinction.

Differentiating these two ways might seem pedantic, unless we reflect on the other fundamental question, namely what specific non-target like structures seem to surface in learners' interlanguage and their pattern of occurrence. Language acquisition theory focusing on syntactic development must investigate the linguistic nature of the CLI phenomenon and what it indicates. In fact, one of the main goals of multilingual research should ideally be to give a principled explanation for such phenomena. This is precisely where this paper intends to contribute to the field of multilingual acquisition. We hope that considerations presented in this chapter may provide insights, which may lead to a better understanding of how CLI works in multilingual development on a structural level.

2. What we already know

Before we go deeper into our topic, let us try to summarize here in a few words what we may say we actually know about language development in an individual. Firstly and most importantly, a human being is provided with a unique capacity to acquire language. Similarly to how all babies

eventually leave off crawling and develop the ability to walk upright, all humans, even the illiterate, end up using a language to communicate verbally with others. This biological endowment innate to humans, the capacity for language which computes finite elements to produce and understand a practically limitless number of utterances is called the faculty of language (FL), or lately, the faculty of language in the narrow sense (FLN) (see Hauser et al. 2002). The overwhelming majority of scientists - biologists, neurologists, linguists, etc.- concerned in the matter accept that the human FL is qualitatively different from communication systems identified among animals and that its uniqueness is due to its core properties, such as recursion which yields discrete infinity (e.g. Hauser et al. 2002). Chomsky and the generative tradition even consider the FL as one of the human cognitive capacities with its own features which differentiate it from other domains of cognition (Rieber 1983). This, nevertheless, does not imply that the FL is an autonomous module of the mind. Experience shows precisely the opposite. Most difficulties in the study of the FL derive from the fact that it can be subject to and influenced by the development of other related domains of cognition, such as sensory-motor, conceptual-intentional, etc. The end product of a language learning process, i.e. the language of a community of speakers, is then the result of a complex process that is constrained by a great number of factors.

It may also be argued that a great number of people is multilingual, although multilingualism in the individual may differ in nature. Given the increased

pace of globalization and the boom in the use of social networking sites in the last ten years, as seen in the Pew Center's Report (Devlin, 2015) the tendency to grow up in a plurilingual community and actively use multiple languages on a daily basis is likely to increase. See similar arguments in (Chomsky 2006; Grosjean 2004; Auer and Wei 2007; Cook and Newson 2007; Aronin and Singleton 2012) among others. Country borders may, in some cases, still represent the borders of a linguistic community, but even these communities are affected by migration of other linguistic communities due to socio-political, economical or even climatic reasons. Increased infrastructure, better communication facilities and the explosive use of media have not only opened up but practically erased barriers among speech communities. If we consider the legions of people who are affected by any or all of these circumstances listed above, the amount of bi- or multilingualism is truly extraordinary. Even if a region is not divided up into communities speaking syntactically rather different dialects or variants of a language, educational policy requires the teaching of one or more foreign languages, as part of the curriculum from primary school on or as early as in kindergarten (see e.g. the European Parliament's Language Policy (n.d.); Key Data on Teaching Languages at School in Europe, a 2012 report from Eurydice/Eurostat). Therefore, even in regions where the overwhelming majority acquires and speaks the same language, the use of at least another language different from the official one has to be necessarily regarded as the most common and thus standard norm, or as Cook and Newson express it

from a multi-competence perspective: "most people, or indeed *all* people, have multiple grammars in their minds" (Cook and Newson 2007:223).

3. Main models for L2 and their consequence for L3 acquisition

By the end of adolescence, the physical and cognitive development of a human being has supposedly reached a mature state, therefore L2 acquisition research with late adolescent and adult learners provides an opportunity to examine language development in a relatively pure way, focussing on the aspect of language development in individuals independent of other influencing factors such as information processing, etc. This demarcation is necessary to set the basis for an adequate theory of language acquisition and competence (Epstein et al. 1996; Flynn et al. 1998; Flynn and O'Neil 1988; Guasti 2002; Martohardjono 1993; Rizzi 2004). Accepting the Chomskyan theory of language acquisition, according to which it is the individual's FL which generates knowledge of language by responding to language input, Universal Grammar (UG) is defined as the theory of this FL and of 'the children's pre-linguistic initial state' (Chomsky 1981:7). Consequently, the task of L2 research is to meet the challenge of describing theoretically how L2 learners access UG in their language development of the L2. Some of the most representative theories were developed in Bley-Vroman (1989), Clahsen and Muysken (1986), Johnson

(1988), Johnson and Newport (1989), Schwartz and Sprouse (1996), Hawkins and Chan (1997), Epstein et al. (1996), Flynn (1983 and subsequent work); see Eubank (1991) for arguments and counterarguments on these theories. For a detailed review on the different hypotheses about access to UG in L2 acquisition, see e.g., White (1989, 1998, 2003) and Cook and Newson (2007). For general treatments of the field of second language, see the corresponding chapters in Ritchie and Bhatia (1996, 2009).

Two principal models were developed to capture possible ways in which UG may be represented in L2 language acquisition. The first, the maturation model, which was based on the maturation hypothesis (Borer and Wexler 1987; Felix 1984), claims that for L2 acquisition UG is available to the L2 learner only in the form of a language-specific grammar viz., the L1, which is supposed to be the beginning basis, the initial state, for the development of the L2 grammar. Thus, under this hypothesis, UG is considered to have somehow changed into L1 and therefore new language knowledge is acquired through L1 alone via some yet to be defined transfer mechanism. The strong continuity model (Flynn and Lust 2002; also in Flynn, 2009 as a 'constant model') is based on the strong continuity hypothesis as articulated for the study of L1 acquisition (Lust, 1999, 2006; Boser et al. 1992; for examples see Boser et al. 1995; Whitman et al. 1991). This model claims that it is not UG which changes over time but the theory-building capacity of the L2 learner. Accepting the strong continuity model of UG does not

mean denying obvious differences between the processes of L1 and L2 acquisition, but, rather, claiming that these differences are not due to a change in UG. According to this model, UG remains distinct from the developing language-specific grammar and is continuously available for the L2 learner, as implicit principles that guide and constrain language acquisition. Consequently, S_0 cannot be regarded as a state of *tabula rasa*, which is changed by the experience of acquiring an L1, but rather as a state which precedes the mental effort to learn a particular target language L_n, or with words taken from Flynn and Lust "a state of the mind/brain prior to experience with particular data and a particular new acquisition task" (Flynn and Lust 2002:114).

