Enhanced L3…Ln Acquisition and its Implications for Language Teaching

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Abstract This paper seeks to provide further evidence in support of the *Cumulative Enhancement Model for Language Acquisition* by analyzing the acquisition of an L3 in which the CP properties match in the L1 and the L3 but not the L2. Results of an elicited imitation task comparing the production of relative clauses by a group of Hungarians learning L2 English and another group (HungarianL1/GermanL2) learning L3 English at three levels of proficiency indicate that a more accurate description of the development of syntactic knowledge in L3 acquisition cannot be clearly traced back to either L1 or to the influence of the last learned language. Learners were tested on three types of restrictive relative clauses: headed (specified and unspecified) and free relatives, each type including four variants according to function of head NP and gap. Results seem to support an exponential development in multiple language acquisition, i.e. syntactic knowledge acquired in the course of learning more languages does not simply add up but rather has a multiplying effect on further language learning. Syntactic knowledge accumulated through language learning experience in the course of $L_1…L_n$ rearranges the UG guided language development in a new and economical way. Such a result has important

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consequences for teaching, primarily because it informs us about what does not have to be taught. Giving enough input on the series of such syntactic primitives by the language teacher may be enough to facilitate the construction of the new grammar for the learner, making learning thus more effective.

1 Introduction

Plurilingualism and multilingualism are terms commonly used in recent literature to describe a phenomenon in society where individuals are able to know and use multiple languages in everyday life. Globalization in transport, communication, etc. makes it literally impossible to maintain strictly monolingual communities; the individual receives constant input from more languages practically every day. In such society language learning occurs constantly. The Association for Language Awareness, founded in 1992, defines language awareness as "explicit knowledge about language, and conscious perception and sensitivity in language learning, language teaching and language use." (ALA homepage)

Formal teaching, therefore, has to adopt itself to this changing reality by implementing new understandings of what language awareness consists of and finding new ways to support the individual who needs to face the challenges of his or her multilingual surrounding. Accordingly, the language teacher is required to be more than a mere expert of his or her subject, a knower of the language he or she teaches. It is increasingly important that the language teacher understands how the pluri- or multilingual mind works, for which it is crucial to investigate how the learner constructs language-specific grammars.

In the following paper, we seek to shed light onto the development of a specifically linguistic process, the acquisition of the English Complementizer Phrase (CP) by Hungarian learners compared to Hungarian multilingual learners. The chosen language constellations for our study groups allow little or no margin for the traditionally understood cross-linguistic transfer, defined as a determining linguistic source upon which new target grammars are built, since Hungarian and English belong to typologically very different language families. There is, however, theoretical evidence that the feature setup of the Hungarian and the English CP show some structural similarities which might be beneficial for subsequent language acquisition. In order to test the effect of syntactic transfer, we chose to investigate the production data of a multilingual group, which consisted of Hungarian L1 learners of L3 English, who had studied German as L2, since some CP properties of German match neither Hungarian, nor English.

Consequently, the objective of the present study is to provide insights about language development, which involve such essential questions as the involvement of UG in the linguistic developmental process and the role of prior languages with regard to the representation of target grammars in the mind of the learner.

2 Theoretical Background

According to the theoretical claim made by Chomsky (2000), there is linguistic development in the process of constructing language-specific grammars by learners. Consistent with the current view of language proposed within the generative framework of linguistics, language acquisition necessarily involves the correct selection and development of formal features on functional heads, which then guide the mapping of language-specific constituents and/or clausal architecture.

This paper builds upon a series of language development studies focusing on the acquisition of relative clauses in English (Flynn and Lust 1980; Flynn 1983, 1987, 1989; Flynn et al. 2004; Berkes and Flynn 2012a, 2012b). These studies seek to elucidate language development by contemplating the development of language-specific properties of the Complementizer Phrase (CP). It is assumed that the interpretable versus non-interpretable features of the CP are responsible for the head-complement relationship among syntactic elements on the sentence level—specifically, the order of head and complement within CP in a given language. According to this position, specific features of the CP, generated by UG, determine the directionality of embedding (head-directionality or branching) and the constituent word order within the subordinate clause (see Flynn and Foley 2004; Lust 2006). Therefore, we may talk about right or left-branching languages with either SVO or SOV word order in the embedded clause.

Experience shows that head-directionality may overlap in certain languages, like English, Spanish or Russian, which are strictly head-initial languages in the sense that they not only embed the relative clause after the relativized NP (right-branching) but also exhibit an SVO constituent word order within the relative clause. The CP feature setup is independent of whether the head NP or the gap within the relative clause is in subject or in object position. The examples given below in (1) show subject head NPs, in (i) the gap in the relative clause is in the subject position and in (ii) the gap is in the object position:

(1) Strictly head-initial languages: right-branching and SVO (e.g., English)

    i. *The lawyer$_i$ [$_{CP}$ who$_i$ [$e_{i/subject}$ criticized the worker]] called the policeman.* (SS)

    ii. *The student$_i$ [$_{CP}$ who$_i$ [the professor introduced $e_{i/object}$] answered the man.* (SO)

Hungarian is a Uralic language belonging to the Ugric group; it is agglutinative with a complex conjugation system. In Hungarian relative clauses appear to the right of the relativized head; hence, it is a head-initial (right-branching) language, similar to English. The stimulus sentences we are concerned about in our experiment include objects modified by an article, in which case the SVO word order is

regarded to be the default[1] (MacWhinney and Pléh 1988; see also É. Kiss 1981), like English. The Hungarian relative pronoun is marked for case and person, so the sentences in (1.i) and (1.ii) translate as (2.i) and (2.ii), respectively, into this language.

