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The sound pattern of initial learner varieties[1]

The sound pattern of initial learner varieties in second language acquisition is investigated in the framework of the "Basic Variety" approach on the basis of sixteen retellings of a cartoon in Polish L2 produced after fourteen hours of controlled input by learners with L1 French and Italian involved in the VILLA project. Besides the expected influence of the first languages, the phonic shape of individual words shows peculiar features in the organization of the segments available in the learner varieties, which point to autonomous processes of elaboration independent of the target and the source languages. Instability characterizes the reproduction of the input words at lexical, intralexical and interlexical levels. Frequency of the words supplied in the input appears to be the major factor in their recognition, as shown by instability reduction in the choice of one form among those belonging to the same paradigm. As to reproduction, reduction of instability is affected in different ways in transparent words, whose phonic shape may reflect the structure of the corresponding L1 words.

La componente fonetica di varietà di apprendimento iniziali di lingua seconda è indagata secondo l'approccio della "Basic Variety" sulla base di sedici racconti di un filmato di animazione in polacco lingua seconda dopo quattordici ore di input controllato, da parte di apprendenti con L1 francese e italiana partecipanti al progetto VILLA. Accanto all'atteso influsso della L1, nella forma fonetica delle parole si riscontrano caratteristiche specifiche nell'organizzazione dei segmenti disponibili nelle varietà di apprendimento, che rivelano processi autonomi di elaborazione indipendenti dalla lingua di arrivo e dalle lingue fonte. La riproduzione delle parole fornite nell'input è contraddistinta da instabilità a livello lessicale, intralessicale e interlessicale. La frequenza delle parole fornite nell'input è il fattore principale del loro riconoscimento, come rivela la riduzione di instabilità nella scelta di una forma tra quelle dello stesso paradigma. Nella produzione, la riduzione dell'instabilità è condizionata in diversa misura nelle parole trasparenti, la cui forma fonica riflette la struttura delle corrispondenti parole nella L1.

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1. *Introduction*

The sound pattern of initial learner varieties in second language acquisition is investigated in the framework of the "Basic Variety" approach (Klein & Perdue 1997). According to this approach, after the first contact with the target language, learners of any L2 are able to organize the linguistic means available to them according to pragmatic ("Focus last") and semantic ("Controller first") principles independent of the specific principles of the first and the second language involved in the acquisition process. Learners may then develop their learner varieties towards the norm of the target language in a continuum of postbasic varieties. The results obtained in the investigation of lexicon, syntax and morphology within this approach have not yet been matched by comparable results in the domain of phonology. As a matter of fact, the phonology of L2 acquisition has been investigated on the background of the pervasive processes of interference of the first language, although conditioned by markedness factors pointed out since the work of Eckman (1981). These processes cloud the identification of potential developmental tendencies independent of the first language in the phonetic component too.

The consideration of the phonetic component of the initial stages of a second language in the framework of the "Basic Variety" approach is now allowed by the data of L2 Polish collected within the VILLA project (Varieties of Initial Learners in Language Acquisition: Controlled input and elementary forms of linguistic organization) (Dimroth *et aliae* 2013). The data allow the comparison of the sound pattern of the same L2 of learners with different first languages performing the same task after the same amount of input exposure[2].

The aim of the VILLA project was the investigation of the strategies of elaboration of initial input in second language acquisition. For this purpose the same 14 hours long Polish course was delivered by the same native teacher to nine groups of young learners and to one group of children in five European countries (France, Germany, the Netherlands,

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[2] The design of the VILLA project is also presented in Rast (2015). Bernini (2016a) discusses the characteristics of the VILLA input in the framework of the notion of norm introduced by Coseriu. Saturno (in prep.) investigates the development of nominative and accusative case morphology in sentences with Subject-Object and Object-Subject orders on the basis of the repetition and comprehension tests submitted to the VILLA learners.

Great Britain and Italy). The course was designed according to the communicative approach with neither metalinguistic explanations nor exercises and tests as usual in an instructional setting. In each country the course was delivered in two modalities called *form-based* and *meaning-based*, distinguished by presence versus absence of corrections and strategies of focus on form (Long 1981). The input delivered by the teacher in the course was designed in a controlled manner and contained the same structures and the same lexical types. These were employed with different frequencies but with a balanced final type token ratio as illustrated in Table 1 for the French and Italian editions, the ones considered in this contribution.

Edition	Types	Tokens	Ratio
France, *meaning-based*	1177	62858	0.019
France, *form-based*	1045	57545	0.018
Italy, *meaning-based*	1053	55529	0.019
Italy, *form-based*	1076	56327	0.019

Table 1. Lexical types, tokens and type/token ratio in the input of four editions of the VILLA Polish course.

In the afternoon of the ten days in which the course was delivered, learners were submitted to a number of tests aimed at measuring their elaboration of different aspects of the Polish input. Spontaneous discourse productions, directive and narrative, were elicited on the last day.

In this contribution the narrative productions of 16 VILLA learners are considered. Eight learners were randomly chosen among the group of 36 with L1 French and eight among the 31 with L1 Italian. For each L1, four learners attended the meaning-based course and four the form-based course. Ten are females, six males. The retellings were transcribed in IPA

and the different phonic shapes of the words were charted in order to compare their relative distance from the standard pronunciation supplied in the input by the native teacher.

