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On phonological processes in child Romanian

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The current paper is a contribution to the study of the acquisition of phonology by Romanian monolingual children whose tendency is to simplify adult targets by resorting to various phonological processes defined as patterns of sound errors that typically developing children use to approximate adult targets as they are learning to talk. The experimental data come from diaries kept by acquaintances of mine which, subsequently analyzed within the framework of "developmental universals" (Slobin 1985), illustrate that Romanian-speaking children adopt either identical or similar strategies approximating targets as their English peers (Bowen 2011; Buja 2015).

Key-words: *child Romanian, phonological processes, developmental universals, patterns of sound errors*.

1. Introduction

Children's acquisition of adult-like speech production has fascinated researchers for over a century, and data gained from associated work have shown the normal acquisition which is consistent with phonological processes in children's typical development.

In what follows, I will investigate the experimental data obtained within the larger framework of "developmental universals" (Slobin 1985) that guided core literature in child language acquisition and development. In line with the developmental universals theoretical framework, wherever we come across similar patterns of development cross-linguistically, in function or in form, we see evidence for strong developmental universals, which may operate across all settings. Basically, on the functional level, there is primacy of conceptual development in providing the first meanings for grammatical forms and in pacing the course of development of certain forms. As for the formal level, there is

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evidence for general language strategies that take precedence over the constraints of particular linguistic forms in individual languages (Slobin 1985, 6).

Putting it differently, Slobin (1985) outlines a new research strategy for child language studies. Instead of looking for innate structures on the basis of studies on the acquisition of one single language, he advocated that researchers, through the study of many languages, should attempt to identify universal operating principles that the child employs in approaching any language. Many of these principles have become commonplace in child language research as proven by Slobin (1985) in his contributions to the literature when analyzing diary-like data from many unrelated languages.

2. Research methodology

The current article is aimed at showing to what extent various phonological processes affecting sound segments are universal. Thus, data coming from diary records kept by acquaintances and friends of mine will be thoroughly investigated.

2.1. Research questions

The study under scrutiny is based on the following research questions:

(i) Beside language-specific patterns, do Romanian monolingual children also resort to phonological processes typical of their English peers to approximate adult targets according to a comparison made between forms produced by monolingual children and utterances phonetically realized by English-speaking children (Bowen 2011)?
(ii) Is there any particular phonological process that prevails when young learners produce speech patterns to simplify adult targets?
(iii) Does any phonological process identified diminish or disappear in time? If so, by what age?

2.2. Informants and data collection

For the present analysis, I have employed diary data from 6 Romanian-speaking children, aged between two years and three years and three months. Their utterances were selected from connected speech and gathered from language diaries kept by their parents, as well as from recordings made sporadically. Only one corpus was audio-recorded; all the other speech samples were video-recorded and subsequently transcribed. The duration of the recordings varies from a few

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seconds (21 seconds - Ioana 3; 3) to several minutes (5 minutes and 46 seconds – Mara 2; 5; 6 minutes and 26 seconds Mara 2; 8), with all samples having short and inconsistent duration.

In the absence of an English-speaking group of children, I made full reference to the corpora in the literature (Bowen 2011).

Details regarding the Romanian-speaking participants who took part in the experiment I conducted are also hereby included (see Table 1).

Table 1

Information on the Romanian participants in the experiment

No.	Child's name	Age
1	Eva	2
2	Nicole	2
3	Mara	2;5- 2;9
4	Cezar	2;8
5	Călin	2;8-3;6
6	**Ioana**	3; 3

3. Data analysis

When attempting to produce the adult target (see Table 2), all Romanian informants resorted mainly to cluster reductions, defined as "the deletion of one or more consonants from a target cluster so that only a single consonant occurs at syllable margins" (Grunwell 1987, 217). Comparing the forms in Table 2 to the ones in Table 3, it is a fact that cluster reduction is the process that prevails in the speech samples under consideration, since it is this phonological process that is consistent with the great majority of instances identified.

The available published research on children's acquisition of consonant clusters proves that systematic reduction patterns are frequently produced in the process of acquiring such structures (McLeod et al. 2001; Smit 1993). This systematicity occurs in both English and Romanian, since cluster reduction stands for a universal phonological process that operates across languages in typical development, being gone by 4 years without /s/, and by 5 years with /s/. Hence, this phonological process has been described as "the most common and longest lasting stage" in the development of cluster production (Shriberg and Kwiatkowski 1980, 138).