(2)

   i. *Az ügyvéd$_i$* [$_{CP}$ *aki$_i$* [*e$_{i/subject}$ kritizálta a munkást*]] *hívta a rendört.*

  The lawyer who-Nom criticized the worker-Ac called the policeman-Ac

   ii. *A diák$_i$* [$_{CP}$ *akit$_i$* [*a tanár bemutatott e$_{i/object}$*] *válaszolt a férfinek.*

  The student who-Ac the professor introduced answered the man-Dat

By contrast, Japanese and Kazakh are strictly head-final (left-branching with an SOV constituent word order in the relative clause) languages. The example in (3) shows a sentence (Saito 1985) where the head NP of the matrix clause is an object and the gap in the relative clause is in object position (OO)

(3) Strictly head-final languages: left-branching and SOV (e.g., Japanese)

- *John-wa* [[$_{CP}$ *Mary-ga$_{subject}$ e$_{i/object}$ kaita*] [$_{Head\ NP}$ *hon$_i$-o*]] *yonda.*
- John-topic Mary-nom wrote book-acc read
- 'John read the book that Mary wrote.'

There are also languages, where head-directionality in subordination and in order of complements in the relative clause do not overlap, e.g. in German. Matrix clauses in German are head-initial (right-branching), like in English and in Hungarian (see examples in (1) and (2)), but with regard to CP-relevant word order (that is, in embedded clauses), it exhibits a general SOV word order, as do most of the head-final (left-branching) languages, like Japanese (see (3)); therefore, in this aspect, it matches neither English nor Hungarian. A relative sentence contains a relative pronoun, which introduces the relative clause and which is marked for case, gender, and person, as we can observe in the example in (4), the direct translation of the sentence in (1.i), and where the relative pronoun *der* refers to a singular masculine subject:

(4)

- *Der Anwalt$_i$* [$_{CP}$ *der$_i$* [*e$_{i/subject}$ den Arbeiter kritisierte*]] *rief den Polizisten.*
- The lawyer r.p.-Nom the-Ac worker criticized called the-Ac policeman-Ac

See Table 1 for a simplified overview of the feature arrangement relevant to CP in the main languages involved in the series of experiments this study builds upon.

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[1] Facts suggest that there is relative freedom in terms of constituent word order in the postverbal domain of the Hungarian sentence which seems to be related to the extractability of the verb into a functional head (É. Kiss 2008).

Table 1 CP features determining head-directionality in relevant languages: branching and word order in subordinate clauses

Language	Head-initial (right-branching)	Head-final (left-branching)	SVO	SOV
English	√		√	
Japanese		√		√
Spanish	√		√	
German	√			√
Kazakh		√		√
Russian	√		√	
Hungarian	√		√	

3 Background Studies

3.1 Design

Of particular importance to this paper are Flynn's (1983, 1987) studies of adult L2 and Flynn et al.'s (2004) study of L3 acquisition of English. The L2 studies investigated adult L1 Japanese and L1 Spanish speakers learning L2 English and the L3 study investigated KazakhL1/RussianL2 speakers learning L3 English. All of these studies used the same test sentences—an adaptation of the original study of Flynn and Lust (1980) of monolingual children acquiring English—and employed the same procedure, an elicited imitation task.

Results of these studies revealed that in order to examine how the CP develops in L2 acquisition, it is necessary to test learners on their handling of free relatives, because free relatives appeared to be developmental precursors to headed relatives in the process of building a full-fledged, language-specific CP architecture (Flynn et al. 2004, 2008). Learners were given an elicited imitation task, the design varied along three factors. The stimulus sentences involved the relativization of a noun phrase object or subject; within the subordinate clause, the gap was either in subject or in object position, thus the stimulus sentences used in these studies can be classified as SS, SO, OS, OO accordingly. 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). Some examples of the stimulus sentences are provided in (5)–(7):

(5) Lexically-headed, specified head NP as object; gap position in subject role (OS):

- *The boss introduced the gentleman who questioned the lawyer.*

(6) Lexically-headed, unspecified head NP as object; gap position in object role (OO):

- *The janitor questioned the person who the student greeted.*

(7) Free relative, head as subject; gap position in object role (SO):

- *Who ever the policeman greeted questioned the gentleman.*

Table 2 General summary of results of relative clause studies for L1, L2 and L3 English

Target language	Group	Pattern	Abbr. name of study
1. English as L1	Children	Free relative precedes lexically headed relative clause	EnL1
2. English as L2	Adults, L1 Japanese (head-final)	Free relative precedes lexically headed relative clause	JaL1/EnL2
3. English as L2	Adults, L1 Spanish (head-initial)	Free relative does NOT precede lexically headed relative clause	SpL1/EnL2
4. English as L2	Adults, L1 German (head-initial)	Free relative precedes lexically headed relative clause at low and mid levels	GeL1/EnL2
5. English as L3	Adults, L1 Kazakh (head-final) and L2 Russian (head-initial)	Free relative does NOT precede lexically headed relative clause	KaL1/RuL2/EnL3
6. English as L3	Adults, L1 Hungarian (head-initial) and L2 German (head-initial)	Free relative does NOT precede lexically headed relative clause	HuL1/GeL2/EnL3

Sources Flynn and Lust (1980); Flynn (2009); Berkes and Flynn (2012a, 2012b)

3.2 Results

Table 2 provides a simplified summary of the results of the above-mentioned studies.

Results of these studies indicated that the L1 Japanese learners of L2 English (study #2 in Table 2), like the English monolingual children (study #1 in Table 2), scored significantly higher on free relatives than on any of the lexically-headed relative types, whereas the Spanish L1 group (study #3 in Table 2) did not do significantly better on any of the three types of relatives in their L2 acquisition of English, despite having been equated with the Japanese L1 speakers at all levels of English competence. It seems that the Spanish L1 learners could somehow draw upon their knowledge of CP structure, for Spanish and English match in terms of both CP properties (contrary to Japanese vs. English), and use it in subsequent learning. This observation led the authors to conclude that the free relative clause structure appears to be a developmental precursor to the lexically-headed form.