On the basis of the sixteen narratives produced by the learners, the phonetic component of the initial Polish learner variety as resulting after the attendance of the VILLA course is considered in order to answer the following research questions:

a. Is it possible to find peculiar characteristics of the phonetic component of the learner variety in the initial stages of a second language irrespective of the learners' L1?
b. Is it possible to correlate the phonetics of the learners' words with the major properties of the controlled input delivered in the course, i.e. frequency and transparency of the words comprised in the input?

2. *Tha data*

The narratives to be considered are the retellings of the thirty segments of a cartoon called the *Finite Story* elaborated by Christine Dimroth (Dimroth 2012). The cartoon shows the adventures of three characters, identified by the color of their cloths as Mr Blue, Mr Green and Mr Red, fleeing from the fire burst in the house they live in. Each learner retells the episode shown in each segment after watching it. As shown in Table 2, the retellings have a variable length. The shortest one is about eight minutes long, the longest one lasts 17 and a half minutes. Each learner is identified by a four digit code: the first digit refers to the first language (1 is French, 5 Italian), the second digit to the course type (1 meaning-based, 2 form-based); the last two digits refer to the learner.

Table 2 also shows the number of lexical types employed in each retelling, whose lexicon comprises a total amount of 87 types. Eight types are found in all 16 retellings, 10 types are found in a number of learners comprised between 10 and 15, 17 types are scattered among fewer learners (five to nine). Surprisingly, 51 types are found only in the retellings of the Italian learners against 14 found only in the retellings of the French learners. Some types occur with greater frequency, as is the case for the names of the three major characters, as commented upon further on.

Meaning-based learners	Length	Lexical types	Form-based learners	Length	Lexical types
1101	07' 52"	25	1201	09' 15"	23
1104	10' 07"	41	1202	10' 01"	25
1114	10' 00"	23	1205	09' 55"	25
1117	09' 31"	22	1211	10' 08"	22
5101	13' 29"	50	5202	14' 41"	37
5102	12' 15"	36	5204	16' 14"	42
5104	10' 04"	24	5205	17' 29"	31
5106	10' 24"	30	5218	15' 49"	32

Table 2. Length of retellings and number of lexical types
of 16 French and Italian VILLA learners.

The learners retold the cartoon to an unknown native speaker of Polish in a semi-natural environment outside the classroom where the course was delivered. The native speaker stimulated the retelling by setting Polish as the language to be used, introducing the characters, asking what they were doing and finally requesting to speak.

As to the general phonetic characteristics of the retellings with respect to the teacher's input, it should be stressed that the phonic shape of the learners' words reflects a fraction of the teacher's words as introduced in the input. The phonic shape of the teacher's words may be defined as "hyperarticulated" with respect to Lindblom's (1990) "H&H Theory", aimed at favoring the learners' word discrimination. The learners' perception of the acoustic signal was accompanied by the teacher's gestures pointing to pictures on power point slides as subsidiary signals. The teacher's frequent repetitions of the same words – as usual in teacher talk – helped the recognition of the word's phonic shape as a sequence of sonority peaks marked by a stress regularly falling on the last syllable but one.

On the other side, the sound pattern of the learners' words is characterized by a general instability, conditioned by physiological factors relating to the reproduction of the words' phonic shape, by cognitive factors relating to the meanings to be organized in the retelling, by

communicative factors relating to the presence of a native speaker as the addressee of the retelling.

For these reasons the investigation of the sound pattern of the initial learner variety of Polish L2 attested in the retellings of the learners at issue here pertains to the word phonic shapes and only marginally to single phones. As a matter of fact, the reduced number of words found in the retellings as in any initial prebasic or basic variety does not allow the projection of sounds onto a phonological system. In the inventory of the 87 words only six minimal pairs are actually found. However, in the retellings of the few learners where these minimal pairs are actually found, in only one case the minimal pair could be attributed some functional load, as in (1) for target /ˈdɔ/, *do* 'to' ~ /ˈtɔ/ *to* 'that' (neuter nominative and accusative). In the retelling of one Italian learner a further minimal pair involving bisyllabic words is found, as in example in (2).

(1) [ˈstraʒak ˈjɛstɛm ˈ**do** ˈ**to** twaˈlɛta] (5106)
     <fireman I-am to that toilet> (*scilicet*: the fireman is at the toilet)

(2) a. [straˈʒakjɛm ˈ**vɔwa** ˈpan niˈbjeski] (5102)
      <fireman calls mister Blue>

    b. [straˈʒakjɛm ˈpxa ˈ**vɔda**] (5102)
      <fireman pushes water>

3. *The sound pattern of the initial Polish VILLA variety*

3.1. *The sound inventory*

The initial Polish VILLA varieties as attested in the retellings differ from the teacher's native variety in the inventory of sounds as a result of interference processes. In particular, the L2 varieties lack the pervasive opposition between palatalized and non-palatalized consonants and the front, half-close, retracted vowel [ɨ] (Gussmann 2007: 2), which is considered an allophone of the high front vowel /i/ (Rothstein 1993: 689). As shown in (3), the half-close retracted vowel is reproduced in the great majority of the occurences by almost all learners as a mid-high front vowel [e] in final position in nine words and in the last closed syllable of one word.

(3) a. Target /ʈʂɛrˈvɔnɨ/ *czerwony* 'red': 157 occurrences, e.g. [ʧerˈvone], over 162

b. Target /ˈduʑɨ/ *duży* 'big'; [ˈduʒe]: 13 occurrences over 14.

c. Target /ˈtaɲʈʂit͡ɕ/ → [ˈtajɲʈʂit͡ɕ] *tańczyć* 'to dance': [ˈtanʧeʧ], 5202, 1 occurrence

The palatalized consonants are mostly reproduced as clusters of a non-palatalized consonant followed by a palatal approximant, as in the second syllable of *niebieski* 'blu', shown in (4).

