

## **L2-accented speech in L3 production**

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### **Abstract**

The paper is aimed at investigating the sources of cross-linguistic influence in the third language (L3) phonology, and, particularly, the impact of the second language (L2) on the phonological acquisition of another foreign language. The study consisted in foreign accent judgements performed by a group of expert judges who were presented with recorded samples of L3 English. The findings confirm the results of some previous studies on the phenomenon of 'L2 status' and demonstrate a tendency for the L2 phonological transfer in L3 production at the initial stages of acquisition that decreases with growing third language proficiency.

### **1. Introduction**

Phonological aspects of third language acquisition (TLA) constitute a relatively unexplored research area that reaches beyond Second Language Acquisition (SLA) by drawing attention to the complexity of cross-linguistic influence while learning more than one foreign language, a situation which has become a commonplace in today's multilingual world.

The present study aims at exploring the phenomenon of L2 status or a 'foreign language effect', i.e. the impact of previously learnt foreign language(s), rather than only the mother tongue, on the phonetic performance in a third language (cf. Meisel 1983, Cenoz 2001, Hammarberg 2001, Hammarberg & Hammarberg 2005, Fernandes-Boëchat 2007). The paper aims to provide further evidence for the claim that L2 outweighs the transfer from L1 at the initial stage of L3 acquisition leading to L2-accented speech, however, this interference diminishes with the gradual approximation to the L3 target norms.

This paper is a part of an on-going investigation into the patterns of interference between first, second and third language, focussing particularly on the articulatory resetting in the process of third language phonological acquisition. The ultimate goal of the research is to assess the influence of L1 and L2 in third language oral productions by comparing perceptual judgements of a foreign accent with an auditory and acoustic analysis of articulatory setting of L3 English<sup>1</sup>.

### **2. Theoretical background**

It is generally acknowledged that foreign language acquisition, particularly in the area of phonology, is subject to interference from the first language (L1). Moreover, the process of acquiring a third language is rather commonly believed to parallel that of the second language learning. Only recently, attention has increasingly been drawn to the specific and complex nature of phonological acquisition in a multiple language setting (cf. e.g. Cenoz et al. 2001, Bannert 2005). The process of acquiring a third language is more complicated in the sense that phonological transfer is not limited only to the mother tongue, but other earlier acquired

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<sup>1</sup> The present contribution constitutes an extended version of a selected part of the research presented in Wrembel (2008).

foreign language systems and learning experiences may also constitute the source of potential cross-linguistic influence. Several factors have been identified in the literature as conditioning transfer in the acquisition of a foreign language, particularly of a third language, including typological distance or psychotypology, foreign language effect, proficiency level, recency of use or the context of interaction (see e.g. Piske et al. 2000, Cenoz 2001, Jessner 2006 for a detailed discussion thereof).

The phenomenon of activating the L2 in L3 production, which is frequently referred to as 'foreign language effect' or L2 status, has attracted special attention of several researchers e.g. Hammarberg and Hammarberg 1993, 2005, Williams & Hammarberg 1998, Cenoz 2001, Hammarberg 2001, Bannert 2005, Jessner 2006, Fernandes-Boëchat and Siebeneicher Brito 2008, Gut (this volume), Llama, Cardoso and Collins (this volume). De Angelis & Selinker (2001:56) claim that there is some kind of 'a potential talk foreign' or 'foreign language cognitive mode' that facilitates the path of interlanguage transfer. Foreign language effect in phonological acquisition is sometimes interpreted as a coping strategy that is resorted to at initial stages of L3 acquisition when the L3 phonetic form is too unfamiliar to master. For this reason, the coping strategy overrides temporarily the basic constraint of L1 transfer (Hammarberg & Hammarberg 2005). Fernandes-Boëchat (2007: 203), on the basis of numerous empirical studies also concluded that there is "a strong tendency for just the preceding foreign language to predominate in the role of the external supplier during initial target language production" provided that the command of the preceding foreign language is at least at an intermediate level.