The forms consistent with Romanian children's realization of cluster reduction have tight correspondence in English (see Table 2). Therefore, cluster

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reduction is applicable to the Romanian-speaking subjects' production I selected for the experiment, but also to the English-speaking informants tested by Bowen (2011). The English peers reduced */spu:n/* to *[pu:n], [kli:n]* to *[ki:n]* and */pleın/* to *[peın].* This further means that cluster reduction is a universal process that holds in both English and Romanian.

Looking into the data obtained, I noticed that there are obvious sonority effects in the production of consonant clusters by both Romanian and English-speaking children. Basically, there is one trend identified in the literature on cluster acquisition which is called "sonority-based onset selection" (Pater and Barlow 2003), in which the least sonorous segment of the target cluster is kept (Barlow 1997; Chin 1996; Gnanadesikan, in press; Ohala, 1996; Ohala, 1999), complying with an established sonority scale shown in (1).

(1) Sonority scale (Blevins 1995; Selkirk 1984)
vowels > glides > liquids > nasals > fricatives > stops

All 6 Romanian-speaking informants reduced the CC-cluster to one singleton, preserving the least sonorous segment. Therefore, /gr/ in /grə/ was reduced to [gə], with the speaker (Nicole 2) dropping the liquid with higher sonority (/r/ in this particular case) and preserving the stop with lower sonority. Similarly, two-segment clusters in onset positions were produced following the sonority scale in (1): /tr/ in [trei] was phonetically realized as [tei], and /tr/ in /patru/ was uttered as [patu] (Eva, Nicole 2). In all instances children kept the stop /t/ from the cluster as it comes to the bottom of the scale, and left out the liquid /r/ which comes in the upper section of the scale. Inaccurate productions of stop + liquid consonant clusters also occurred in the other children's connected speech. Thus, /tr/ in /kastravete/ and /pjatrə/ was reduced to [t] in [kastavete] (Mara 2; 5) and [pjatə] (Cezar 2;8). Added to all these, /kr/ in /sekret/ and /pr/ in /kəprıtsə/ were reduced to [k] in [seket] (Călin 2; 8) and [p] in [kəpıtsə] (Mara 2;5), with the liquid /r/ being dropped each time the speaker approximates the stop+liquid cluster. Moving on to another phonetic context, fricative+liquid clusters will be considered, with such patterns being reduced to one fricative segment due to sonority reasons. Given the data, /fr/ in /frumos/ and /frumoase/ was narrowed down to [fumos] (Ioana 3; 3, Cezar 2; 8 Mara 2; 5, with the fricative /f/ being kept since it has lower sonority than the liquid /r/. The same sonority scale is applicable to the /vr/ cluster in /vreau/ and /fl/ cluster in /fluturaʃ/, which were realized as [veau] (Ioana 3; 3) and [futuraʃ] (Mara 2; 8) on sonority grounds. Proceeding to the /sp/ cluster, the current data obviously show that reduction met sonority issues this time, too. Thus, instances such as [pəlat] (Călin 2; 8), [tau] (Mara 2; 9), [povetete] bring further

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phonetic evidence in favour of cluster reduction, where, in accordance with the sonority scale, the fricative /s/ is dropped and the stop /p/ is kept in the syllable margin, being less sonorous. Realizations of the - CC two-segment consonant cluster as one singleton were also encountered in coda position. It is the case of /sk/ in /mototolesc/, /lipesc/ uttered as [mototolek], [lipek] (Călin 2; 8), where the phonetic realization of the fricative /s/ was null based on the sonority principle. The examples provided by Bowen (2011) indicate that English-speaking children resort to the same strategy of cluster reduction when simplifying adult targets. The instances mentioned in Table 2 under the heading English peer's form reinforce the fact that cluster reductions are universal, irrespective of the mother tongue young children speak. The non-adult English forms encapsulated in Table 2 are taken from Bowen (2011) and illustrate that English-speaking children also resort to reductions that observe the sonority scale. For instance, the clusters /sp/, /kl/, /pl/ in /spu:n/, /kli:n/ and /pleın/ are reduced to [p], [k] and [p], respectively, with the higher sonorous segment being dropped each time the target is produced. Reduced forms are obtained from the tested children (Bowen 2011) in their attempt to simplify the adult forms.