(4) Target /ɲɛˈbʲɛski/ *niebieski* 'blue': [-bje/bjɛ-] 186 occurrences

However palatal /ɲ/ has a range of reproductions apparently sensitive to prosody, as shown in Table 3 for the initial unstressed syllable of *niebieski* 'blu' and in Table 4 for the independent negative particle *nie* 'not'. Unstable palatal or palatalized reproductions, echoing the nasal palatal phoneme of French and Italian, seem to characterize the retellings of learners with French as L1.

	L1 French	L1 Italian	
[nje-, njɛ-]	10	0	
[ɲe-]	15	0	
[ne-]	32	9	
[ni-]	25	**95**	
Total	**82**	**104**	**186**

Table 3. /ɲ/ in target /ɲɛˈbʲɛski/ *niebieski* 'blu'.

	L1 French	L1 Italian	
[nje, njɛ]	**27**	**21**	
[ɲie, ɲe, ɲɛ]	9	4	
[ɲi]	0	1	
[ne]	1	0	
[ni]	0	7	
Total	**37**	**33**	**70**

Table 4. /ɲ/ in target /ɲɛ/ *nie* 'not'.

Also related to palatalization is the neutralization of the opposition between Polish postalveolar retroflex and alveolopalatal affricates and fricatives (Czaplicki *et alii* 2016). As shown in (5) these sounds are substituted by the palatoalveolar affricates and fricatives of French and Italian as the learners' L1s.

(5) a. Target   /ʂ ʐ ʈʂ ɖʐ̊/   vs   /ɕ ʑ ʨ ʥ/
    Learners   [ʃ ʒ ʧ ʤ]
    b. Target   /ˈʐuwti/ *żółty* 'yellow',   (1114)   [ˈʤute]
    Target   /ʐɛˈlɔnɨ/ *zielony* 'green',   (5104)   [ʒeˈlɔne]

3.2. *Autonomous processes of sound distribution*

Besides the reduction of the sound inventory with respect to native Polish, the learner varieties show some internal dynamics which distinguish them from the three languages in contact and point to autonomous processes of organization of their sound pattern. This may be evidenced by the mode of articulation of the palatal series of consonants in the reproduction of the phonic shape of the words delivered in the input. As reported in Table 5, the initial alveolopalatal voiced fricative of the target word for Mr Green is reproduced as a fricative by the Italian learners, whose L1 lacks such a sound, and as an affricate by the French learners, whose L1 lacks palatal affricates.

	L1 French	L1 Italian	
[ʤ-]	66	6	
[ʒ-]	5	65	
Total	**71**	**71**	**142 (over 144)**

Table 5. Reproduction of /ʐ-/ in target /ʐɛˈlɔnɨ/ *zielony* 'green'.

On the other hand, the initial retroflex unvoiced affricate of the target word for Mr Red is reproduced with the palatoalveolar unvoiced affricate by all learners irrespective of the presence – as in Italian – or absence – as in French – of such an affricate in their L1, as shown in Table 6. Interestingly enough, the only three occurrences of an initial fricative in the reproduction of this word are found in two Italian learners (5202, 5205).

	L1 French	**L1 Italian**	
[ʧ-]	**83**	**75**	
[ʃ-]	0	3	5202, 5205
Total	**83**	**78**	**161 (over 162)**

Table 6. Reproduction of /ʈʂ-/ in target /ʈʂɛrˈvɔnɨ/ *czerwony* 'red'.

Initial position seems to affect the reproduction of retroflex and alveopalatal consonants as affricates by French learners. On the contrary, target voiced fricatives between vowels are mostly reproduced as fricatives, as will be shown later on for the words for 'fire' and 'fireman'.

3.3. *Instability*

As shown in the data just considered, the most pervasive characteristic of the sound pattern of the VILLA initial learner varieties – and perhaps of the initial learner varieties of any language – , is the relative instability in the reproduction of the shapes of individual words, resulting from the physiological, cognitive and communicative factors involved in the communicative task required from the learners. The instability involves individual words – we shall call it lexical instability – , groups of forms belonging to the same paradigm – we shall call it intralexical instability – , and groups of forms of different lexical types – we shall call it interlexical instability.

All phonetic components of a word appear to be unstable: vowels, consonants, stress and syllable structure, as exemplified by the pool of eleven forms for target /ˈpɔʐar/ *pożar* 'fire', exemplified in (6), for a total amount of 71 occurrences found in all sixteen learners. The forms in (6a) and (6b) show instability in the height of the first vowel and in stress position; the form in (6c) shows the reproduction of the internal target fricative as an affricate; finally the forms in (6d) show instability in syllable structure.

(6)　Target /ˈpɔʐar/ *pożar* 'fire' (11 forms, 71 occurrences, 16 learners)
　　a. [ˈpɔʐar, ˈpoʐar] b. [pɔˈʒar, poˈʒar]
　　c. [ˈpɔʤar]　　　d. [proˈʒar, ˈproʐar, ˈproʒak, ˈpɔʒarn, ˈpɔʤarn, poˈʒaru]

Individual forms may occur with greater frequency, as for [ˈpɔʒar] and [pɔˈʒar] with 25 and 21 occurrences which account for almost two thirds of the total amount of 71 occurrences. Individual forms may also reflect first language preferences, although in a not straightforward way as already shown for the negative particle *nie*. As illustrated in Table 7, target paroxytone pronunciation of *pożar* is consistently found in learners with L1 Italian, where most words are also paroxytone. Non-target oxytone pronunciation is found mostly in French learners, again matching the word prosody of the L1. However one third of the French learners' occurrences is paroxytone as in the target, a fact that points again to developmental dynamics within the learner varieties.