There have been several hypotheses put forward in literature to account for this switch to a foreign language mode. Firstly, the mechanisms responsible for the acquisition of the mother tongue differ from those applicable to foreign language learning, i.e. the process of learning a second or third language usually takes a similar route of acquisition which is inherently different from the natural acquisition of the L1. Therefore, it is hypothesised that L3 phonological learning may lead to the reactivation of the L2 acquisition mechanisms. Secondly, several psycho-affective factors are at play in the process, attitude being one of the most powerful ones. Hammarberg's informant, for instance, reported a strong desire to suppress her L1 as 'non-foreign' and to use instead a 'foreign language strategy' in order to acquire the L3. Consequently, we have an interplay of two processes of suppressing the L1 and activating the L2 that may result in a tendency to rely on the second language as an external source of cross-linguistic influence. Further explanations of this phenomenon are provided by studies on multilingual mental lexicon. For instance, Hall & Ecke (2003) propose that stronger transfer between L3 and L2 rather than L3 and L1 could be attributed to stronger links between foreign languages in the speaker's mind.

Rather conflicting findings were reported by Llisterri and his associates in a series of studies on bilinguals learning a third language. Llisterri & Poch-Olivé (1987) investigated the production of French oral vowels by bilingual learners of French as a third language by measuring the frequency of the first two formants and compared the bilingual speakers of Catalan and Castilian with the performance of monolingual Catalan speakers. The findings indicated that with regard to the measured durations of L3 English vowels both monolingual and bilingual speakers do not make significant differences between long and short English vowels. The second part of the study focused on fricative consonants in L3 French. No significant differences were found between the two groups with respect to the measured frequency and intensity of acoustic energy as well as the duration of the consonants. On the whole, Llisterri & Poch-Olivé (1987) demonstrated experimentally that in the case of bilinguals learning a third language there seems to be no interference of their L2 on the oral production in L3 and the existing transfer can be satisfactorily explained by means of acoustic features of their L1 sounds. Therefore, they concluded that bilingual speakers learning a third

language behave in the same way as their monolingual counterparts as they tend to follow their L1 distributional patterns in the acoustic vowel space and the L2 vowel space does not seem to have much bearing on their L3 productions. One of the shortcomings that these studies suffer from is a fairly limited number of the participants of the experiments (3 - 10 max). Moreover, they concerned only bilinguals acquiring another foreign language, however, little attention was paid to the participants' linguistic dominance.

### **3. Foreign language effect in phonological acquisition**

Nonetheless, there have been more studies to date that testify to the complex interference between foreign languages acquired as second and third and point to the existence of the so called foreign language effect in L3 phonological acquisition (cf. among others Bannert 2005, Fernandes-Boëchat 2007, Tremblay 2007, Gut this volume, Llama, Cardoso and Collins this volume). Bannert's (2005) reports an attempt to create a database FIST of third language acquisition in order to make quantitative statements about phonological interference from the L2 and L3 that is responsible for deviating pronunciation in the target language.

One of the earliest yet significant contributions towards research on third language phonological acquisition was that of Hammarberg (cf. Hammarberg 2001, Hammarberg & Hammarberg 1993, 2005, Williams & Hammarberg 1998) although it was limited to a longitudinal case study of a multilingual, Sarah Williams, whose L1 was English, L2 - German and L3 - Swedish. The study consisted in accent judgements performed by 3 native German listeners as well as an auditory and acoustic analysis of samples of Sarah's speech performed by the authors. As far as the accent judgements are concerned, the judges were to identify the speaker's native tongue while listening to the same excerpt of text from two different stages of interlanguage development of L3 Swedish. The judges unanimously agreed that the speaker was German when listening to samples from the initial stage of acquisition of Swedish, while two out of three identified Sarah correctly as English when exposed to the second recording from a more advanced stage. The results pointed to a stronger interference of a foreign language learnt as second (German in this case) at an early stage of TLA, when Sarah's output in L3 Swedish was strongly L2-accented. This L2 interference in the L3 acquisition seemed to have diminished with time and at a more advanced stage of L3 learning it was the native English accent that prevailed leading to more L1-accented performance in the third language.