The fact that German manifests the same CP-related head-directionality as English (head-initial) in matrix clauses but differs with regard to constituent word order within subordinate clauses by exhibiting a standard SOV order, provided the unique possibility to tease apart the influence of the two constitutional features of the CP, head-directionality and constituent word order relevant to the CP, on the development of target language syntax (study #4 in Table 2). The statistical analysis of the results revealed significant differences between correct production of lexically-headed and free relatives at the low and mid levels of their acquisition of English L2. The developmental patterns at the early and intermediate stages of acquisition seemed to resemble those isolated for the L2 acquisition of English by Japanese speakers and for the L1 acquisition of English by children, rather than the one reported for the SpL1/EnL2 study. This result suggested that free relatives act as developmental precursors to the lexically-headed forms for the L1 German learners of L2 English as well, which indicate that the feature responsible for the constituent word order within subordinate clauses seems to play a role in the process by which the learner constructs subsequent language-specific grammars, i.e. it may suggest that due to CP related word order differences they have to figure out the new values for the CP, which does not seem to be immediately evident, just like in the case of the JaL1/EnL2 learners.

The primacy of free relatives in CP development of the target language was further tested by an L3 study, which investigated an adult group of KaL1/RuL2 learners of L3 English (study #5 in Table 2). Kazakh is a head-final language with an SOV constituent word order within the relative clause, like Japanese (see (3)). The difference between study #2 and this one was that these learners had learned Russian—which is a head-initial language with primary SVO order in relative clauses so that it matches the English configuration represented in (1)—as L2 first and subsequently English as L3. Results of this study indicated that the learners' development of CP structures in the target language patterned with that of the SpL1/EnL2 rather than the JaL1/EnL2 group; in other words, the Kazakh L1 adult learners, with the help of their experience in acquiring L2 Russian, had developed a target-like CP structure upon which they could draw. Flynn et al. (2004) concluded, on the one hand, that the universal knowledge underlying the free relative seems to be fully available for the learner and, thus, acts as a developmental precursor in the acquisition of English, as was observed in the case of the JaL1/EnL2 group. On the other hand, prior CP development appears to influence the development of target-specific CP structure, as in the case of the KaL1/RuL2/EnL3 group or the Spanish L1 learners of L2 English, who had already instantiated the CP setup for English through the acquisition of L2 Russian and their own L1, respectively.

The L3 study of Flynn et al. (2004) concluded with the postulation of the *Cumulative Enhancement Model* (CEM) for language acquisition. This model hypothesizes that language learning is cumulative, i.e. all previously known languages are available to the learner to constructively enhance subsequent language learning. According to the CEM any prior language can be strategically drawn

upon in subsequent acquisition and may enhance the acquisition of further languages. Consequently, it appears that with respect to the CP, the mind does not redundantly represent CP clausal structure. This claim contrasts with deficit models (e.g., interference, negative transfer). Performance errors may negatively influence production data or the learner may licitly opt for using the strategy of translation and thus transferring elements of grammar from one language to the other, but such errors are not necessarily an indication of the level of competence at the deepest level, at the level where the construction of language-specific grammar takes place.

We carried out an additional L3 study (study #6 in Table 2) (see also Berkes and Flynn 2012a, 2012b) with a twofold objective. On the one hand, to test the general prediction of the CEM investigating the effect of enhancement on development as a result of multiple language acquisition experience. On the other hand, the design of this study allowed us to investigate the role of the last learned language on the acquisition of language-specific syntactic knowledge. Thus we had selected Hungarian L1 with L2 German learners of L3 English (HuL1/GeL2/EnL3), where L1 and L3 match completely but not L2.[2]

Hungarian L1 learners were in the process of acquiring L3 English, a language that involves a similar type of integration of universal and language-specific properties concerning CP head-directionality to their L1. Our prediction in support of the CEM were thoroughly fulfilled as the statistical analysis of the results indicated that HuL1/GeL2 learners of L3 English did not need to fall back on the primary use of free relatives in order to build up a target-like CP, since this group showed no evidence that they found the imitation of free relatives easier than that of the headed ones. These results matched those produced by the KaL1/RuL2/EnL3 group (Flynn et al. 2004).

These findings prove to be relevant to our research on the role of the last learned language in subsequent language acquisition as well. The different developmental patterns exhibited by the GeL1/EnL2 and the HuL1/GeL2/EnL3 studies, in spite of having been statistically equated on proficiency, provide one of the strongest pieces of evidence for rejecting an astructural transfer of the last learned language into subsequent acquisition. If the syntactic setup of the last learned L2 German was what L1 Hungarian learners transfer into their L3 English, we would have expected to find almost identical developmental patterns. The lack of negative transfer from L2 to L3 was also corroborated by the error analyses.

Concerning enhancement, the L3 group's exceptionally good performance was also attested by the fact that their production at the high level was significantly better than the comparable results of the GeL1/EnL2 group.

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[2] Here we refer back to Flynn et al. (2004), who after having studied production data from a multilingual group, where L2 and L3 matched but not L1, concluded that the L1 does not have a privileged role in L3 development on the level of complex sentence construction.

3.3 Conclusions

So far data seem to support the theoretical claim, according to which in L1, L2, L3 acquisition of relative clauses, there appears to be linguistic development, a process by which the learner constructs a specific language grammar, i.e., a theory of the specific language. Accepting the assumption that language learning is computational and that it is constrained by UG in the course of acquisition, the learner's linguistic development consists of the learner trying to map from one primary structure to another more developed structure by dissociating modular grammatical components and integrating them in the "assembly" of new language-specific grammars (Flynn et al. 2005; see also Foley 1996).

Results seem to indicate that in L1, L2, L3 acquisition of English restrictive relative clauses development of the "headless" relative is developmentally primary to that of the lexically headed relative clause, i.e. free relatives seem to precede the development of full-fledged CP-structure. In contrast to the language-specific knowledge, the universal underlying the free relative appears to be fully available at all points in development and it seems that this knowledge is precisely what is needed to enable the acquisition process for lexically-headed relatives. Furthermore, results from the L2 studies suggest that CP-related directionality, both branching and word order in relative clauses, are critical for this development.