	L1 French	**L1 Italian**	
ˈ**CV**-CVC(C)	12	33	
CV-ˈ**CVC(C)**	21	4	
Total	**33**	**37**	**70**

Table 7. Paroxytone and oxytone forms for /ˈpɔʐar/ pożar 'fire'.

Some learners may show preferences for one form, as learner 1101 among the French learners with seven oxytone [poˈʒar] occurrences in her retelling; other learners have very unstable pronunciations, as 5205 among the Italian learners, who repeats the target word for 'fire' in five different forms in his retelling.

The range of different forms of a target lexical type found in the learner varieties points to their independence of the first and the second language. The learners' autonomous sound pattern is evidenced by the palatoalveolar voiced fricative found in final position instead of an unvoiced palatal fricative as in target /tɛʂ/ *też* 'too' and /ˈstraʂ/ *straż* 'guard'. As shown in (7) the final voiced consonant may occur before the initial unvoiced consonant of the following word too.

    (7)   a. Target /tɛʂ / *też* 'too'
           (5202)   [ˈtɛʒ ˈʃpi] <also sleeps>

        b. Target /ˈstraʂ poˈʐarna/ *straż pożarna* 'fire brigade'
           (1104)   [ˈstraʒ poˈʒarna]

The presence of a voiced consonant in word final position is a typological feature which distinguishes the learner varieties where it occurs from the target language, Polish allowing only final unvoiced consonants besides vowels and sonorants. As to the learners' L1s, Italian allows only word final vowels and sonorants. French, on the other hand, does allow final voiced consonants, but the final voiced fricative of the learner varieties as illustrated in (7) is unlikely to mirror a potential sound pattern of the L1. The final voiced fricative is found in three French learners (1104, 1201, 1202) and in three Italian learners (5106, 5202, 5204). The occurrences of the forms for *też* 'too' are shown in Table 8.

	L1 French	L1 Italian	
[ˈtɛʃ]	16	26	
[ˈtɛʒ]	6	8	1201, 1202; 5202
[ˈtɛʧ]	1	0	
Total	**23**	**34**	**57 (over 59)**

Table 8. Final fricatives in target /tɛʂ / *też* 'too'.

We can turn now our attention to intralexical instability, that can be illustrated with the competing nominative and instrumental forms of the word for 'fireman': /ˈstraʐak/ *strażak*, /straˈʐakʲɛm/ *strażakiem* shown in (8) and (9). The words are reproduced by 14 different forms, five reflecting the nominative form and nine the instrumental form, employed irrespective of their morphosyntactic functions.

(8)　(1104)
　　a. [telefonuˈje aː ˈ**straʒak**]
　　　　<(Mr Blue) phones fireman>

　　b. [**straˈʒak** ˈjɛst twaˈlɛta]
　　　　<fireman is toilet>

(9)　(1117)
　　a. [ˈpan ʤeˈlone telefoˈne a aː **straˈʒakjæm**]
　　　　<Mr Green phones fireman>

　　b. [ˈpan **tʀaˈʒakjɛm** ˈɔn də twaˈlɛta]
　　　　<Mr firemen he to toilet>

Overall, forms reflecting the nominative are more frequent than forms reflective the instrumental: 92 against 57. However, among Italian learners the reflexes of the two forms occur with the same frequency, i.e. 39 for each form.

As anticipated above, the instability of the phonic shape of a word may also be traced back to different lexical types in what may be called interlexical instability. This may be shown with respect to target /ˈiɕtɕ/ *iść* 'to walk' and /ˈjɛxatɕ/ *jechać* 'to ride (a vehicle)', whose third person present forms – as illustrated in (10a) – differ for the initial syllable as /ˈidzɛ/ *idzie* and respectively /ˈjɛdzɛ/ *jedzie*. In the *Finite Story* the context for the use of *jechać* is given in the segment where a fire engine reaches the house on fire, whereas in all other segments *iść* should be used to describe the walking movements of the characters. The overlapping of the two forms is shown in (10b) in the autocorrection induced by the native addressee of the retelling.

> (10) a. /ˈiɕtɕ/ *iść* 'to walk', /ˈidzɛ/ *idzie* '(s)he walks'
> /ˈjɛxatɕ/ *jechać* 'to ride (a vehicle)', /ˈjɛdzɛ/ *jedzie* '(s)he rides (a vehicle)'
>
> b. [(…) tɕerˈvone **jedʒe**/ ˈidʒe i ˈpɔtɛm ˈʃpi na ˈuʃku]   (5204)
> <Red rides/ goes and then sleeps on bed>

In the case of the Polish motion verbs *iść* and *jechać*, whose meanings are not neutralized in either French *aller* or Italian *andare*, interlexical instability may be induced by semantic contiguity besides phonetic similarity. Phonetic similarity seems to be most relevant in the overlapping of target /ˈskakatɕ/ *skakać* 'to jump' and /ˈskrɛɲtɕitɕ/ *skręcić* 'to turn' in the retellings of the segments showing the three characters jumping out of the windows of their homes onto the jumping sheet held by the firemen, and illustrated in (11).

> (10) [ˈpɔm dʒeˈlone **skɛnˈtatʃ** ˈtɛʃ (…) **skranˈtʃatʃ**]   (1101)
> <Mr Green jump too (…) jump>

In this case interlexical instability goes along with intralexical instability, shown in (12a) and (12b) for the infinitive and the third person present of 'to jump'[3].