Learners in this state, which is initial with respect to a new L_n, have access to the linguistic principles of their UG, which trigger the language-specific grammar in view of new language input, and may also use other learning strategies particular to each individual. To have a unified understanding of what S_0 means is crucial in order to investigate the L2 learner's representation of grammar at the point of encountering the L2 input for the first time (White 1989, 1998, 2003; see related discussions on the nature of the L1 in the L2 grammar in Gass and Selinker 1983, 1992; for other treatments on how prior linguistic knowledge influences L3 acquisition, see e.g. Montrul et al. 2012 and Fallah et al. 2016). Learners must then map the language-specific grammar by dissociating and integrating grammatical components to construct their new language-specific grammars, a process

referred to as 'grammatical mapping' (Flynn and Lust 2002; Flynn et al. 2005, also in Lust 2006). We believe that only this understanding of the S_0 and of the acquisition of L2, or any L_n, may aspire to come up with a principled definition of what it means to construct a new target grammar on a structural level and explain the fact why L2/L3 language learners appear to follow structural development regarding L2/L3 comparable to the established route for native children of those particular languages.

4. Toward a new understanding of syntactic CLI

Research based on contrastive analysis tended to emphasize the perceptual surface structure relation among languages, as it compared parallel structures found in the source and the target language at a position-sensitive allophonic level, rather than at a more abstract level. If we contemplate the role of surface elements alone in language development, CLI is generally seen as positive if surface elements match and negative if surface elements do not match in parallel structures of the compared languages. Consider the following English sentences (1.a-d):

(1) a. Which cat_i did the hunter believe [that the girl had hit e_i]?

b. Which cat_i did the hunter believe [the girl had hit e_i]?

c.   *Which girl$_i$ did the hunter believe [that e_i had hit a cat]?

d.   Which girl$_i$ did the hunter believe [e_i had hit a cat]?

While English manifests overt Wh-movements, like in (1.a-b) and (1.d), although constrained, as exemplified in (1.c), Chinese does not exhibit overt Wh-movements at all. On the other hand, Spanish matches English in that it allows for a long-distance Wh-movement, although the presence of an overt complementizer seems to be obligatory, therefore only the equivalent of (1.a) and (1.c) would give correct results. Even German speakers should be familiar with the long-distance Wh-movement phenomenon, as German exhibits partial Wh-movement, but in sentences with D-linked wh-phrases, only the equivalent of (1.a) would give a correct result. Hence, taking only the acquisition of surface features into account, we would expect Spanish and German learners of English L2 to considerably outperform Chinese L1/English L2 speakers on sentences with an overt Wh-movement like examples in (1). This would necessarily lead us to accept the claim that L2 learners transfer syntactic knowledge from their L1 and thus construct their L2 language-specific grammar.

Consider, however, how learners of English acquire constraints on Wh-movement, as illustrated in (1.c). Simplistically formulated, the model that assumes the transfer of syntactic knowledge from L1 predicts that Chinese learners of English L2 could never derive Wh-movement constraints for English in their interlanguage as they do not apply them in their L1s and

they never encounter data confirming the ungrammaticality of such questions. Such a prediction was not only proven to be false, but learners even seemed to be sensitive to different degrees of Wh-movement violations (see Martohardjono 1993). Moreover, if learners were conscious of the constraints that their L1 poses on long-distance Wh-movement, as described for Spanish and German above, a model based on the theory of transferring surface elements from L1 to a target language would even predict a negative influence of L1 on English L2. It is, however, highly improbable that learners treat constraints consciously, especially due to lack of evidence in both their L1 and in English, and therefore such a model seems to be too weak to adequately explain how Spanish L1 and German L1 learners of English L2 end up applying the correct constraints on Wh-movement in the target language.

As a first conclusion, we may say that learners legitimately use extra linguistic strategies, especially at initial levels, such as translation, etc. because it is available to them. Finding such occurrences in production then does not necessarily reflect their developing linguistic competence, i.e. these occurrences cannot be identified with the theory of the target grammar they are elaborating. There is thus an important consideration to be made here. It seems to be crucial to treat learners' production from a developmental perspective and establish, as closely as possible, the consecutive stages of the linguistic development of homogeneous groups. Researchers must ask at what stage a group outperforms another and what makes it do so, i.e. what

linguistic knowledge this group may draw upon to deal with a specific target construction. All things considered, it is clear that many factors influence how learners acquire a subsequent language and in doing so they rely on prior linguistic knowledge either consciously or unconsciously. Regarding such influence as 'positive' or 'negative' would limit the explanatory power of an acquisition theory which intends to capture how learners are trying to work out the specifics of a grammar of a particular language, guided by basic linguistic principles.

The desire for a more elaborate explication for how learners develop a subsequent target grammar and the evolution of theoretical linguistics led linguists to look at the development of more abstract formal features. Decades of L2 research and more recently research in multilingualism have produced valuable studies and new discoveries in the area of how prior language experience influences the development of the new target language L_{n+1}. For a comprehensive selection of recent studies, see Liceras et al. (2008), Cabrelli Amaro et al. (2012).

To give an example for a study that investigates the development of an abstract formal feature, let us consider here a behavioural acquisition study comparing the structural constraints of children and adult code-switching. Paradis et al. (2000) looked at how production data of children and adult French-English bilinguals reflect learners' knowledge of the functional category INFL for these languages. The presence of system morphemes in their utterances, such as tense, agreement or aspect markers, copulas,

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auxiliaries, etc. was considered as overt reflexes of the mentioned functional category. Accepting that INFL-related morphology in English emerges later in development than in French, the authors claim that English-French bilingual children, although clearly aware of this category's existence, seem to lag behind in their productive use of INFL in English. Results indicate that the use of language-specific INFL morphology does not necessarily reflect children's syntactic knowledge related to the language-specific INFL. Such a finding hints at the possibility of regarding the feature setup of the English INFL as less transparent for children, which effectuates such a delay. The authors conclude then that syntactic knowledge must be regarded as something different from the knowledge of grammatical rules of the target language, in spite of the fact that syntactic knowledge seems to be closely related to the acquisition of the target-specific setup of elements in the Lexicon, in this case the specific architecture of the English and French functional category INFL (for further details see MacSwan 2005, 2013). Paradis et al.'s study provides only one albeit convincing evidence that investigating the role of abstract features in development is crucial in order to reveal a more complete picture of target language development.