Having performed the auditory analyses of the informant's performance in L3 Swedish, Hammarberg & Hammarberg (1993, 2005) differentiated between various stages of interlanguage development and pointed to varying degrees of influence of L1 English and L2 German. An early stage of acquisition of L3 Swedish demonstrated prevalently features characteristic of German such as e.g. voiced /s/ in intervocalic positions, uvular approximant for postvocalic /r/, prevocalic /r/ realised as apical trill, less retracted long /a:/, very lax short /i/, tense quality in stress and intonation patterns, lip rounding gesture characteristic for German and an overall German colouring. At the later stage of L3 development, it was the informant's L1 English whose influence was dominant and it was manifested e.g. by retracted alveolar rather than dental /t/, /d/, slightly velarised /l/, occasional reductions of unstressed vowels to schwa, no replacement of /s/ by [z] in intervocalic positions, postvocalic /r/ realised as apical approximant, English-like setting for prevocalic /r/ in postvocalic positions, and generally more English-oriented performance.

Furthermore, task-related variability was evident in the analysis. The imitation and repetition tasks generated less L2 accented speech, whereas reading and free production that was subject to less conscious monitoring resulted in stronger L2 interference in L3 output. However, the acoustic investigation of phonatory settings measured by means of fundamental

frequency distribution analysis did not point to any significant differences between different stages of the interlanguage development of L3 English. Hammarberg & Hammarberg (1993, 2005) concluded that in their case study, supralaryngeal articulation in L3 acquisition was subject to resetting, whereas the phonatory setting seemed to have remained unaltered. The reasons for L2 accent being so prevalent at the initial stage of L3 acquisition could have been attributed to the recency of use of L2 German and its high level of proficiency on the one hand, and the unwillingness to sound English (i.e. an avoidance strategy not to sound as a native English speaker) on the other. It was a purposeful avoidance of L1 influence on the part of the speaker of L3.

The present contribution was intended as an attempt to replicate foreign accent ratings of third language performance on a larger scale in order to assess the degree of influence of the L1 and the L2 in third language oral productions by means of the perceptual judgements of a foreign accent.

## **4. Experiment**

The aim of the present study was to explore the nature of a foreign accent in samples of L3 English. The term 'foreign accent' was used to refer to the deviant phonetic realisation of the target language, defined as "the inability of non native language users to produce the target language with the phonetic accuracy required by native listeners" (McAllister 1997: 207).

The study was based on a small corpus of non-native English speech collected by the author. The corpus consisted of 240 recordings and had a total length of 6.5 hours. The stimuli were recorded using CoolEdit96 as 16-bit mono files at 16 000Hz sampling frequency. The recorded participants included Polish native speakers with a very good command of German as their L2, and with a rather limited competence in English as was their L3 as well as native speakers of German acting as controls, for whom English was a second or a third language. The subjects were recorded performing language tasks in 4 conditions: reading a word list, reading a text, telling a picture story and presenting a spontaneous speech.

For the sake of the present experiment, 30 samples of L3 English speech were selected from the recorded corpus (one sample per subject), however, one had to be excluded in the course of the experiment due to technical problems. The samples featured 24 native speakers of Polish (with L2 command of German) and 5 German controls speaking English as their L2 or L3. The selected samples were 40-50 s excerpts extracted from the original recordings and included 2 styles: a reading text and free speech.

### **4.1 Participants' profiles**

The participants involved Polish students of the German philology at Adam Mickiewicz University, Poznań, Poland, who have been learning English at an elementary level as well as the students of Applied Linguistics of the same university with a more proficient command of English as their third language. They were assigned to appropriate proficiency level groups (i.e. beginner N=7, elementary N=8, pre-intermediate N=2, intermediate N=7) on the basis of a placement test that had been administered at the beginning of the term by their English teachers. However, as there were no significant differences in performance between the two lower proficiency groups and the two upper proficiency groups they were mostly treated jointly in the subsequent analysis of the results as beginner/elementary and pre-intermediate/intermediate.