4 Enhancement Study

4.1 Research Focus

Along these lines we have come to show that the CEM may serve as a valid model for language acquisition, as it genuinely reflects the way that language-specific CP develops within the constraints of UG. Learners at comparable proficiency levels (L2 study vs. L3 study) seem to manifest distinct levels of CP knowledge. So, the question that is still to be explored is whether there is any connection between enriched CP knowledge and ease of subsequent language learning. Multilingual individuals can be frequently heard saying that language learning "gets easier" the more languages one knows (see also Cenoz 2004). But what is the linguistic explanation for this, i.e. what is the linguistic nature of this enhancement? Can it be that the representation of the various CP feature-setups in the mind triggers some "multilingual function" that enhances language learning capacity, i.e. they show how to draw upon this knowledge in the course of subsequent language acquisition? Or is it rather, that in the course of multiple language learning experience the learner unconsciously acquires a boosted skill to figure out CP options, which has an impact on learning strategies, and it ultimately produces the effect of enhancement? Finally, if there is enhancement in the sense of "boosted

syntactic capacity" in multilingual language acquisition, what implications does it have for language teaching? These are the questions we turn to explore in the following sections of this paper.

4.2 Predictions

To explore this intriguing question was what motivated our study to compare the production data of two groups; we compared the production data of the HuL1/GeL2/EnL3 group (study #6 in Table 2) with that of Hungarian L1 learners of L2 English. Therefore, this new study compared production data of groups where the only difference is an additional L2 German in case of the L3 study group, but this L2—since it did not match the L3 with respect to CP architecture—does not contribute to subsequent language acquisition as a direct source of knowledge with respect to CP architecture. This means that, in this regard, the L3 study group had no advantage over the L2 group. Furthermore, we made sure to statistically equate the two groups on proficiency.

This design allowed us to focus on our research question, that is, what is the nature of the enhancement the CEM predicts provided language proficiency is controlled? Taking the previously enumerated findings into account, we generated the following predictions:

(8) If there was no apparent difference between the production of the L2 and the L3 groups, we would find support for a straightforward application of the CEM. According to this model, Hungarian L1 learners of L2 and L3 English (the L2 and the L3 study respectively) may draw upon their knowledge of full-fledged CP, because Hungarian seems to manifest the same CP properties in restrictive relative constructions as English.

(9) If the L2 study group clearly performed better than the L3 study group, we would find indices of negative transfer in syntactical development from L2 to L3, since in the L3 study L1 matches L3 but differs from L2 with regard to one of the CP relevant features (word order within the subordinate clause is SOV in German, as opposed to the Hungarian/English SVO order).

(10) If the performance of the L3 study group on relative clauses was undeniably better than that of the L2 group, we would find support for the CEM in a radically new way. Results would indicate that enhancement took place in the learners' syntactical knowledge due to multilingual experience.

4.3 Design and Subjects' Data

The design of our L2 and our L3 studies matched the ones reported above. Using an elicited imitation task, we tested two groups of young adults on their production of three types of relatives. Thirty-six Hungarian learners of L2 English and 36

Table 3 Subject information

Level	L2 Study: HuL1/EnL2		L3 Study: HuL1/GeL2/EnL3	
	Number of learners	Mean ESL score	Number of learners	Mean ESL score
Low	12	18.8	9	19.8
Mid	15	27.8	13	32.0
High	9	40.8	14	42.4

Source Berkes and Flynn (2012b)

Hungarian learners (with L2 German) of L3 English took part in the experiment. Members of both groups were mainly high school students preparing to enter into university or attended university at the time of testing. They had also received 2–10 years of formal instruction in English.

The L3 group had been exposed to German for at least 10 years. All of the subjects declared themselves nonnative speakers of German, although their exposure to German in school was very intensive. These students exhibited an advanced competency in this language, which was also tested independently with the help of an online test (www.testpodium.com). Those who did not score high enough to be on a C2 level (the "Mastery" level of the European Language Portfolio, the highest level of language competence in a certain language, according to common criteria accepted throughout Europe) were excluded from the study prior to the experiment, because our aim was to see to what extent fully-constructed, language-specific CP structures influence the development of subsequent learning.

A proficiency test was administered to the participants prior to the experiment in order to allocate them into three proficiency levels in English (low, mid, and high), as established by the standardized Michigan Test. Subject information is summarized in Table 3.

We carried out an ANCOVA statistical analysis on the data, a 3-way mixed design 2*3*3, with study (L2 and L3 study) and level (low, mid, high) as between-subjects factors and sentence type (specified headed, unspecified headed, free) as a within-subjects factor, using proficiency as a covariate to statistically equate the two groups on proficiency. The non-significant value for the 2-way study*level interaction ($p = .555$) suggests that the proficiency effect was statistically equivalent for the two language groups. Moreover, the 3-way study*level*type of relative interaction ($p = .537$) gave a non-significant value, which suggests that the effect of proficiency is not significantly different across levels of the two studies and sentence type.

4.4 Results

Participants were tested on three types of relative clauses (lexically-headed and specified, lexically-headed and unspecified, and free relatives); each type varied according to the grammatical function of the relativized head and its gap in the

Table 4 Mean number of correct responses on three types of relatives by language group and level

Level	L2 study: HuL1/EnL2			L3 study: HuL1/GeL2/EnL3		
	Specified	Unspecified	Free	Specified	Unspecified	Free
Low	,3333	,3333	,8333	1,3333	,7778	1,3333
Mid	1,7333	1,6000	3,1333	4,2308	3,9231	4,0000
High	3,6667	3,3333	5,6667	5,6429	5,9286	6,2143
Total	*1,7500*	*1,6111*	*3,0000*	*4,0556*	*3,9167*	*4,1944*

relative clause (SS, SO, OS, OO—see examples (5)–(7)). The mean number of correct responses for the three types of relatives is presented in Table 4 (two measures were taken from all 3*4 sentences; max. value is 8).

Even a casual look at Table 4 shows that there is a significant difference in correct production between the two groups and within the L2 group even among the three relative types. A three-way analysis of variance was carried out on the data with study (HuL1/EnL2 and HuL1/GeL2/EnL3) and level (low, mid, and high) as between-subjects factors, and within-subjects repeated measures on type of relative clause (specified headed, unspecified headed, and free relatives). Figure 1 shows the production data on the three types of relatives by the two language groups broken down into the three levels of English competency.