In conclusion we may say that if a theory of linguistic development aims to achieve explanatory adequacy, it must investigate the development in acquisition of both surface and abstract features.

5. Focus of this paper

Based on our arguments presented in the previous chapter, the S_0 state for the acquisition of a target language must comprise of already acquired surface and abstract properties of the L1 for L2 acquisition and those of the L1 and L2 for L3 acquisition. As we explained, the fact alone that learners start out with similar patterns of surface properties does not suffice to present a complete picture of how development of a target language occurs. The acquisition of abstract properties, such as features of functional categories, has already proven to play a significant role in subsequent language acquisition and development. It follows then that only an approach that focuses on the development of both surface and abstract properties may aspire to explain with increased adequacy the complexity of language development, e.g. could reveal not only how learners of English acquire long-distance Wh-movement but also how they learn to respect constraints regarding this movement.

To illustrate this claim, in this paper we focus on the correct identification of 'empty categories' (ECs) by learners of English L2 and English L3. The term 'empty category' was first employed by Chomsky (1981) to refer to a nominal element of a sentence without phonological content, also called as 'nominal gaps'. Their anaphoric and/or pronominal features are responsible for the constraints which are imposed on the derivation to bind them. The role played by these features is, on the one hand, abstract given its lack of

phonological content and, on the other hand, structure specific due to binding constraints. Linguistic theory identified four distinct classes of ECs, namely: *pro*, PRO, NP-trace and Wh-trace.[3]

A highly challenging question in language acquisition is then to study how learners identify these phonologically empty elements and acquire the knowledge as to their associated syntactic features in the target language. The task of the learner seems to be especially complicated not only because empty categories are not manifest either in written nor in spoken form but also because empty categories, though available in all known languages, are applied in a principled way. Therefore, it is expected that differences among language groups emerge in terms of their identification of ECs.

6. Two studies in EC identification in English

In the followings, we summarize the results of two independent experiments examining EC identification by adult learners of English. The first one examines how learners of English L2 identify the distinctive features of an NP-trace in relative clauses, whereas the second focuses on how multilingual learners of English L3 work out the appropriate binding properties for PRO in adverbial adjunct clauses introduced by *when*. Our

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[3] Recent work in theoretical linguistics has argued that functional categories in syntax may also be empty or null, such as null determiners, null complementizer, etc. (see for detailed reviews Radford 2004, Carnie 2013).

goal here is to examine learners' production from a perspective that may provide deeper insights into the question of CLI. We believe that these studies have significant implications for revealing aspects not yet emphasised in the field and thus may illuminate the role of CLI in multilingual language acquisition.

6.1 First study: EC identification in restricted relative clauses

The first study we would like to sum up here was originally reported in Flynn (1989). Three groups of adults, viz., Spanish, Japanese and Chinese, learning English L2 were tested on their elicited production of four types of restricted relative clauses. The design varied along three factors. Learners were asked to imitate stimulus sentences which involved the relativization of a noun phrase object or subject; within the subordinate clause, the gap was either in subject or in object position. These variations were extended to three types of relative clause structures that were varied in terms of the semantic and syntactic status of the relativized head NP – lexical head NP, *person* as head NP, and no head (free relative). Sentences (2)-(4) should serve as illustration of the stimuli. The sentence in (2) is a lexically headed relative clause, where both the head and the gap are in subject position. Sentence (3) introduces a lexically headed relative clause including *person*, an unspecified noun, as its head in subject position but the gap is in object

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position. Finally, sentence (4) is an example for a free relative, where both the head and the gap are in object position.

(2) The lawyer who criticized the worker called the policeman.

(3) The person who the engineer answered criticized the man.

(4) The doctor answered whoever the policeman criticized.

According to the previously taken standardized Michigan Test, learners of each group had been arranged into three levels of English proficiency: low, mid and high. Table 1 shows the number of participants and proficiency level placement scores for each level in each language group. Learners were also trained on the particular lexical items of the stimuli to assure that lexical knowledge made no impact on performance.

Table 1: Number of participants according to L1 and level of proficiency in English with mean scores

	Low		Mid		High	
	Number of participants	Mean score	Number of participants	Mean score	Number of participants	Mean score
Spanish	16	17.9	21	31.3	14	41.7
Japanese	7	20.3	25	30.8	21	42.5
Chinese	11	14.5	20	31.0	29	43.8

Regarding surface properties, learners' L1s -Spanish, Japanese and Chinese- differ from each other. Whereas Japanese objects precede the verb (OV), as seen in (7), Spanish and Chinese objects, as in English, follow it (VO), as in

(5), (6) and (8). Therefore, if learners somehow draw upon their previous linguistic knowledge, Spanish and Chinese learners should have no difficulty in producing the stimuli, whereas the correct sequencing of constituents in English is assumedly a novelty for Japanese learners, hence must be learnt. Directionality, on the other hand, presents a different distribution among these languages. A relative subordinate clause, usually introduced by a relative marker, modifies a head (H), typically an NP in the main clause. Spanish, Chinese and Japanese differ in terms of the match/mismatch in head direction to English relative clauses (RC). English and Spanish are head-initial languages (H-RC) (see sentences (5)-(6)), whereas Japanese and Chinese are head-final (RC-H) (see sentences (7)-(8)). The examples in (5)-(8) are reproductions of Flynn (1989:1-4).

(5)   English (H-RC with VO):
       (The child [who is eating rice]) is crying.