In order to control better various factors contributing to the complex nature of cross linguistic influence, language learning biographies were collected from the participants in the form of questionnaires at the onset of the experiment. The questionnaires included

information concerning the length and intensity of study of the second and third foreign languages, reports on the visits to English- or German-speaking countries, self-assessment of the respective proficiency levels and metalinguistic evaluation of positive and negative effects of cross linguistic transfer. The analysis of language biographies resulted in a fairly homogenous profile with respect to L2 German, however, the participant differed significantly with respect to various indicators of their proficiency level in L3 English (see Table 1). Similar mean results for the beginning and elementary groups as well as for the pre-intermediate and intermediate allowed the present author to simplify the proficiency level distinction, and consequently, to divide the participants into two distinct groups reflecting their command of English.

	<b>Beginner/elementary</b>		<b>Pre-intermediate/Intermediate</b>	
	ENGLISH	GERMAN	ENGLISH	GERMAN
Years of study	3.5	9.3	12	11
First contact	at 17	at 12	at 10	at 11
Instruction	2 hr/week	7.7 hr/week	2 hr/week	8 hr/week
Stay abroad	No	6.2 months	3 weeks	3.5 months
Self-evaluation	2 (poor)	4.3 (above good)	4 (good)	4.5 (above good)

Table 1. Language learning biographies of the participants. (NB! Language proficiency level refers to the participants' competence in L3 English. The numbers indicate mean values.)

Both groups studied German for a comparable number of years, the mean values being  $M=9.3$  for beginner/elementary, and  $M=11$  for pre-intermediate/intermediate. The age of the first contact with the language was similar (on average 12.4 for the former and 11 for the latter). Likewise, the amount of German instruction totalled 8 hours per week for both groups. The participants of the two groups reported the length of their visits to German speaking countries (on average 6 months for the lower level group and 3.5 months for the more advanced group). They evaluated their German competence as fairly good, i.e. in the range of 4.3 - 4.5, (5 being the maximum). All in all, both groups were fairly comparable with respect to their L2 German, however, they differed significantly with regard to their experience with English.

As far as the acquisition of English as the third language is concerned, the pre-intermediate/intermediate level participants reported a much longer learning period of 12 years on average, whereas for the beginner/elementary it totalled only 3.5 years. The age of the first exposure to English also differed significantly and was much earlier for the more advanced group (i.e. on average at the age of 10) than for the lower level group (on average at the age of 17). The intensity of training at the time of the experiment was comparable for both groups (approximately 2 hours per week), however, the subjects from the pre-intermediate/intermediate group self-evaluated their English competence much higher (4 - good) than those from the beginner/elementary group (2 - poor). It may come as a surprise that the mean age of the first contact with German and English was comparable in the case of the more advanced group (11 vs. 10 years of age), however, it does not clash with the interpretation of German as the L2 and English as the L3 because the dominance of the languages in contact does not necessarily correspond to the chronological order of acquisition in multilingual subjects (cf. Hufeisen 1997).

The analysis of the learners' profiles for both groups evidenced that they were very homogeneous with respect to their L2 German proficiency, however, they constituted two distinct groups in terms of their L3 competence. Therefore, in the further analysis of the

findings the results will be compared against the participants' language biographies to provide insights into the complex nature of L3 phonological acquisition.

The majority of the participants made metacomments on the 'negative' influence of L2 German on their English performance, particularly in the area of pronunciation. No one, however, overtly stated a desire to resort to L2 German in order to suppress consciously the influence of their mother tongue Polish by using the so called 'coping strategy' as reported by Hammarberg & Hammarberg (2005).