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[3] The form [ˈskake] points to a reduction of the allomorphy distinguishing in the target the palatal stem /ˈskatʂe/ of the third person singular of the present tense from the velar stem of the infinitive /ˈskakatɕ/.

(12) a. Target: /ˈskakatɕ/ *skakać* 'to jump':
      [ˈskakaʧ, ˈskakɛʧ, ˈskɛkaʃ, ˈstakaʧ]

   b. Target: /ˈskaʈʂe/ *skacze* '(he) jumps':
      [ˈskaʧe, ˈskaʃe, ˈskaʧ, ˈskake]

   The consideration of the sound pattern of the learner varieties of the 16 VILLA learners considered here as attested in their retellings of the *Finite Story* has been shown to be partially independent from the L1s French and Italian and oriented towards Polish as the target language. Furthermore, the patterns of instability have shown autonomus processes of reproduction of the phonic shape of the words delivered in the input. The first research question may then be positively answered and we can now try to find whether the relative instability of the phonic shapes of the learners' words may be correlated with the major characteristics of the input design, i.e. transparency and frequency of the words presented in the course.

4. *The sound pattern of the learner varieties and the input*

4.1. *Input design*

   The Polish input presented to the learners in the meaning-based and form-based modalities of the VILLA course was designed by selecting a number of about 1000 lexical items as shown in Table 1 on the basis of two variables: transparency and frequency. Transparency contributes to the recognition of the L2 words giving the learners some point of reference for the perception and the comprehension of the input, as shown in investigations carried out preliminarily to the VILLA project (cf. Rast 2008, Rast/Dommergues 2003). On the other hand, the role of frequency – measured in the number of occurrences of a lexical type – in the elaboration of the input seems to be rather marginal. However its effect in the recognition of input words may be observed after eight hours of exposure, as claimed in the preliminary study by Rast/Dommergues (2003).

   As for transparency, the input comprises 60 items in a list of 120 Polish words whose semantic core was correctly translated by more than 50% of informants tested in the five countries involved in the project, as

shown e.g. by the translation 'France' besides target-like 'French' for Polish [ˈfrantsus], i.e. *Francuz*, submitted as an audio stimulus to the informants[4].

The different frequency of lexical items may be exemplified by the non-transparent forms *mieszka* '(s)he lives' (e.g. in Warsaw) and *Włoszka* 'Italian (woman)'. In the form-based presentation in Italy both words are found in a comparable number of occurrences in the first lesson (17 and respectively 14). However the overall frequency of *mieszka* in the form-based presentation in Italy amounts to 439 occurrences, whereas *Włoszka* in the same course edition is repeated only 29 times. Therefore *mieszka* is a high-frequency item, whereas *Włoszka* is a low-frequency item.

A potential effect of transparency and frequency may be found in the reduction of the relative instability of the learners' word patterns evidenced at lexical, intralexical and interlexical levels. The reduction in phonetic instability at lexical and interlexical level may prefigure the establishing of a phonological system and at the intralexical level the establishing of morphological oppositions. Stable word forms, at least for verbs, have actually been observed in the Basic Variety, whereas the establishing of paradigmatic oppositions marks the development of post-basic varieties. We may now look at potential patterns of instability reduction in the renderings of the transparent and frequent words comprised in the 87 lexical items found in the sixteen retellings of the *Finite Story*.

4.2. *Transparency*

The set of lexical items of the retellings comprises nine transparent items. Only three of them allow the observation of the role of transparency in shaping the phonic form of the input words and will be considered in detail here[5], i.e. /tɛlɛfɔˈnuje/ *telefonuje* '(s)he phones', /tɛˈlɛfɔn/ *telefon* 'telephone' and /toaˈlɛta/ *toaleta* 'toilet'.

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[4] Transparent words besides *Francuz* are e.g. [infɔrˈmatik] *informatik* 'information technologist' and [ˈgrɛkʲɛm], *Grekiem* (in the singular, masculine instrumental case) 'Greek'. Non transparent words are e.g. [kuˈxarka], *kucharka* 'woman cook' and [çinʲˈt͡ʃikʲɛm], *Chińczykiem* (in the singular, masculine instrumental case) 'Chinese'. The phonetic characteristics of the Polish words recognized as transparent by the tested informants with L1 Italian are investigated in Valentini/Grassi (2016).

[5] The low number of occurrences (1 to 4) of the remaining six items does not allow any significant insight. The six items are: *dialog* 'dialogue', *kontynuacja* 'continuation', *panika* 'panic' (1 occurrence in 1 learner each); *sukces* 'success' (3 occurrences in 2 learners), *obserwuje* '(s)he observes' (3 occurrences in 3 learners); *specjalny* 'special' (4 occurrences in 4 learners).

The first item /tɛlɛfɔˈnujɛ/ *telefonuje* '(s)he phones' occurs 73 times in the retellings of all 16 learners considered here. Instability reduction may be shown in the 67 occurrences of [telefoˈnuje] over 73 illustrated in (13a), which mirror the target but for the closed-mid vowels instead of the expected open-mid vowels. Four of the remaining occurrences diverge from the stable majority of occurrences only for the stress on the final syllable; they are shown in (13b) and are found in the retelling of a single French learner who also produces two occurrences with the expected paroxytone stress. The reproduction of the French final stress in one of the last two occurrences shown in (13c) is found in the retelling of a French learner besides two occurrences of the stable form [telefoˈnuje][6].