(6)   Spanish (H-RC with VO):
       (El niño [que come arroz]) llora.
       The child that eats rice   cries

(7)   Japanese (RC-H with OV):
       ([Gohan-o tabete-iru] ko-ga)   naite-imasu.
       Rice-obj   eating is   child-subj crying is

(8)   Chinese (RC-H with VO):
       ([Na-ge zhen zai chi fan *de*]   xiao hai zi) zai ku.
       That is   eating rice *RC_{marker}* little child   is crying

The overall results indicate that both Chinese and Japanese L1 learners perform markedly less well than Spanish L1 learners but also that the Japanese speakers perform decidedly less well than the Chinese at all competence levels except the lowest. This sharp difference cannot be accounted for by constituent word order differences alone. It shows that the development of a language cannot be explained away based on the transfer of surface elements alone.

Development in linguistic theory led Gair at al. (1997) to investigate the role of abstract properties involved in the data presented above. The increasing clarity around the role ECs play in syntax and the application of the theory to acquisition presented interesting results. All relative clauses contain a gap or missing constituent (EC) in syntax, which corresponds in meaning to the antecedent H of the main clause. For instance, (9)-(11) represent schematically the arrangement of syntactic constituents in a relative structure, where the antecedent for the EC functions as an object.

Object-gap in a relative clause:

    (9)   English/Spanish:
                NP_{object} [CP who [$NP_{subject}$ V **EC** object]]
                'The man [who the student $_{(subject)}$ called **EC**$_{object}$]'

    (10)   Chinese:
                [$NP_{subject}$ V **EC**$_{object}$ de$_{comp}$] NP_{object}
                '[Student$_{subject}$ called **EC**$_{object}$ de] the man'

(11) Japanese:
      [NP$_{subject}$ **EC**$_{object}$ V] NP$_{object}$
      '[Student$_{subject}$ **EC**$_{object}$ called] the man'

Figure 1 and 2 highlight the most interesting findings in the data. Figure 1

shows the amount correct statistics for the three groups (Spanish L1,

Chinese L1 and Japanese L1) according to type of stimulus sentence

(subject- vs. object-gap sentences).

Figure 1: Amount correct according to language group and type of sentence
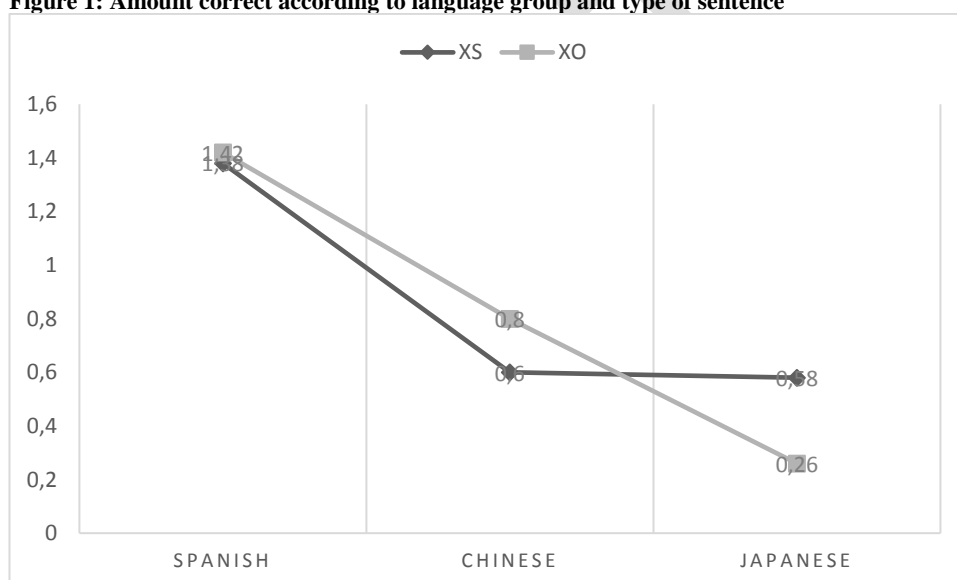

Figure 1 reveals that learners with Japanese as their L1 seem to have

considerable difficulties with object gaps in relative clauses and

consequently perform decidedly better on subject gap relatives. Learners

with Chinese as their L1, on the other hand, exhibit a slight preference for

object gaps (for a detailed analysis see Gair et al. 1997). We may assume

then that the L1 interferes in L2 learning in a general sense, but such CLI

must correspond to a more nuanced analysis of the involved syntactic structures.

For this reason, error analysis on the production data was most revealing for the purposes of this study. One of the most common mistakes committed by the learners was that in their imitation of the stimuli they changed the grammatical function relation of the relativized item within the relative clause. Figure 2 shows the mean of object gap to subject gap (XO>XS) and subject gap to object gap (XS>XO) conversions according to L1 language groups. There is a striking difference among language groups, as is seen. What makes it even more remarkable is the fact that the given responses are grammatically correct but with an altered basic meaning. After analysing the production data, Gair et al. concluded that in changing XO to XS, Japanese L1 learners "do not so much as change the grammatical function of the gap within the object relative clause, but rather fail to recognize its existence" (Gair et al. 1997:107). In short, nature of errors indicated in this study that identification of EC for the Japanese L1 learners had to be constructed along the acquisition process.

Figure 2: Two types of error conversions according to language group
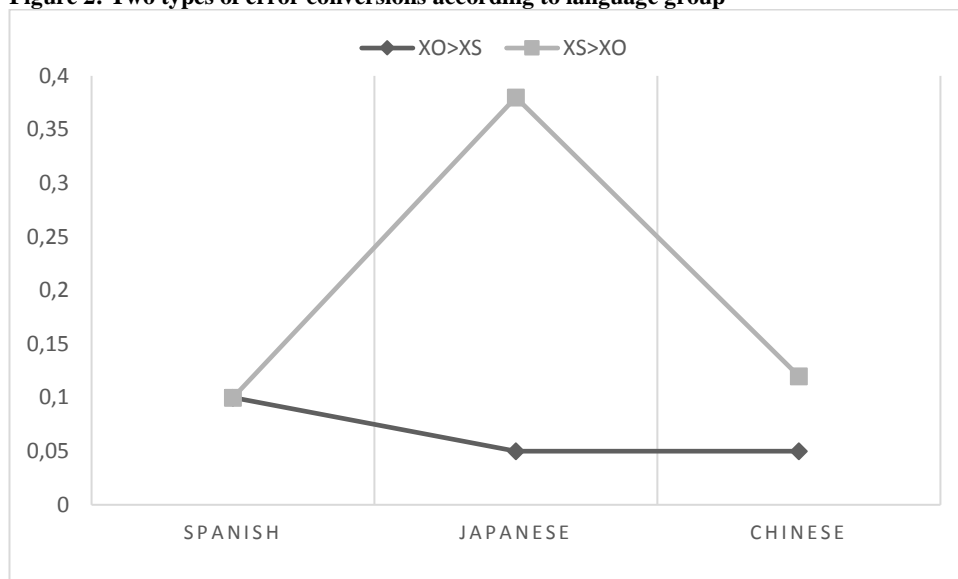
Considering the three proficiency levels in each L1 language group as three stages in the English interlanguage development, our preliminary conclusion with regard to CLI is that the construction of abstract properties of functional categories takes time, which implies that such phenomenon seems to be best understood when considered from a developmental perspective.