#### 4.2 Procedure

This part of the study consisted in perceptual judgements of a foreign accent based on sample recordings of English acquired as a third language. The accent ratings were performed by 27 expert judges who consisted of 7 native speakers of English (NS) and 20 non-native speakers of English (NNS) with a near-native proficiency in English, all of whom were university lecturers.

The present author decided to include apart from native speakers of English also proficient non-native judges although it is generally claimed that native speakers are naturally better at detecting a foreign accent. However, this assumption has recently been questioned by some researchers. Højen (2000), for instance, found evidence that non-native speakers are more sensitive to divergences from the target language phonetic norms than the natives, provided they have a distinct mental representation of the authentic pronunciation of the L2 sounds. Højen's claim is based on the perceptual magnet effect (cf. Kuhl & Iverson 1995) stating that non-natives are less sensitive to subcategorical phonetic differences between sounds close to a native phonetic prototype.

As far as the judges' characteristics are concerned, the native speakers had on average 10.6 years of EFL teaching experience, and for the non-natives the mean was 7.65 years. As for phonetic expertise, all the NNS had some training in English phonetics and phonology, whereas the natives did not.

The judges were presented with 29 randomised samples and asked to perform the following tasks:

- 1) *rate the samples for an overall degree of a foreign accent on a 6-point scale (1-heavy accent, 6- native-like)*
- 2) *identify the native tongue of the speakers by selecting an appropriate item from an open list presented in the rating questionnaire (e.g. Polish, English, German, Italian, etc).*

#### 4.3 Research questions

The following research questions were investigated in the study:

1. *Which previously learnt language prevails as the source of cross-linguistic influence in L3 phonological acquisition?*
2. Will the subjects performing in L3 English be identified correctly as native speakers of Polish or of German?

*3. Will accent judgements be correlated with L3 proficiency levels?*

*4. Will the correct identification be related to the speakers' level of proficiency in L3?*

*5. Will there be any differences in accent judgements due to task and interrater variability?*

#### 4.4 Results

The statistical analysis was conducted using the SPSS package. The findings concerned the degree of correct identification of the speakers' first language, the relation between the perceived foreign accent and the proficiency level as well as task variability.

##### 4.4.1 Correct identification of speakers

The results indicate that in case of correct identification (i.e. Polish speakers of English identified as Poles, German controls as German), there was no relationship between correct identification and the speaker's mother tongue ( $\chi^2=0.081$ ,  $p=0.775$ ). The speakers of Polish and German were identified correctly by the raters in 33% and 40% of the cases respectively (see Table 2), whereas in the remaining cases they were assigned to other language groups.

		POL/GER		Total
		G	P	
correct id	N	3 60,0%	16 66,7%	19 65,5%
	Y	2 40,0%	8 33,3%	10 34,5%
Total		5 100,0%	24 100,0%	29 100,0%

Table 2. Correct identification (G - German, P - Polish participants, N - no, Y - yes)

However, there was a significant relationship between the correct identification of the speakers and their language proficiency (Pearson  $\chi^2=8.893$ ,  $p=0.031$ ). The results demonstrated that the subjects at a higher proficiency level in English were more frequently identified correctly as Poles speaking English than those Poles with a lower L3 English proficiency (see Fig.1). The values for correct identification as Polish reached statistical significance for intermediate (71%) and pre-intermediate subjects (50%), whereas lower proficiency level subjects were much less frequently identified correctly (i.e., beginners - 20%, elementary - 8%).