Table 2

Cluster reductions in typical development.
A case study on Romanian monolingual children

Child's form	**Adult target**	**Child's name and age**	**English peer's form**	**Phonological process**
[gənitsə]	/grədinitsə/ *grădiniţă* 'kindergarten'	Nicole 2	[pu:n] 'spoon' [ki:n] 'clean'	cluster reduction
[tei]	/trei/ 'three'	Eva 2 Nicole 2	[poon] 'spoon' [ki:n] 'clean'	cluster reduction
[patu]	/patru/ 'four'	Eva 2 Nicole 2	[poon] 'spoon' [ki:n] 'clean'	cluster reduction
[fumos]	/frumos/ 'beautiful'	Mara 2;5 Cezar 2;8	[peın] 'plane'	cluster reduction
[kastavete]	/kastravete/ 'cucumber'	Mara 2;5	[peın] 'plane'	cluster reduction
[seket]	/sekret/ 'secret'	Călin 2;8	[peın] 'plane'	cluster reduction

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Child's form	Adult target	Child's name and age	English peer's form	Phonological process
[lipek]	/lipesk/ 'I am pasting'	Călin 2;8	[peɪn] 'plane'	cluster reduction
[kətʃun]	/kətʃun/ 'Christmas'	Călin 2;8	[peɪn] 'plane'	cluster reduction
[mototolek]	/mototolesc/ 'I am crumpling'	Călin 2;8	[peɪn] 'plane'	cluster reduction
[pəlat]	/spəlat/ 'washing'	Călin 2;8	[peɪn] 'plane'	cluster reduction
[pjatə]	/pjatrə/ 'stone'	Cezar 2;8	[peɪn] 'plane'	cluster reduction
[rup]	/rupt/ 'broken'	Mara 2;5	[peɪn] 'plane'	cluster reduction
[kəpɪtsə]	/kəprɪtsə/ 'little she-goat"	Mara 2;5	[peɪn] 'plane'	cluster reduction
[futuraʃ]	/fluturaʃ/ 'little butterfly'	Mara 2;8	[peɪn] 'plane'	cluster reduction
[fumos]	/frumos/ 'nicely'	Ioana 3;3	[peɪn] 'plane'	cluster reduction
[veau]	/vreau/ 'want'	Ioana 3;3	[peɪn] 'plane'	cluster reduction
[povetete]	/povesteste/ 'tell'	Mara 2;9	[peɪn] 'plane'	cluster reduction
[tau]	/stau/ 'stay'	Mara 2;9	[peɪn] 'plane'	cluster reduction
[fumoase]	/frumoase/ 'beautiful'	Călin 2;8	[peɪn] 'plane'	cluster reduction

Moving on to Table 3, I will discuss further phonological processes that I managed to identify in the Romanian-speaking children's production, with tight correspondence in the English-speaking children's realizations I made reference to throughout the study. Instances of weak syllable deletion, /v/-stopping, final consonant deletion, affrication, epenthesis, palato-alveolar fronting, prevocalic voicing, vowel copying, reduplication, consonant harmony, initial consonant deletion and vowelisation will be all considered in turns. I have to mention that these processes are sporadic unlike cluster reduction, which was by far more frequent and typical of all the informants investigated.

In this vein of thought, one subject in an aggregate of six produced utterances featuring weak syllable deletion, which is typically gone by the time the child turns four years old. The two-year-old girl Nicole deleted the syllable /di/ in

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/grədinitsə/, realizing it as [gənitsə]. Similarly, the same weak syllable is deleted by the same informant (Nicole 2) when producing the proper name /diana/ as [ana]. These non-adult forms exhibiting weak syllable deletion are also reflected in the English peers' production: [efənt] for 'elephant', [teɪtə͡ʊ] for 'potato', [tevɪʒɪon] for 'television' and [nana] for 'banana' (see Table 3).

Stopping is another phonological process that operates across both English and Romanian as illustrated by the data in Table 3. Nicole has the tendency to substitute the fricative /v/ with the stop /b/ when she calls her twin sister by name, so /eva/ will turn into [eba]. These substitutions are usually gone by the age of 3yrs ½ if the child does not suffer from language impairment. The same /v/-stopping with identical phoneme substitution was encountered in the non-adult targets produced in the English literature (Bowen 2011). Therefore, the inaccurate form [berɪ] for 'very' stands for a case in point.