6.2 Second study: EC identification in adverbial subordinate clauses

In a further study, which also involved the analysis of the acquisition of surface and abstract features, we looked at how English L2 and L3 learners acquire correct referential relations for subject-controlled pronominal anaphora in adverbial subordination. We investigated the elicited imitation

production of sentences involving adverbial subordinate clauses of two groups of Hungarian L1 learners of English: a group of Hungarian L1/English L2 and another multilingual Hungarian L1/German L2 group learning English L3.[4]

Both group's English proficiency was measured by a standardized test prior to experiment. The mean results and the number of participants in each group and level are shown in Table 2. Participants in both groups were young adults between 17-21 years of age and either studying at a university or preparing to do so. Although the number of participants in the L2 group at high level is too low to expect any statistical results, it does not affect the validity of the arguments we will present here.

Table 2: Two Hungarian L1 Studies on EC identification in adverbial adjunct clauses. Number of participants according to study and level of English proficiency with mean scores

	L3 Study: HuL1/GeL2/EnL3		L2 Study: HuL1/EnL2	
Level	**Number of learners**	**Mean ESL score**	**Number of learners**	**Mean ESL score**
Low	11	25.00	12	26.58
Mid	10	36.30	8	36.38
High	11	43.36	4	43.50

All participants were asked to repeat a series of stimulus sentences with the subordinator *when*. Adverbial subordinate clauses function mainly as adjuncts. Such clauses do not depend on the verb in the main clause, therefore they may occur in an initial as in (12) or in final position as in (13).

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[4] Data regarding the Hungarian multilingual L1/German L2/English L3 group was originally published in Berkes and Flynn (2015).

(12)   When he entered the office, the janitor questioned the man.

(13)   The man answered the boss when he installed the television.

Stimuli included both finite with a referential, overtly realized pronoun and non-finite sentences with a null anaphor, a phonetically empty category. The subordinate adjunct clause was either preposed or postposed, as illustrated in (14)-(17). In short, stimulus sentences varied in two critical grammatical factors, directionality and anaphor type, with all other factors held constant. Learners were tested on their elicited imitation of the stimuli.

(14)   ***Preposed adverbial clause, backward anaphor***
When he$_i$ entered the office, the janitor$_i$ questioned the man.

(15)   ***Preposed adverbial clause with null anaphor***
When inspecting the room the worker questioned the janitor.

(16)   ***Postposed adverbial clause, forward anaphor***
The man$_i$ answered the boss when he$_i$ installed the television.

(17)   ***Postposed adverbial clause with null anaphor***
The professor answered the owner when preparing the lunch.

6.2.1 The role of surface elements

We have already pointed out that adverbial adjunct clauses may be placed either in initial or in final position. Furthermore, English is not a null subject

language (NSL); pronouns in a finite clause are always overtly realized. Sentences (14) and (16) contain the pronoun "he" before the verb of the main clause "entered" and "installed". There is, however, a difference in directionality of this anaphor, a difference which is closely related to but not necessarily dependent on the position of the adverbial subordinate clause. As indicated by indexation, the postposed adverbial adjunct of (16) contains a forward anaphor because the pronominal anaphor is c-commanded by an antecedent (*the man*) which occupies a higher position in the derivation. The anaphor in the preposed adverbial adjunct clause (14), on the contrary, refers to a NP found behind the position where the anaphor is spelled out (*the janitor*), thus "he" in (14) is a backward anaphor.

Previous L1 and L2 studies have indicated that there is a significant effect of directionality in English language acquisition processes. Lust (2006) in her review of the acquisition of syntax by children claims that children can be tested on their linguistic analysis through the study of their knowledge of anaphora. The reason is that anaphora can be either pre- or postposed but, at the same time, are subject to strict binding constrains. Further findings in developmental psycholinguistic research both for L1 and L2 English supported this claim that learners' interpretation of anaphoric relations between a lexically realized pronoun and an antecedent is affected by directionality, i.e. it is constrained by it. It seems that the forward anaphor (as in 16) is more productive in English L1 acquisition (Lust et al. 1986) and also in English L2 acquisition where directionality in learners' L1 and L2

coincides (Flynn and Espinal 1985; Flynn 1987a, 1987b; Flynn and Lust 2002).

In German as in Hungarian, similar to English, temporal adverbial adjunct clauses may occur in initial or in final position. However, due to its specific property, German differs from English and Hungarian in that the verb in the subordinate clause appears in clause final position, in other words, German in subordinate clauses presents an SOV word order.

Regarding typological distinction, German is classified as an expletive NSL language because it allows expletive null subjects in certain cases (Roberts and Holmberg 2010:8), but referential null subjects must be spelled out, as in English. Since our study does not include expletives, we treat German here as a non-NSL. Hungarian, on the other hand, has a morphologically uniform verbal inflectional system, which allows for null subjects in the sense of (Jaeggli and Safir 1989). Moreover, Hungarian not only permits a null pronominal category for referential null subjects but in focus-neutral contexts requires it, as illustrated in (18).