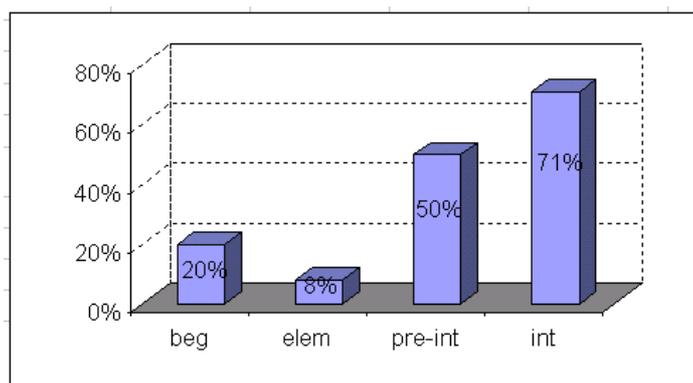


Fig. 1 Correct identification as Polish vs. language proficiency level

#### 4.4.2 Foreign accent judgement vs. proficiency level

The results of a variance analysis 1-way ANOVA showed a statistically significant correlation between the proficiency level and mean points assigned for foreign accent ( $F=55$ ,  $p<.001$ ). On a 6-point scale, the beginner and elementary level subjects received mean ratings  $M=1.75$  (within a range 1.3 - 2.1), whereas the mean score for intermediate level subjects was  $M=3.85$  (within a range 3.0 - 4.3) - see Table 3.

			N	Mean	Std. Deviation	Std. Error	Minimum	Maximum
POL/GER	G	adv	1	5.800	.	.	5.8	5.8
		int	4	3.350	0.8699	0.4349	2.6	4.2
		Total	5	3.840	1.3297	0.5946	2.6	5.8
	P	beg	7	1.700	0.2449	0.0926	1.3	2.0
		elem	8	1.813	0.2900	0.1025	1.4	2.1
		pre-int	2	1.750	0.3536	0.2500	1.5	2.0
		int	7	3.857	0.5127	0.1938	3.0	4.3
		Total	24	2.371	1.0327	0.2108	1.3	4.3

Table 3. Descriptive statistics of foreign accent judgements

Furthermore, a T-test for Independent Samples was administered to measure the relation between correct identification and accent judgement ratings. The results ( $t=-3.75$ ,  $p<.000$ ) demonstrated a statistically significant difference between correct identification as a Polish speaker of English and mean points assigned for accent. The subjects who were assigned higher scores for accent were more frequently identified correctly as Polish speakers of English than those whose L3 English performance was judged as being more accented (mean score for accent  $M=2.94$  for correct identification;  $M=2.55$  for incorrect identification).

As far as identification as German is concerned (i.e. the subjects identified as German natives speaking English as a foreign language), the numbers were significantly higher for the beginner/elementary level and totalled 218 token identifications compared to only 78 such cases at the pre-intermediate/intermediate level.

As for the identification as German vs. correct identification at respective proficiency levels, it appears that beginner and elementary Polish speakers of English were identified incorrectly as German in 53% of the cases, whereas at the pre-intermediate/intermediate level only in 17%. The reverse was also true for correct identification as the lower level subjects were identified by the raters as Polish learners of English in 24% of the cases, while the more advanced students in 58% (see Fig. 2).

The results of 1-way ANOVA pointed to a significant relation between the identification as German and proficiency level and accent judgement ( $F=155$ ,  $p<.001$ ). Moreover, the Games-Howell test for multiple comparisons pointed to statistically significant differences between intermediate and beginner/elementary groups at the significance level  $p<.001$ .

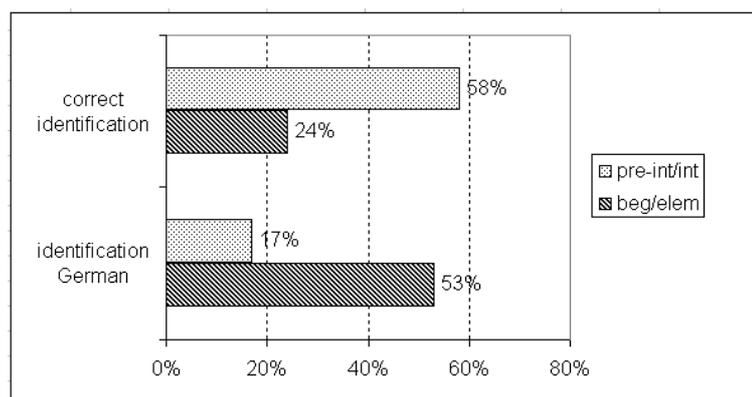


Figure 2. Identification as German vs. correct identification as Polish at respective proficiency levels

#### 4.4.3 Task and interrater variability

For the purpose of the present study two out of four types of tasks recorded in the corpus were selected and assessed for the degree of the perceived foreign accent. This allowed the author to analyse the scores for accent ratings with respect to different modes of L3 oral performance (i.e. read vs. spontaneous speech).