Results show that the type of relative clause had a significant main effect by itself ($F_{2,132} = 11.951$, $p < .001$). Pairwise comparisons revealed that the highly significant within-subjects effect is due to the successful imitation of free relative sentences. Type of relative clause also produced a very strong interaction with study ($F_{2,132} = 6.248$, $p = .003$). Moreover, the test of between-subjects effects gave a significant value for study ($F_{1,66} = 14.608$, $p < .001$) and level, although this was to be expected, because production clearly improves with competence. We compared correct production of relative clause types at each level with the help of *t*-tests between the two language groups. The *p* value proved to be significant or very close to significant at each level of proficiency, as shown in Table 5.

Finally, the within-subjects contrasts revealed that it was precisely the contrast between free vs. both types of lexically-headed relatives that contributed to the significant interaction between study and type of relative.

4.5 Error Analysis

We have seen in the previous section that the developmental patterns exhibited by the two language groups differ considerably. The L2 group seems to acquire the target-like full-fledged CP structure over time starting out and building upon the apparently more transparent free relatives. As we shall see subsequently, the error
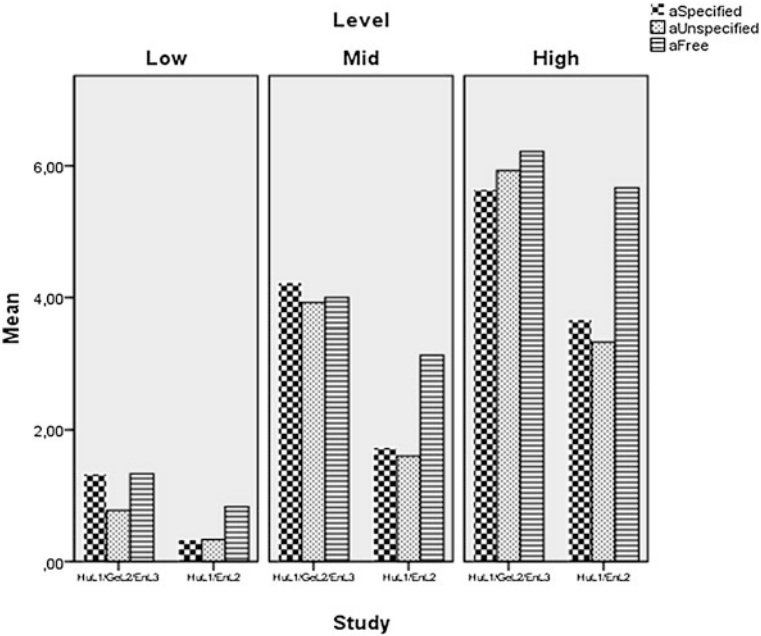
Fig. 1 Mean of correct production by the two language groups according to level and relative type

Level	F	p
Low	$F_{(1,19)} = 3.206$	0.089
Mid	$F_{(1,26)} = 25.028$	0.016
High	$F_{(1,21)} = 7.172$	0.014
Overall	$F_{(1,19)} = 14.608$	*0.000*

Table 5 Compared correct production on types of relatives by L2 and L3 learners according to levels

Source Berkes and Flynn (2012b)

analyses conducted on the production data of the two groups add further support to the claim that groups with diverse linguistic background show diverse developmental patterns in constructing a target-like grammar.

Learners, especially beginners, had general difficulties with two-clause complex structures, i.e. they had difficulties in maintaining the two-clause forms in their imitations and produced instead a single clause. We have used the label "one-clause imitation error" for those repetitions that contained one valid simple sentence, i.e. it contained a verb and at least a subject or an object. Sentences (11) and (12) provide some examples:

(11)   *Stimulus*: The lawyer who criticized the worker called the policeman.

- *Learner*: The lawyer criticized policeman…
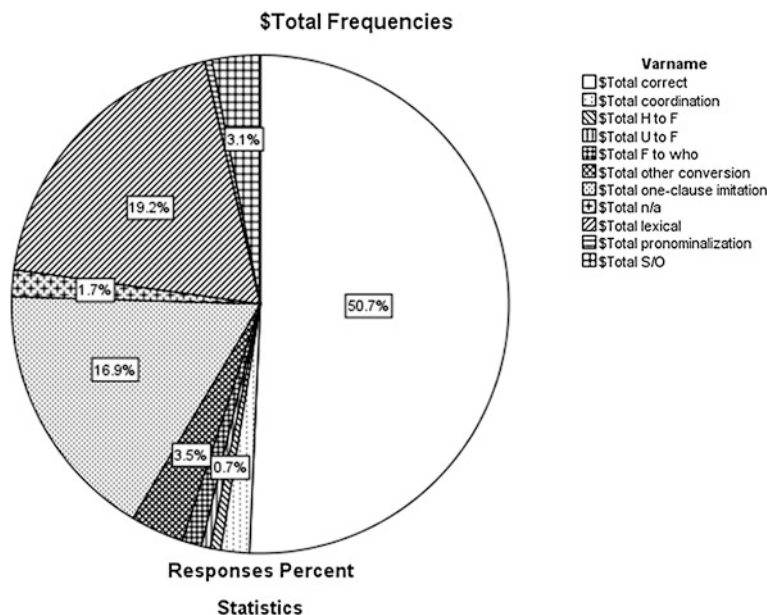
$Total Frequencies

Fig. 2 L3 study: percentage of correct imitation and error types

(12) *Stimulus*: The janitor questioned the person who the student greeted.

- *Learner*: The janitor questioned the person...

If we compare the amount of errors made by the two groups when imitating the stimuli (Fig. 2 and Fig. 3), we see that the L3 group is not only more successful in their production but also has considerably less difficulty in manipulating two-clause forms. The L3 group made one-clause imitation errors in 16.9% of all cases, whereas the L2 group produced twice as many (34.8%) such errors.