(18) A mérnök$_i$ köszöntötte a szakácst$_j$, amikor *pro*$_{i,j}$ (*ô)
      The engineer greet-PAST3sg the cook.ACC when   (*pron.3sg)
      kinyitotta   az ajtót.
      prefix-open-PAST3sg the door.ACC
   'The engineer greeted the cook when he opened the door'.

The finite adverbial adjunct in (18) contains a null pronominal category *pro*, both number and person can be recovered from the verbal inflection.

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Languages like Hungarian are called consistent NSL according to the typology established by (Roberts and Holmberg 2010).

In order to test the role of surface elements alone, we were interested to know whether directionality plays a role in language development studied through the acquisition of complex sentences involving adverbial subordination with a pronoun anaphor. Our test looked at whether learners performed differently on imitating pre- and postposed adjuncts with an overt pronoun anaphor. Data from an elicited imitation task on stimuli exemplified in (12) and (13) for both groups (L2 and L3) were examined separately by a non-parametric test (related-samples Wilcoxon signed rank test) for this comparison. The null hypothesis that the median of difference was zero could not be rejected, which means that learners of either groups did not seem to perform differently on the two types of sentences where the only distinguishing grammatical factor was directionality.

Figure 3 presents the overall results of a repeated-measures analysis of variance (ANOVA). The mean scores of the total correct answers are presented for the four types of anaphora for both groups and at each level of proficiency.

Figure 3: Total mean scores according to group, level and anaphora type (max. mean score=2)

HuL1/GeL2/EnL3

HuL1/EnL2

■ PrepBack   ■ PrepNull   ■ PostFor   ■ PostNull
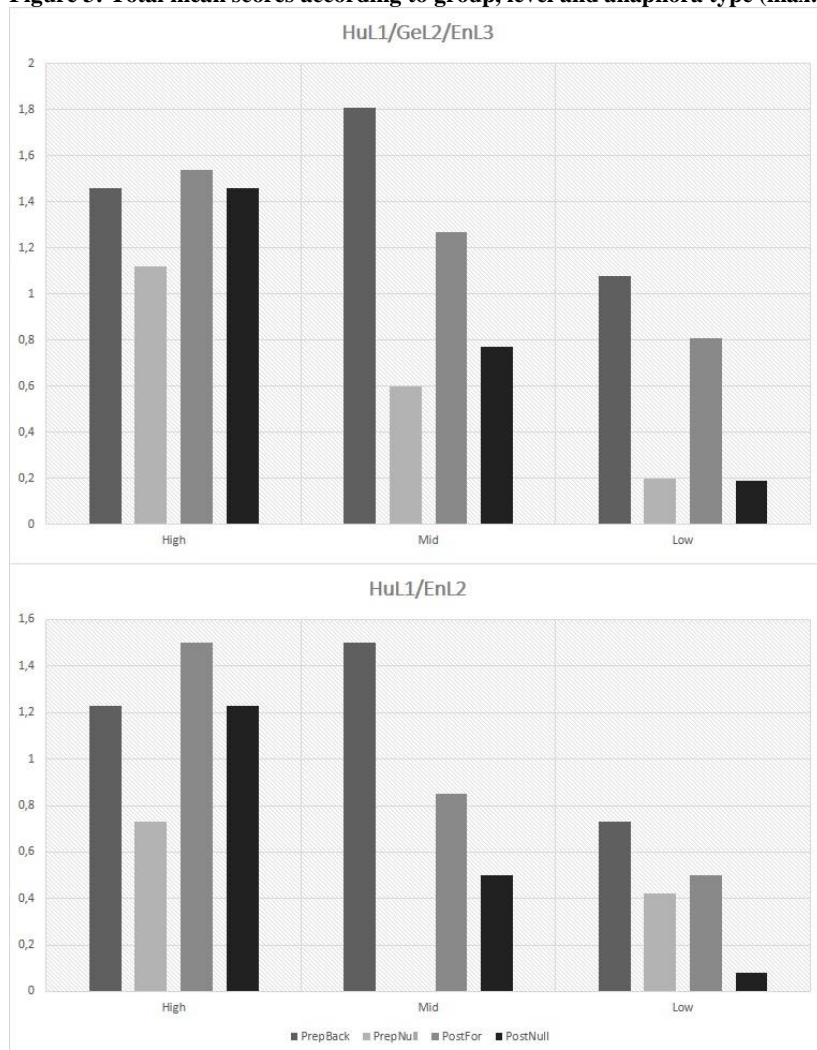
Even a casual look at Figure 3 shows that the low and mid-levels of both groups manifest a striking difference between correct production of subordinate clauses with an overt referential pronoun and of those with a null anaphor. This fact leads us to conclude that the type of anaphor included in the stimuli (*pro* vs. PRO) seems to play a significant role in determining how successful learners of English are in imitating them. At the

same time no statistical main effect was found for directionality. Nonetheless, the figure implies that there is an important developmental change, the overall amount of correct imitations increases considerably as language proficiency of learners develops. We may conclude then, that ECs are a source of errors for Hungarian learners of English L2/L3 at low and mid level, comparable to the Japanese L1/English L2 learners. However, we must make a critical observation regarding this result. At intermediate level L3 learners of English seem to have established grammar for the ECs in English, the target language, a fact that cannot be evidenced at mid stage in case of Hungarian L1 learners of English L2. In other words, multilingual Hungarian learners of English with German L2 seem to be ready to acquire the abstract feature of an empty category earlier than the parallel bilingual group. Given that the two groups (L2 and L3) were equated in all other variables in the study, we must assume that this difference is due to their additional linguistic knowledge of German L2.

Pairwise comparisons revealed that, in the case of the L3 group, directionality within an anaphor type was not relevant in either of the cases, but the imitation of the stimuli with pronoun anaphora was significantly more successful than with null anaphora both in preposed and postposed adjuncts. This difference seems to disappear as learners' proficiency moves from mid to high level. The critical stage in learners' knowledge of anaphoric relations relevant to this study appears to be at intermediate level. While the overall correct imitation of adjunct sentences with overt pronouns

increases significantly from low to intermediate level and grows only slightly from there on, the increase in total amount of correct imitation of sentences with null forms is significant till mid-level and continues to be close to significant after that as well.

Although this may be true, the lack of statistically significant differences does not make our results robust enough, thus we had to conclude that the role of surface elements alone was not enough to explain the different performance observed in production data of the two participating groups.