(13) Target /tɛlɛfɔˈnuje/ *telefonuje* '(s)he phones' (total 73 occurrences)
    a. **[telefoˈnuje] 67 occurrences (all learners)**
    b. [telefonuˈje] 4 occurrences (1101)
    c. [telefoˈne, telefoˈnie] 1 occurrence each (1117)

The item /tɛˈlɛfɔn/ *telefon* 'telephone', related to *telefonuje*, is found in a significant lower number of nine occurrences scattered among six learners. The item is reproduced in five word shapes shown in (14), differing for the height of the vowels but sharing the expected paroxytone stress postion but for two occurrences found in one French learner (cf. 14b). The common stress position of the majority of occurrences may be considered as a measure of instability reduction[7].

(14) Target /tɛˈlɛfɔn/ *telefon* 'telephone' (total 9 occurrences)
    a. [tɛˈlɛfɔn, teˈlefɔn, teˈlefon] 6 occ. in 4 learners (1202, 5101, 5202, 5218)
    b. [ˈteleˌfon] 2 occ. (1104)
    c. [teleˈfɔnu] 1 occ. (5102)

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[6] This occurrence might reflect the French cognate *téléfoner*, whereas the other one might point to a kind of compromise with the target Polish word in the segmental and prosodic structure.

[7] It may be worth noticing that the expected stress position is found in the nominative *telefon* and in the genitive *telefonu*. The distribution of a syllable initial major stress and a syllable final secondary stress in the two occurrences shown in (14b) may interpreted as the result of a compromise between the prosodic patterns of the L1 (French) and of the target language pointing to some kind of learning process.

As for the third item *toilet* illustrated in Table 9, transparency does not appear to be related to reduction of instability in pronunciation. Of the six forms found in 14 retellings, grouped according to the type of diphthong of the first syllable, two are preferred by French learners and two by Italian learners, probably in accordance with the pronunciation of that diphthong in the corresponding cognate word in the respective L1. However, as with *telefon*, prosody seems to be stable, only one form being stressed on the last syllable.

	L1 French Learners	L1 Italian Learners	Occurrences
[tw**a**ˈlɛta, tw**a**leˈta]	**5**	1	6
[to**a**ˈlɛta. to**a**ˈlɛːo]	1	**5**	6
[to**i̯**ˈleta, to**i̯**ˈlɛːa]	1	1	2
Total	**7**	**7**	**14**

Table 9. Learners' forms for target /toaˈlɛta/ *toaleta* 'toilet'.

4.3. *Frequency*

The investigation of the potential correlation of the frequency of the teacher's words in the input and the phonic shape of the learners' words must take into account a number of intertwined factors, such as individual variables related to the communicative situation of the retellings, the range of competing forms available in the input and the syllabic structure of single words. Therefore we can only point to some possible ways of considering input frequency and output phonetics with no claim of generalizations, which require the consideration of a greater number of learners and the application of statistical techniques.

For this purpose we may consider on the input side the mean frequency of a lexeme across the four courses considered here, i.e. meaning-based and form-based in France and in Italy[8]. On the output side, the phonic shape of the lexeme with the highest number of occurrences across the sixteen learners is considered with respect to the total amount of instable

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[8] The number of tokens of the same lexical type found in the four editions of the course may vary in a considerable way. For this reason the standard deviation is always indicated in the tables besides the mean frequency of the forms at issue.

occurrences of that lexeme. The frequency of a lexical type in the input should then be reflected in a preferred phonic shape in the learners' ouput as a clue of instability reduction.

This is shown in Table 10 for the two monosyllabic function words for 'not' and 'too'. High input frequency seems to be actually reflected in the relative low instability in the word shapes as repeated by the learners. However, as has been already pointed to, frequency effects can only be considered only in connection with the phonetic structure of the lexeme in question. The higher instability of the learners' words for 'not' is related to the reproduction of the initial palatal nasal, as already commented upon in section 3.1. (cf. Tables 3 and 4). On the other hand, the lower number of dispersed forms for 'too' comprises 14 occurrences with a final voiced consonant as an autonomous development never submitted in the Polish input, where final voiced consonants are not permitted.

	Input			Output	
	Frequency mean	**SD**	**Occ./Total**	**%**	
/ˈɲɛ/ *nie* 'not'	312,25	41.55	35/71	**49.29**	[ˈnjɛ]
/ˈtɛʂ/ *też* 'too'	214,25	30.06	42/59	**71.18**	[ˈtɛʃ]

Table 10. Frequency and instability reduction:
monosyllabic function words.

Turning to plurisyllabic words, me may now consider the case of the infinitive form for 'to jump' and of the third person present '(s)he jumps', belonging to the same paradigm and constituting a source of intralexical instability in the output. The mean requency of the two forms in the input is reported in the left section of Table 11. The lower frequency of the infinitive form seems to be reflected in the higher instability of the phonic shape of that word in the retellings, where the phonic shape with the highest number of occurrences amounts to a little more than one third of the total number of forms reflecting the target infinitive form *skakać*. On the contrary, the higher frequency of the third person present in the input is matched by a higher percentage of the stable form [ˈskaʧe] in the output.

However, the highest figure for the phonic shape of the infinitive form reported in Table 11 is elicited only among the Italian learners, whereas the highest figure for the form of the third person present *skacze* is found in the retellings of French and Italian learners as well.