Moreover, final consonant deletion is consistent with three Romanian-speaking subjects in an aggregate of six. Mara (2; 5) drops the liquid /l/ in coda position /kaldə/, realizing the first syllable that should have been closed as an open syllable [kadə]. The two-year old Romanian twins, Eva and Nicole resort to the same strategy when simplifying non-adult targets by deleting the nasal /n/ in coda position. Thus, /munkə/ is produced as [mukə] by the little girls. Final consonant deletion also operates in English with 'comb' being reduced to [ko]. Therefore, the English-speaking child (Bowen 2011) dropped the nasal /m/ in coda position and uttered an open syllable instead of a closed one. The phonological process of final consonant deletion is expected to disappear completely by the age of three (Pena Brooks et al. 2007).

By analogy, initial consonant deletion is applicable to three Romanian-speaking children among the 6 children whose production is under investigation, with one child (Mara 2; 5) exhibiting both initial and final consonant deletion. For instance, the syllable /la/ is realized by Mara (2; 8), Cezar (2; 8), and Ioana (3; 3) as [a]. English peers (Bowen 2011) make use of the same strategy when producing non-adult targets. As the data in Table 3 below illustrate, 'bunny' is realized as [ʌni:], with the stop /b/ being deleted in onset position.

Little Mara (2; 5) produced palatalization– as the alveolar affricate /ts/ becomes an alveolar-palatal affricate [ʧ] - being the only Romanian child in the group of 6 informants who made use of this strategy. The same subject produced another instance of affrication when having uttered the word /pʌzəl/ as [pʌʤəl] with the fricative /z/ being turned into the affricate [ʤ] this time. Bowen (2011) identified an identical strategy when English-speaking children pronounced [ʤoor] for 'door' turning thereby the stop /d/ into [ʤ].

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Only one subject in six (Nicole 2) produced an utterance that exhibits epenthesis. When she pronounced her last name /bɨʃkə/ she phonetically realized it as [bɨuskə] with /u/ insertion. Furthermore, the word Nicole (2) produced is subject to one more phonological process that is palato-alveolar fronting with /ʃ/ being realized as /s/ in coda position. Similarly, English peers do resort to the same strategy. Bowen (2011) mentioned a case of epenthesis identified among her subjects. Thus, 'blue' was mispronounced as [bʊ̯lʊ̯] with /u/ insertion. As for palato-alveolar fronting, it is also typical of English children as illustrated by Table 3 below where 'wish' was produced as [wɪs].

As the data in Table 3 below illustrate, there is just one instance of prevocalic voicing produced by Mara (2; 5). So, the adult form /suk/ was pronounced by the Romanian little girl as [ʒuk]. Furthermore, the process of prevocalic voicing has tight correspondence in English non-adult forms with 'comb' being produced as [gom].

Table 3

Phonological processes in typical development. A case study on Romanian and English monolingual children

Romanian Child's form	**Adult target**	**Child's name and age**	**English peer's form**	**Phonological process**
[gənitsə]	/grədinitsə/ *grădiniţă* 'kindergarten'	Nicole 2	[efənt] 'elephant' [teɪtəʊ̯] 'potato' [tevɪʒɪon] 'television' [nana] 'banana'	weak syllable deletion
[eba]	/eva/ 'Eva-proper name'	Nicole 2	[berɪ] 'very'	/v/-stopping
[kadə]	/caldə/ 'warm'	Mara 2;5	[ko] 'comb'	final consonant deletion
[getutʃe]	/getutse/ 'little boots'	Mara 2;5	[dʒoor] 'door'	palatalization
[mukə]	/munkə/ 'work'	Eva 2 Nicole2	[ko] 'comb'	final consonant deletion
[bɨuskə]	/bɨʃkə/ 'Bîşcă-proper name'	Nicole 2	[bʊ̯lʊ̯] 'blue' [wɪs] 'wish'	epenthesis palato-alveolar fronting

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Romanian Child's form	Adult target	Child's name and age	English peer's form	Phonological process
[ʒuk]	/suk/ 'juice'	Mara 2;5	[gom] 'comb'	prevocalic voicing
[ana]	/diana/ 'Diana-proper name'	Nicole 2	[nana] 'banana'	weak syllable deletion
[pakakalə]	/portokalə/ 'orange'	Eva 2	[baba] 'bottle'	vowel copying reduplication
[pakalə]	/portokalə/ 'orange'	Eva 2	[baba] 'bottle'	vowel copying
[mamat]	/dərɨmat/	Cezar 2;8	[baba] 'bottle'	consonant harmony reduplication
[a] [uat]	/l-a/ /luat/ 'took it'	Cezar 2;8	[ʌni:] 'bunny'	initial consonant deletion
[a] [el]	/la/ /el/ 'at him'	Mara 2;8	[ʌni:] 'bunny'	initial consonant deletion
[pʌʤəl]	/pʌzəl/ 'puzzle'	Mara 2;5	[ʤoor] 'door'	affrication
[a]	/la/ 'at'	Ioana 3;3	[ʌni:] 'bunny'	initial consonant deletion
[nəietsi]	/nəmetsi/ 'snow drift'	Mara 2;9	[baba] 'bottle'	vowelisation vowel copying