When comparing the developmental patterns of the one-clause imitation error made by the two groups, we see that the HuL1/GeL2 learners of L3 English appear to have less difficulty in maintaining complex structures from the very beginning of their acquisition of the target grammar and subsequently at all levels, as shown in Fig. 4, which exhibits the mean number of one-clause imitation errors by the two language groups broken down into types of relative and level.

A three-way analysis of variance was conducted on the one-clause imitation data of both groups separately with level as a between-subjects factor (low, mid, high) and within-subjects repeated measures on type of relative clause (specified headed, unspecified headed, free) to see if there was any appreciated difference among the structures presented in the stimuli. We found that type of relative gave a significant main effect ($F_{2,66} = 4.675$, p = .013) in case of the L2 study group, whereas the L3 group did not differentiate among the three types. Although improved proficiency contributes to the radical decrease of one-clause imitation errors, pairwise comparisons at the three levels show that the L2 group could
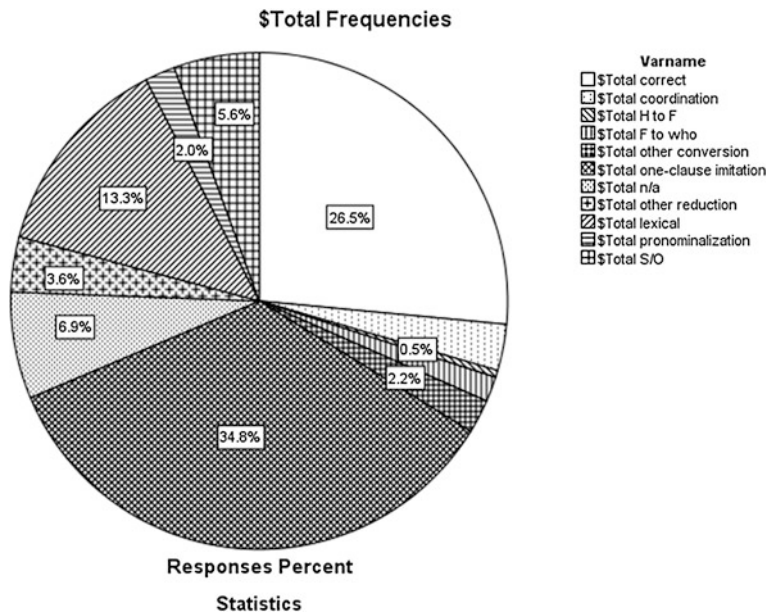
Fig. 3 L2 study: percentage of correct imitation and error types

handle complex free relatives significantly better than headed ones at the different stages of language development. This circumstance seems to support the claim that free relatives are structurally more transparent constructions (Flynn et al. 2005).

We also wanted to see if the difference was significant between the two groups; thus we conducted a three-way analysis of variance on the one-clause error data produced by the two language groups, including the same within-subjects repeated measures and adding study to the between-subjects factors. The between-subjects effect of study proved to be significant ($F_{1,66} = 13.825$, $p < .001$), as expected, indicating that the two groups treated the lexically-headed and the free relatives differently. We may conclude then that the difficulty of the L2 group to imitate the apparently less transparent lexically-headed structures was mainly due to their less developed syntactic capacity to manipulate two-clause forms.

This difference is even greater when we add the non-valid responses (categorized as "n/a") to this figure. There were learners in both groups who required more than one repetition of the stimulus sentence or uttered only isolated words without forming a sentence, i.e. without a verb. The percentage of such errors is shown in Table 6. We added this type of error to the one-clause imitation errors, because such an error suggests even more strongly that the learner had not yet acquired a full CP structure in the target language. The total percentages for the L2 language group double those for the L3 group at each developmental stage (see Table 6), a fact that gives strong support to the claim that the L3 group has a more developed syntactic ability to construct the target grammar.
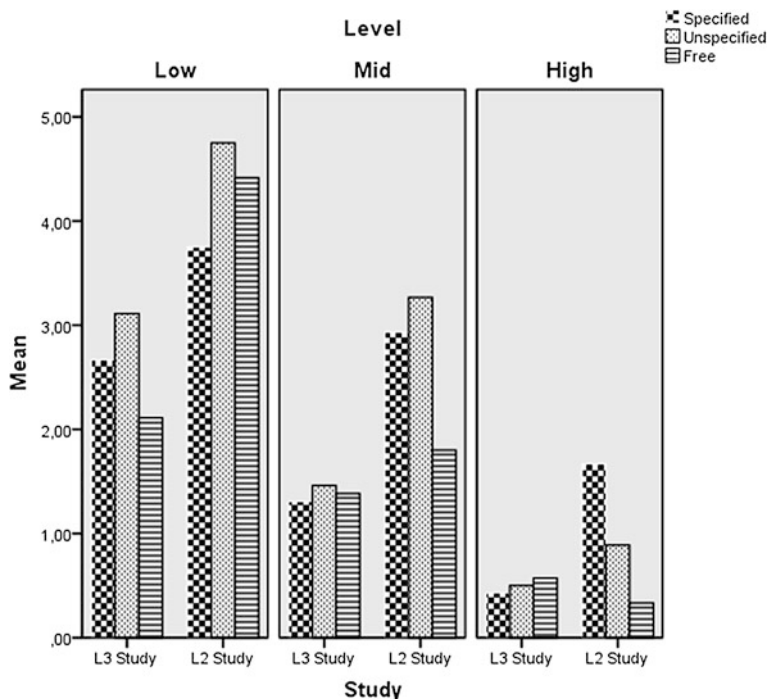
Fig. 4 Mean of one-clause imitation error by study group and level

Table 6 Errors in percentages showing the lack of target CP structure by language group and levels

	L2: HuL1/EnL2				L3: HuL1/GeL2/EnL3			
	Low	Mid	High	*Total*	Low	Mid	High	*Total*
One-clause	53.8	33.3	12.0	*34.8*	32.9	17.3	6.3	*16.9*
n/a	16.7	3.1	0.5	*6.9*	6.0	0.6	–	*1.7*
Total	70.5	36.4	12.5	*41.7*	38.9	17.9	6.3	*18.6*

When learners do reach a developmental stage that allows production of two clause responses with overwhelming success, they make some interesting conversion errors. Of particular interest here is the type of conversion error where learners changed the grammatical relations of the stimulus in their imitation. Learners, in their responses to stimuli, as in (13), converted the role of the gap position within the relative clause from O to S.