It turned out that the accent ratings for the two modes were fairly consistent with respect to the subjects' proficiency levels. The lower proficiency subjects remained in the 1.4-2.0 range (on a 6-point scale, 1- strongly accented, 6 - near-native like), although the points assigned to each individual for spontaneous speech were on average 0.5 point lower than for the read text. As far as the more advanced subjects are concerned, their ratings were in the 3.7-4.3 range and their individual scores for the speaking mode were on average 0.4 point higher than for the reading mode.

The patterns of identification in the reading and speaking mode of performance for the two proficiency levels are illustrated in Figure 3. As can be observed, the lower level Polish subjects performing in L3 English were incorrectly identified as native speakers of German in 37% of the cases when they read a text, however, this number increased to 61% in the speaking mode. A similar tendency was evidenced for the higher proficiency level subjects, yet the percentage of incorrect identification was significantly lower. In the reading mode they were labelled as German native speakers only in 12% of the cases, whereas in speaking the percentage increased to 41%. Interestingly enough there were no such significant discrepancies between the reading and speaking performance modes when we analyse the subjects' being correctly identified by the raters as Polish speakers. The differences in this

case were negligible and equalled 1% for the lower group and 4% for the upper level. It means that when the subjects were perceptually assessed to be Polish, their L1 accent in L3 English performance was judged to be approximately stable irrespective of the performance mode. On the other hand, when they were identified as German speakers of English, there was considerable task-related variability in the two performance modes. In the case of L2-accented L3 output, the spoken performance was judged to be much heavier accented than the more controlled reading task.

The present findings corroborate those of Hammarberg and Hammarberg (1993, 2005); in both cases less conscious monitoring resulted in stronger L2 interference in L3 output.

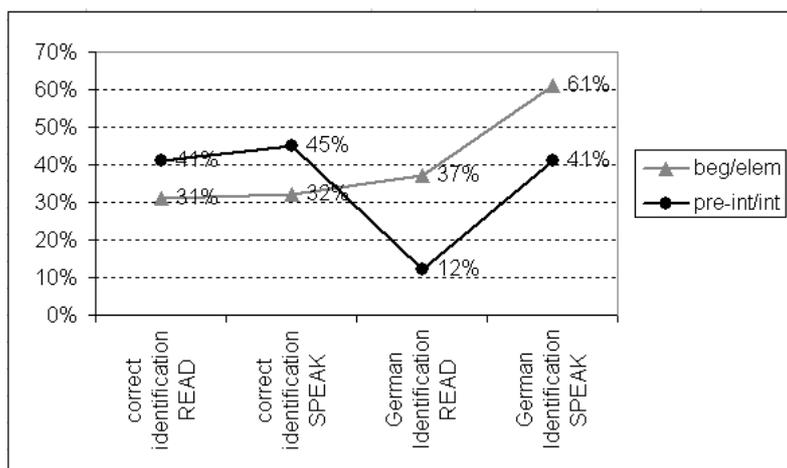


Figure 3. Correct identification as Polish vs. German identification at respective proficiency levels.

If we analyse the raters' variables, the results of the T-test showed significant differences between native and non-native speaker judgements ( $t=4.3$ ,  $p<.001$ ). The non-native judges assigned lower points for accent and tended to be more severe than English native speakers, which is consistent with other findings (cf. e.g. Scheuer 2000). The difference between mean accent ratings of native speakers of English ( $M=3.05$ ) was statistically different from those of non-native judges ( $M=2.56$ ) (see Table 4).