6.2.2 The role of abstract features

As we mentioned earlier, our main objective in this study was to examine how the acquisition of an EC develops in L2/L3 English, therefore testing the production of an EC, in this case the null anaphor PRO, was critical to the design. English non-finite adverbial clauses do not require the presence of an explicit pronoun, but contain a null category PRO, as indicated in (19.a) (Hornstein 2003:30.52) and (19.b).

(19) a. $John_i$ saw $Mary_j$ after/before/while PRO_i eating a bagel.

b. When PRO_i eating a bagel $John_i$ saw $Mary_j$.

PRO is obligatorily subject-controlled in English. The null category PRO in (19.b) is an anaphor which appears in the subject position of its non-finite

clause. As the indexation shows, the only possible antecedent for PRO is the

subject of the main clause since this is the position which *c*-commands the

null category in adjuncts. Now compare the sentences in (20) where (20.a)

includes an explicit pronoun, whereas (20.b) a null PRO category.

(20) a.The engineer$_i$ greeted the cook$_j$ when he$_{i/j}$ opened the door.

b.The engineer$_i$ greeted the cook$_j$ when PRO$_{i/j*}$ opening the

door.

The pronoun anaphor "he" in (20.a) may refer to either of the preceding NPs

unlike PRO in (20.b), as argued above. This shows then that PRO in English

non-finite adverbial adjuncts is an obligatorily subject-controlled null

anaphor, regardless whether the clause is in initial or final position (21vs

22).

(21) *Preposed adverbial clause with null anaphor:*
When inspecting the room the worker questioned the janitor.

(22) *Postposed adverbial clause with null anaphor:*
The professor answered the owner when preparing the lunch.

Although German and Hungarian allow non-finite clauses, such sentences

do not tolerate the presence of an explicit subordinator (see Berkes and

Flynn 2015 for a more detailed review of this property in German and

Hungarian). Consequently, it may be argued that learners are not familiar

with such constructions in their L1 and, thus, binding relations for the English PRO must be acquired; thus, production of such constructions reflects a form of grammatical analysis implicitly carried out by these learners.

Before we turn to present the results of our study, we must say some words about the most relevant features of pronominal anaphora, viz., overt referential pronouns and PRO. According to Holmberg (2010:94a):

(23) Pronouns are either DPs, with the structure $[_{DP}D[_{\varphi P}\varphi[_{NP}N]]]$, or φPs

Holmberg (2010) and Holmberg and Sheehan (2010) provide cross-linguistic evidence that overt referential pronouns are in fact full DPs with the structure given in (23), whereas null subjects in consistent NSLs are φPs. Therefore, pronouns in English and German, non-NSLs, are full DPs, whereas *pro* in Hungarian, a consistent NSL, is a φP without a DP-layer. It is not our objective here to give the technical details how licensing takes place (for detailed analyses see Biberauer et al. 2010 and the individual chapters therein), we will simply assume the validity of this recent classification of null subjects and the claim that during the probing/valuing process CP transfers the directionality feature to DP.

The typological distinction made by Holmberg (2010) and Holmberg and Sheehan (2010) was further elaborated by Livitz (2011), but here we will

focus on her proposal regarding PRO for its relevance to the present study. Livitz proposes that PRO has a φP structure with unvalued φ-features ($[_u\varphi]$) and is a defective goal in the sense of Roberts (2010) which also explains its silent nature cross-linguistically. Following Landau (2008) Livitz assumes that in an obligatory subject-control structure the referential relationship between PRO and its antecedent T(ense) in the matrix clause is mediated by a DP controller in the matrix clause. Thus the φ-features of both the controller DP and PRO in the subordinate clause are valued by the matrix T when it enters into two parallel AGREE relations in the course of the derivation. PRO-control is illustrated in (24):

(24) $[T_{u\varphi} \ldots DP_{i\varphi} [_{CP} [_{TP} PRO_{u\varphi} T]]]$ (Livitz 2011:104.20)

Hence, we may say that anaphoric relations in adverbial adjunct control structures in non-NSLs can always be traced back to two parallel AGREE relations which involve the presence of a full DP and a PRO element. Assuming that the structure of (23) is provided by UG, the choice which one/ones enter in the Lexicon of a language is language-specific.

Directionality in adverbial clauses was argued to be critical for the development of anaphoric relations, but directionality is transferred to DP in sentences like (21)-(22). It follows then that directionality of the adverbial adjunct in non-NSLs is determined by the directionality manifested in their DP, and in this sense English matches German. Hungarian, on the other

hand, is a NSL and it was argued that *pro* in such languages is an φP without a DP-layer, therefore, Hungarian cannot encode directionality in adverbial subordinate clauses. If there are indices in learners' data from our multilingual experimental group (Hungarian L1/German L2/English L3) that learners possess some subtle awareness of target-like directionality, we must assume it to be the sign of a cumulative effect of syntactic knowledge drawn from their fully developed German L2. As we noted above, neither German nor Hungarian non-finite adverbial adjunct clauses may include an overt subordinator, therefore we assume that the featural setup for PRO in English non-finite adverbial adjuncts and the peculiarity of its anaphoric nature in the context of the stimuli must be figured out by the learners in the course of development.

To test learners' interpretation of PRO, we decided to look more closely at the production data with special focus on the type of errors participants committed in their imitations. These unveiled that learners struggle with anaphora-related difficulties. Examples for such errors are shown in (25)-(26).

(25) **Conversion from non-finite to finite clause**
Stimulus: When inspecting the room the worker questioned the janitor.
Learner: When inspected the room the worker instruct the janitor.

(26) **Subject-drop**

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> *Stimulus*: When he delivered the message, the man questioned the lawyer.
> *Learner*: When he delivered the message, greet her the lawyer.