(13)

- *Stimulus*: The janitor questioned the person who the student greeted. (Unsp. OO)
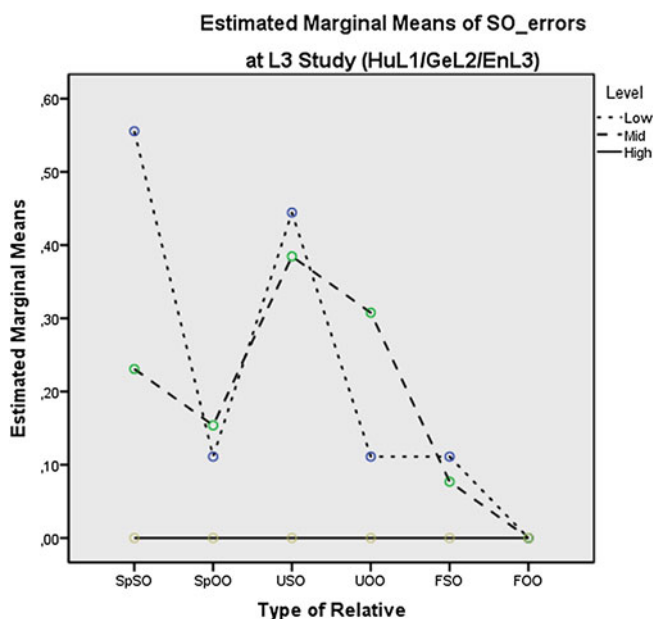- *Learner*: The janitor asked the person who greeted the janitor. (Unsp. OS)

Fig. 5 L3 study: means of S/O conversion errors according to type of relative and level

Figure 5 presents the mean amount of such S/O conversion errors by type of relative and level in the case of the L3 study group (HuL1/GeL2/EnL3) and Fig. 6 the same for the L2 study group (HuL1/EnL2).

According to the CEM, the two groups may equally draw upon their knowledge of a fully-fledged CP structure, i.e. none of them has advantage over the other in this respect.[3] It is evident that learners of both groups commit S/O conversion errors such as in (13) to a certain extent, nevertheless, there is a considerable difference between the performance of the two groups. Firstly, in the case of the L2 study, this type of error has proved to be remarkably constant across levels, whereas learners of the L3 study seem to stop making this type of conversion at about the time when their language competency shifts from intermediate to advanced (see Fig. 5 and Fig. 6). A six-way analysis of variance on the data with study and level as between-subjects variables and within-subjects repeated measures on the six types of stimuli gave a significant main effect for type of relative ($F_{5,330} = 9.176$, $p < .000$) and a significant interaction for type of relative*study ($F_{5,330} = 2.275$, $p = .047$). Pairwise comparisons revealed

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[3] Gair et al. (1997) reports on the occurrence of such errors where learners change the grammatical function relation of the relativized item within the relative clause, as shown in (13), noting that such errors were committed in greater proportion by L1 Japanese than by L1 Spanish learners of L2 English, exactly by those who cannot draw upon their knowledge of L1 in developing the target grammar.
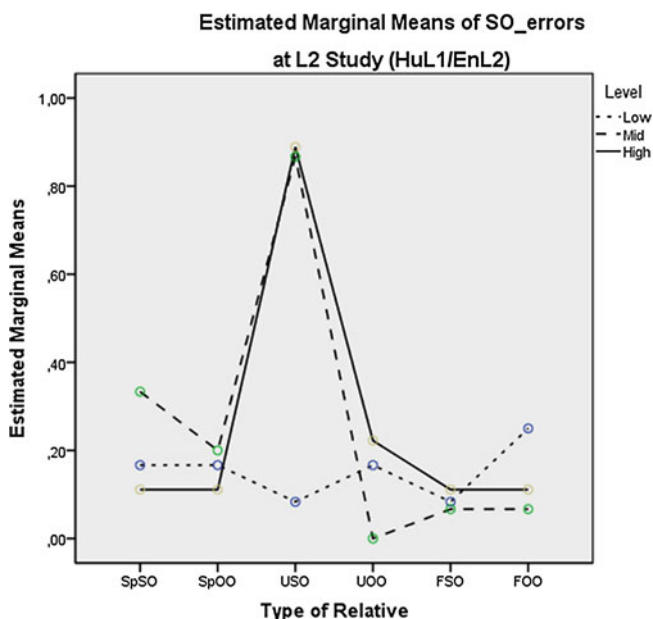
Fig. 6 L2 study: means of S/O conversion errors according to type of relative and level

that both significant effects were due to the fact that learners of L2 English were likely to make this conversion when they imitated lexically-headed unspecified SO type relatives. Although SO sentences in general appeared to be more easily subjected to such grammatical functions conversion by learners, the lexically-headed and unspecified SO type relatives were undoubtedly the most likely to be converted. Exploring the reasons for how unspecificity is connected to the full-fledged CP structure goes beyond the scope of this paper. Such a research would, without doubt, contribute in a particularly nuanced way to understand the improved syntactic fluency multilingual learners seem to acquire during their language learning processes.

In conclusion, a casual glance at the markedly distinct S/O conversion error patterns in Figs. 5 and 6 implies that the HuL1/GeL2 learners of L3 English seem to follow a somewhat different developmental path than the HuL1 learners of L2 English, a claim primarily drawn from the evident difference we found in terms of developmental patterns regarding the three types of relative clauses.