Two Romanian informants in six approximated adult targets by resorting to vowel copying. Eva (2 yrs) approximated /portokalə/ as [pakakalə] with the monophtong /a/ replacing /o/ in the first two open syllables of the word, by copying the nucleus in the syllable /ka/. Besides, this is also an instance of reduplication since the whole /ka/ syllable was doubled in Eva's inaccurate form /kaka/. In her attempts to pattern the adult form /portokalə/, Eva (2) also produced the form [pakalə] with vowel copying operating without being associated with reduplication. Mara (2; 9) also resorted to vowel copying associated with vowelisation when producing /nəmetsi/ as [nəietsi].

Little Cezar (2; 8) approximated the adult form /dərɨmat/ as [mamat], his utterance exhibiting thus both consonant harmony and reduplication. Obvious instances of reduplication were also encountered among the English-speaking children with the target 'bottle' being phonetically realized as [baba].

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3.1. Longitudinal study

The current data enabled me to conduct a longitudinal study within 2 months ½. The findings illustrate that the Romanian informant Călin (3) successfully managed to produce accurate consonant clusters in onset position by 3; 6 exhibiting signs of typical development (see Table 4). So, CC-clusters in onset position, such as /gr/, /sp/, which posed great difficulties for the little boy when he was 2; 8, were uttered without error since the Romanian child acquired consonant clusters with and without /s/ before turning 4, as the literature goes (Bowen 2011). Furthermore, if I compare the accurate utterances [grəunte], [grəbitə], [neɨngrijitə], [spate], [ispravə] (Călin 3; 6) to [fumoase] [pəlat], [lipek], [mototolek] (Călin 2; 8), I will draw the conclusion that the Romanian boy does not reduce consonant clusters any more.

Table 4

Data from Călin, at two stages in his linguistic development (2;8 and 3;6)

Child's form	**Child's name and age**	**Child's name and age**	**Child's form**	**Phonological process**
[grəunte]	Călin 3; 6	Călin 2; 8	[fumoase]	No cluster reduction by 3; 6
[grəbitə]	Călin 3; 6	Călin 2; 8	[fumoase]	No cluster reduction by 3; 6
[neɨngrijitə]	Călin 3; 6	Călin 2; 8	[fumoase]	No cluster reduction by 3; 6
[spate]	Călin 3; 6	Călin 2; 8	[pəlat] [lipek] [mototolek]	No cluster reduction by 3; 6
[ispravə]	Călin 3; 6	Călin 2; 8	[pəlat]	No cluster reduction by 3; 6

4. Conclusions

The current experimental data have obviously proven that Romanian monolingual children also make use of phonological processes typical of their English peers to approximate adult targets in line with Buja (2015). A comparison made between

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forms produced by Romanian monolingual children and utterances phonetically realized by English-speaking children (Bowen 2011) reinforce this tenet. The data obtained show that there is tight correspondence of elicited tokens in both English and Romanian (see Tables 2 and 3), since developmental universals (Slobin 1985) operate across languages, irrespective of the respondents' mother tongue.

According to the current findings, Romanian monolingual children do approximate adult targets by resorting to various strategies in order to simplify the required tokens. Thus, in the Romanian-speaking subjects' utterances, I identified instances of weak syllable deletion, /v/-stopping, final consonant deletion, affrication, epenthesis, palato-alveolar fronting, prevocalic voicing, vowel copying, reduplication, consonant harmony, initial consonant deletion, and vowelisation. Nevertheless, cluster reductions were by far more frequent than the other phonological processes and typical of all the informants investigated, which means that this phonological process prevails when young learners attempt to produce adult targets.

The longitudinal study (Călin 2; 8 - 3; 6) I conducted has shown that in a span of 8 months the Romanian boy Călin (3; 6) had no more the tendency to diminish consonant clusters. Even clusters with /s/ and without /s/, which are gone around the age of 4 or 5 years respectively, were accurately produced by the little boy.

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