Not surprisingly, there were more anaphora errors on null forms than on sentences involving an overt pronoun in production data of both groups. Pairwise comparisons of the interaction between directionality and type of anaphor for the L3 group, however, revealed an interesting fact. We discovered that there were significantly fewer anaphora errors at low level on the postposed adverbial adjuncts with an overt pronoun than on any of the other types of stimulus sentences. This result strongly suggests that despite of the fact that the multilingual group does not show a statistically measurable preference for postposed adverbial adjuncts in its correct production of such sentences like learners of English L1 or L2 do, L3 learners seem to have significantly less difficulties in producing postposed adjuncts measured by the amount of anaphora errors they commit. This suggests after all a similar though not identical developmental pattern to that of English L1/L2 learners previously reported on.

90% of the total anaphora errors on stimulus sentences involving null anaphora were due to learners converting the non-finite clause into a finite one, exemplified in (25). When the imitation was a fully articulated adverbial adjunct sentence, converting a non-finite to a finite clause was classified as a type of anaphora error mainly because it indicates that learners seem to perceive the presence of an anaphoric expression, and in

their production they recur to employing elements available to them at their level, i.e. the finite verb. Since Hungarian is a NSL, it is to be expected that Hungarian learners of English may take longer to acquire the rule of the obligatory presence of an overt pronoun in a tensed clause, or expressed with technical terms, to discern the obligatory DP layer in the derivation. Obviously, their full-fledged German (non-NSL) acquired previously did not induce these learners to add overt pronouns to their imitation, at least not at an initial level. It must also be said here that the omission of an overt pronoun practically disappears by mid-level, even non-finite to a finite clause conversion errors receive an overt pronoun, which demonstrates that the [-pro-drop] feature for English is fully acquired by the time learners' competence in English reaches that level. The considerable amount of converting non-finite stimuli to finite ones at low level leads us to think that learners do not yet have the correct representation for English binding relations which involves an obligatory DP layer, at least not in the domain of our stimuli.

6.2.3 Concluding remarks

Accepting the claim that directionality, as set in the target-language, fundamentally affects the way learners interpret pronouns, our experiments with English L2 and L3 learners were to test whether referential relations acquired during previous linguistic experience involving pronoun and null anaphora would reflect learners' subtle syntactic knowledge of English

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directionality. As we mentioned before, neither German nor Hungarian match the feature setup of the English CP completely, therefore learners must figure it out in the acquisition process. Although we found no statistically measurable evidence that learners imitate postposed adjuncts with overt pronouns more successfully than preposed ones, error analyses suggest that this is so. Both L2 and L3 groups tend to commit significantly more anaphora errors on preposed adjuncts with an overt pronoun than on postposed adjuncts at low level, and even at mid level in the case of the L2 learners. This fact shows that there is a surprising directionality effect present in the imitation data and which replicates the results found in English L1 acquisition where it was seen that children tended to be more productive on forward pronominalization. It seems that our Hungarian learners, like English L1 children, connect directionality of the target-input and referential relations since they are more productive on forward pronominalization. Our first conclusion then, drawn from the analysis of the development of surface elements, is that the directionality principle, as in the case of English L1 children, constrains the development of learners' representation of the new grammar in a subtle way from the very beginning, although not in an L1 manner.

Next, our multilingual L3 study has brought new insights into the comprehension of the development of referential relations for overtly realized pronouns and PRO in English adverbial adjuncts. Hungarian, for being a NSL, omits the use of personal pronouns in neutral contexts, i.e. the

DP layer, therefore it does not encode directionality in the domain of our stimuli. The fact that our L3 participants have produced statistically better at each developmental stage leads us to conclude that their German L2 provides a subtle knowledge they could draw upon. Production data in this case supports the hypothesis that language learning is a cumulative process because syntactic feature settings can be drawn upon to build a new target-specific grammar. It seems that learners have access to previous syntactic experience on the specific feature, in our case the one found in their German L2, to enhance subsequent learning as proposed by most of the recent models for L3 acquisition, such as the Cumulative Enhancement Model of Language Acquisition (Flynn et al. 2004), the Linguistic Proximity Model (Westegaard et al., 2016) or the Scalpel Model (Slabakova, 2016). Therefore, production data of adverbial pre- and postposed adjunct clauses with overt pronouns and with subject-controlled pronominal anaphora PRO imply that development of anaphoric relations in these domains is likewise constrained for Hungarian L1/German L2 learners of English L3 by their FL as for English L1 children.

7. Conclusion

Our objective in this chapter was to present an appeal to redefine what the term CLI means in L2 and L3 acquisition. Based on the definition of the S_0

state given by Flynn and Lust (2002), we have claimed that the unidirectional approach, i.e. 'transfer from a source to a target language', has to be reinterpreted to allow for a more creative progress the learner goes through. Hence, occurrences of CLI must receive a subtler treatment in acquisition studies, trying to reveal how both surface and abstract features develop in the production of homogeneous groups of learners along language acquisition to phase out the effect of diverse learning strategies language learners resort to, especially at initial levels. If continuous input, desire to learn and effort are given, we may freely assume that all learners make progress in acquiring the target language. As a result, we can compare the developmental trajectories of homogeneous groups and predict that they will differ depending upon the match/mismatch of the surface and abstract properties of the target language.

We could see from our first example that differing constituent word order of learners' L1 (Chinese and Japanese) could not fully explain the difference shown in the production of English relative clauses by the examined groups. The manifest difficulty of Japanese L1 learners of English L2 with object gaps seemed to gradually disappear along development as they learnt to correctly identify and interpret the EC, or more precisely its abstract features, left by the relativized head. Similarly, Hungarian L1/German L2 learners of English L3 could quickly (by mid level) develop the correct anaphoric relations based on their capacity to dissociate directionality from CP and integrate it into DP. Simultaneously, success required the

recognition of the obligatory presence of a DP-layer in the domain of our stimuli.

In sum, both the L2 and the L3 studies imply that learners at subsequent levels of proficiency use linguistic knowledge available to them, nevertheless their development seems to be guided by principles that determine English L1 acquisition. We have seen that learners' choice among the syntactic options available to them seems to show a certain pattern. CLI, therefore, appears to be syntactically selective and principled to varying degrees and varying ways. In order to develop the new target language, the learner needs to reconstruct both surface and abstract properties of ECs, generally those of functional categories (Determiner Phrase and Complementizer Phrase). This is not a simple transfer of elements of one language to the other but a more nuanced picture of acquisition through the reconstruction of existing and additional features provided by FL.

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