5 Discussion

The production data of the HuL1/EnL2 speakers on the three types of relatives were highly surprising: learners did not seem to benefit from their previously acquired knowledge of the CP setup for Hungarian when learning English. Results

reveal that free relatives were significantly more productive than the lexically headed forms in terms of amount correct, i.e. the HuL1/EnL2 learners appear to develop the target-like CP structure over time, whereas the free relatives, as in the case of the JaL1/EnL2 group (study #2 in Table 2), seem to be fully available at all points in development. We did not expect such an outcome, yet, there might be a good reason why learners would need to employ such a strategy. It is true that Hungarian matches English in head-directionality, notwithstanding Hungarian is considered to be organized around the concept of topic and focus rather than the concept of subject (Li 1976), which also suggests that constituent word order within the relative clause might not be encoded in this language the same way as in German or in English. This might precisely be the reason why Hungarian learners of L2 English would need more time to find the right values for the CP setup in the target grammar. Free relatives, which seem to have a more transparent syntactic structure for the learner (Flynn et al. 2005), appear to be available for them from the beginning of their language development. This study provides, then, further support for the claim that free relatives seem to be developmental precursors to full lexically-headed forms.

In contrast, the multilingual HuL1/GeL2/EnL3 speakers produced all types of relative sentences with nearly the same high rate of success; we could not detect any significant difference in their production of free relatives at any stage of their language development. We conclude, therefore, that for these learners free relatives do not appear to be primary in the development of a target-like grammar.

Returning to our predictions, we found no evidence for negative transfer from L2 German in the way that learners of L3 English construct their target grammar (prediction (9)). Whereas the HuL1/EnL2 group seems to develop full lexically-headed forms over time, the HuL1/GeL2/EnL3 group appears not to differentiate the three types of relatives in their treatment, thus indicating that the fully-fledged CP setup in the target grammar is fully available to them from the beginning of their constructing the target grammar.

The picture of how development takes place seems to be more nuanced than we had thought before. We could not verify our prediction in (8). Not only have we found a significant difference in the correct imitation of the three types of relatives between the two groups, but the emerging developmental patterns have proved to be radically distinct in the two groups, also supported by the error analyses.

Therefore, results support our prediction in (10), i.e. the claim that multilingual learners have an enhanced knowledge of the target-specific CP architecture. Even where learners had no explicit advantage in terms of previously acquired CP structure, a significant enhancement effect was found. It seems as if the knowledge of the fully-fledged CP structure of L2 German activates possible patterns the CP might take. Results indicate that multilingual learners, due to their enriched experience in CP properties, acquire an enhanced syntactic fluency, which seems to facilitate the way that they construct subsequent target grammars.

6 Conclusions and Some Implications for Teaching

Our objective in this paper was to show that language learning entails more than just acquiring proficiency through learning some phonological, morphological, etc. elements and combining them with specific syntactic rules. In the learning process there appears to be a very subtle linguistic development, a process by which the learner constructs a specific language grammar (i.e., a theory of the specific language), and which does not necessarily reflect a measurable proficiency level in the traditional sense.

Results of the series of studies we have presented in this paper help us better understand language acquisition, and most particularly the nature of the hypotheses language learners impose when learning a new target language. In particular, we have found strong support for the claim that the acquisition of complex sentence structures involving relativisation of an NP in a target grammar requires a specific developmental process, a process, which seems to follow a common path for learners with diverse language backgrounds, although it also appears to be very much related to accumulated knowledge of grammatical structure in general. More specifically, in constructing the lexically-headed relative clause in the target language, learners build upon knowledge of the free relative (see Hamburger 1980 and Flynn and Lust 1980 for English; Packard 1988 for Mandarin; Lee 1991 and Lee et al. 1990 for Korean; Murasugi 1991 for Japanese; Foley 1996 for French; Somashekar 1999 for Tulu; Mróz 2010 for Polish; Flynn et al. 2004 for Kazakh). These results suggest that the universal properties underlying the free relative are fully available for the learner at all points in the course of developing a target-like grammar, therefore we may say that free relatives seem to act as a sort of syntactic primitive with respect to other relative clause types. Such a result has important consequences for teaching, primarily because it informs us about what does not have to be taught. Giving enough input on the series of such syntactic primitives may be enough to facilitate the construction of the new grammar for the learner, making learning thus more effective.

We may, therefore, argue that the series of studies presented here provides strong support against simplified accounts of language transfer from either L1 or any previous language. Any theory of acquisition based entirely on transferring surface elements from one language to another cannot give an explanatorily adequate account for how language develops in the mind of the learner. We could, however, observe that specific previous linguistic knowledge does make a difference in subsequent language development. On the one hand, we saw how the knowledge of a full-fledged CP structure in L2 Russian helped L1 Kazakh learners of L3 English to draw upon this knowledge and thus skip a more "primitive" stage, where learners take advantage of the more transparent free relatives to build up complex structures in the target language (Flynn et al. 2004). On the other hand, the present paper shows that certain language constellations may be beneficial for the learner as they facilitate the acquisition of syntactic features carried by functional elements. Given that a certain "word order" feature on CP is responsible for the possible variations in word order in the subordinate clause,

when L1 Hungarian learners have acquired L2 German, their universal CP knowledge seems to register the existence of such a feature, a knowledge which we called "syntactic fluency", and thus facilitates their subsequent acquisition of English, since we have not detected a need to fall back onto the more primitive stage of building upon free relatives.

This conclusion again has important repercussions for the language teacher. Results suggest that language teachers need to know what languages their learners are fluent in or have advanced communicative competence in. Whereas a theory of language acquisition based on transfer would endeavor and be satisfied with finding out the different languages learners have, a theory of language acquisition based on the study of syntactic development requires the necessity to find out learners' competence in each known language as well as the structural properties of these languages. Competence will inform teachers about the solidity of featural setup of functional elements in the brain of the learner and the comparison of structural properties between previously known languages and the target language will point out the areas where there is need for more transparent input and practice. A homogeneous grouping of the learners according to syntactic fluency would obviously be an ideal solution for a better learning experience, but lesson plans which take such results into account promise to result in higher efficacy and in a deeper rooted knowledge of the target language.

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