Input			Output		
	Frequency mean	SD	Occ./Total	%	
/ˈskakatɛ/ skakać 'to jump'	18.75	1.92	14/38	**36.84**	[ˈskakatʃ]
/ˈskat̠ʂɛ/ skacze '(s)he jumps'	34.50	3.41	28/51	**54.90**	[ˈskatʃe]

Table 11. Frequency and instability reduction:
plurisyllabic content words.

Evidently, comparison of frequency counts must be refined and take into account other factors. In the case of the name of Mr Green, already mentioned and illustrated in Table 12, the singular masculine nominative form as the most frequent among the six ones delivered in the input is the only one found in the retellings. However, French and Italian learners prefer different modes of articulation of the initial consonant of that word as already commentend upon in section 3.1. (cf. Table 5), whereas final [-e] is found in 149 occurrences over 150.

	Input /zɛˈlɔnɨ/	Input /zɛˈlɔna/	Input /zɛˈlɔne/	Input /zɛlɔˈnego/	Input /zɛˈlɔnɔ̃ũ̃/	Input /zɛˈlɔnɨm/
11	63	10	0	5	2	1
12	70	14	0	4	3	0
51	57	9	0	5	2	0
52	58	10	1	1	0	0
315	248	43	1	15	7	1
Mean	**62**	**10.75**	**0.25**	**3.75**	**1.75**	**0.25**
SD	5.14	1.92	0.43	1.63	1.08	0.43

Table 12. Input forms for 'green'.

Paradoxically, frequency seems to be the relevant factor in the case of learners' word forms not found in the input. As reported in Table 13, the five lexical items for 'to ride a vehicle', 'to speak', 'to greet', 'to dance', 'to see' and 'to call' are attested in five retellings with an instable final nasal not delivered in the input, which echoes the present third plural morpheme of Polish verbs. These forms are found in the retellings of five learners, three learners attending the form-based French and Italian editions of the course and two learners attending the Italian meaning-based course. These forms are found in utterances with plural "subjects", implicit as in (15a) where the arrival of the fire engine at the burning house is described, and explicit as in (15b) where the three protagonists of the *Finite Story* are referred to.

	1202	1205	5101	5104	5204	
[jaˈxɔ̃n]	1					'ride'
[ˈmuvɔn]		2				'speak'
[pozdraˈvjɔ̃]	2					'greet'
[pozˈdravjɔn]			1		1	
[pozdraˈvjɔn]		1				
[pozdraˈvɔn]		1				
[ˈtantʃɔn]			1			'dance'
[ˈvizon]		1				'see'
[ˈvɔwã]				1		'call'
[ˈvowãn]					1	
[ˈvɔjɔn]					1	
Total	**3**	**5**	**2**	**1**	**3**	**14**

Table 13. Third person plural forms not delivered in the input.

(15) (1202)
    a.   [ˈstraʒak ˈjɛxa/ ˈjɛxa/ **jaˈxɔ̃n** ˈpɔʒar ˈdɔm]
                    <fireman ride-3PL fire house]
    b.   [ˈʧe pan **pozdraˈvjɔ̃**]
                    <three mister greet-3PL>

As illustrated in (16), learner 1205 seems to oppose the nasal final form to a vowel final singular form with the verb 'to see' with plural (16b) and singular (16a) subjects respectively. On the contrary, learner 5204, illustrated in (17), shows intralexical instability of the verb 'to call' in the same implicit plural contexts: both utterances a. and b. ctually refer to the four firemen holding a jumping sheet in the cartoon segment being described.

(16) (1205)
    a. [ˈpan neˈbjeski **vizi** proˈʒar]
       <Mr Blue sees fire]

    b. [ˈpan neˈbjeski ˈpan ʧerˈvone i ˈpan ʤeˈlone **vizon** ˈspraʒak
       <Mr Blue Mr Red and Mr Green see-3PL fireman>

(17) (5204)
    a. [ˈstraʒak **vɔjɔn** ˈpam ʒeˈlone]
       <fireman call-3PL Mr Green]

    b. [ˈstraʒak straˈʒakjɛm **vowa** ˈpam ʒeˈlone ˈpam ʧerˈvone]
       <fireman fireman calls Mr Green Mr Red>

The third plural forms found in the input are shown in Table 14. Only three lexical types typed in bold in Table 14 are common to all four editions of the Polish course and appear in an appreciable number of occurrences: 'be', 'have', 'live'. The overall frequency of the occurrences of third plural forms is greater for the French courses referred to by the numbers 11 and 12, than for the Italian courses referred to by the numbers 51 and 52. However, meaning-based (11 in France and 51 in Italy) and form-based (12 in France and 52 in Italy) modalities of course presentation comprise a comparable amount of occurrences for each country[9]. Besides

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[9] As already introduced in section 2., in the coding of the VILLA learners the first digit refers to the country (1 for Frances and 5 for Italy) and the second digit refers to the modality of presentation (1 for meaning-based and 2 for form-based).

frequency, these data may point to the relevance of the form-based modality of input presentation for the perception of phonic forms. Strategies of focus-on-form may have triggered the elaboration of verb forms with a final nasal in competition with vowel final forms as in learner 5204 and also in an opposition which prefigures morphological differentiations as in learner 1205.

/-ɔN/ → [-ɔ̃ų̃]			11	12	51	52
/ˈjadɔN /	*jadą* 'they ride (a vehicle)'		3	0	1	0
/kɔˈxajɔN/	*kochają*	'they love'	2	0	0	0
/ˈlubʲɔN/	*lubią*	'they love'	0	17	0	11
/ˈmajɔN/	**maja**	**'they have'**	**27**	**50**	**23**	**36**
/mʲɛʂˈkajɔN/	**mieszkają**	**'they live'**	**51**	**66**	**30**	**58**
/nazɨˈvajɔN/	*nazywają*	'they call'	0	1	0	6
/praˈʦujɔN/	*pracują*	'they work'	1	0	0	0
/prɛfɛˈrujɔN/	*preferują*	'they prefer'	0	1	0	0
/ˈrɔbʲɔN/	*robią*	'they do'	2	0	0	0
/ˈsɔN/	**są**	**'they are'**	**172**	**121**	**132**	**100**
/znajˈdujɔN/	*znajdują* 'they are located'		28	25	17	8
		Total	**286**	**281**	**203**	**216**
		Lexical types	**8**	**7**	**5**	**6**

Table 14. Third person plural forms in the input.

5. *Conclusion*

The consideration of the Polish L2 retellings of the *Finite Story* by French and Italian VILLA learners has allowed a positive answer to the first research question. As already claimed in Bernini (2016b), the sound pattern of the initial learner varieties shows peculiar characteristics. Some of these characteristics reflect the learners' first languages, as in the case of the reduction of the segment inventory of the target language. However the organization of the segments available in the learner varieties in the phonic shape of the individual words shows peculiar features, such as the presence of a voiced consonant in final word position and the voiced

palatal word initial affricate or fricative not found in the learners' first languages. The sound pattern of the learner varieties is characterized by a relative instability at lexical, intralexical and interlexical level. The relative instability may evidence a certain specific weight of the first language as in the case of the oxytone pronunciation of some words by French learners such as [poˈʒar] 'fire'. However first language interference is always counterbalanced by pronunciations oriented towards the paroxytone pattern of the target language. These data show that the fourteen hours of exposure to Polish help French speakers in perceiving and reproducing the paroxytone stress of Polish words, although they lack lexical stress in the first language and in previous researches on perception reported in Shoemaker / Rast (2013: 178) showed some degree of 'deafness' to stress.

The data available in the retellings of the *Finite Story* represent the final result of the elaboration of the input delivered to the learners of the VILLA Polish courses as it appears in the task of discourse production in realistic communication. As suggested by vanPatten (2014: 200), these data can therefore only allow to infer the role input features played in the establishment of the actual phonic shapes of the words found in the retellings by "working backwards". In this respect it should be pointed out that the actual phonic shapes of the learners' words reflect the words the teacher helped to isolate by her hyperarticulated pronunciation which clearly marked word boundaries by explicit phonological cues and by repetition (Cutler 1996). Therefore both learners' and teacher's words are the other side of the coin with respect to the experimental data used to investigate the processing of input in previous research endeavors.

As for the phonetic component of the VILLA input, the reduction of the series of retroflex and alveolopalatal consonants attested in the learners' productions is in line with the general conclusions of Shoemaker (2014), who found that the learners had not yet created stable L2 phonological categories after ten hours and a half of exposure. However, the French VILLA learners investigated by Shoemaker (2014) did activate their perceptual system early on. They were shown to be able to discriminate non-native retroflex and alveolopalatal consonants after 10 and a half hours of exposure to the second language, although only in response to stimuli constituted by syllables with the structure /Ca/ which

are rarely found as words the input[10]. The contrast between the places of articulation of these consonants was actually introduced at the very beginning of the first lesson in the word /ˈʈʂɛɕtɕ/ *cześć*, originally 'honor', used as an informal greeting.

As for the processing of words, on the basis of the recognition of low transparency words by learners exposed to L2 Polish in a pilot study carried out before the VILLA project, Shoemaker / Rast (2013: 174) claim that learners acquire "sensitivity to general phonological forms and/or prosodic patterns of Polish rather than to specific lexical items". Furthermore, eight hours of exposure suffice for extracting lexical items from running speech but not for developing recognition accuracy.

The retellings show that both French and Italian VILLA learners are able to extract words from the speech of the teacher, where they were acoustically separated and frequently repeated. As to recognition, phonetic similarity and semantic contiguity may hinder the distinction of lexical types as in the cases of interlexical instability. However, in general, the learners' words can be mapped onto the teachers's words even in the case of intralexical instability, whereby words belonging to the same paradigm are used as different shapes of the same word. Frequency appears to be the major factor in recognition, as shown by instability reduction in the choice of one form in a group of forms belonging to the same paradigm as in the case of the name of Mr Green.

At the interface between recognition and production, frequency of present third plural forms of verbs favored the recognition of a final nasal cluster [-ɔ̃ũ̃] and its reproduction in verb forms never delivered in the input in a fairly consistent phonic shape. In fact, frequency has been shown to be a factor in instability reduction in the phonic shape of single words. However, in reproduction, L1 influence hinders the adjustment to the teacher's phonic shape of words in different ways as in the case of transparent words. As shown in the low instability of *telefonuje* with respect to *telefon* and *toaleta*, the phonic shape of the L1 item corresponding to the transparent L2 word influences its reproduction in the learners' pronunciation.

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[10] They are *ma* '(s)he has', *na* 'to', *ta* 'that-F', *za* 'behind. The only two words constituted by a /Ca/ syllable in the learners' retellings are the prepositions *na* and *za*..

The investigation of the phonetic component of the learner varieties as attested in the retellings of the VILLA French and Italian learners may then be integrated with the investigation of their morphosyntax in production as in Dimroth (2018) and of the processing of the case markings as in Rast *et aliae* (2014), in order to get a consistent picture of the interface between input and output in second language acquisition, the VILLA project allowing to pursue such an ambitious aim.

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