<i>Group Statistics</i>						
			N	Mean	Std. Deviation	Std. Error Mean
accent	TYPE	NATIVE	203	<b>3.05</b>	1.347	0.095
		NON-NAT	579	<b>2.56</b>	1.424	0.059

Table 4. Descriptive statistics for native vs. non-native accent judgements

Nonetheless, no correlation was found between the judges' experience measured in the length of teaching instruction and their scores in the accent judgements. Furthermore, there was no relation between the type of judges (native or non-native) and the correct identification ( $\chi^2=1.285$ ,  $p=0.2$ ), which means that the Polish judges' ability to identify the speakers correctly did not differ significantly from that of the native English speakers. These findings provide further support for the author's decision to include also non-native proficient

speakers of English as expert raters able to pass reliable judgements on the degree of a foreign accent.

#### 4.5 Discussion

The main research question addressed in the study was which previously learnt language prevails as a source of cross linguistic influence in L3 phonological acquisition; the L1 or the L2. The analysed data clearly demonstrated that it is not only the motor routine of the mother tongue that determines the acquisition of a new foreign language. As appears evident from the findings both the learner's L1 Polish as well as L2 German played important roles in the development of their English interphonology, however, the strength of these influences differed, depending on the stage of the third language proficiency.

A closely related research question concerned correct identification of the mother tongue of the speaker. When listening to randomised samples of L3 English, the raters identified some subjects correctly as native speakers of Polish (prevalingly those who had an intermediate level of English competence), whereas a considerable number was identified as German native speakers.

When assessing the degree of the perceived foreign accent and its correspondence to L3 proficiency levels, it was found that the scores for foreign accent assigned by the judges reflected the speakers' actual command of L3 English i.e. elementary and beginner learners received significantly lower scores than intermediate learners ( $M=1.75$  as opposed to  $M=3.85$  on a 6-point scale). This finding pointed to the reliability of foreign accent ratings, which reflected to a considerable extent the subjects' group assignment that had been based on a proficiency test. It was only the pre-intermediate group that did not quite follow this pattern as its scores fell in the lower level category rather than closer to the upper band as could have been expected, however, this proficiency level was fairly underrepresented ( $N=2$ ) which could have affected the results.

The fourth question addressed the correlation between the speakers' L3 proficiency level and the correct identification of the speakers' mother tongue. An interesting regularity was observed since there was a visible tendency for higher proficiency level subjects to be identified correctly as Polish (58%) in contrast to the beginner/elementary group (only 24%). In turn, lower proficiency levels, i.e. beginners and elementary learners of L3 English tended to be labelled more frequently as German native speakers (53%), whereas the intermediate learners only in 17% of the cases. This finding provides further evidence for Hammarberg & Hammarberg's (2005) claim that it is the second language rather than the mother tongue that constitutes a stronger source of cross-linguistic transfer at the initial stages of phonological acquisition thus leading to L2-accented speech in L3 performance. This tendency to resort to L2 articulatory routines becomes less powerful with the development of third language proficiency.

The final question concerned potential differences in accent judgements related to task and interrater variability. The data showed that the results of accent judgements were fairly consistent with regard to the performance modes, i.e. individual subjects received comparable proficiency judgements irrespective of the fact whether their performance involved reading or speaking. The average differences in accent ratings for a given mode were fairly negligible. Furthermore, similar tendencies were observed in the pattern of correct and incorrect recognitions of the subjects' nationality on the basis of their speech samples. The subjects' L3 English was perceived as more L2-accented in the speaking mode than in reading both in the lower and upper level groups, however, the numbers were relatively higher in the former case.

This may lead to a tentative conclusion that the spoken mode is more susceptible to a stronger phonological transfer from L2. On the contrary, no such tendency was reported when the subjects' performance was labelled as L1-accented, as the percentages of correct identification were similar notwithstanding the performance mode at both levels respectively.

Moreover, the raters' variables were found to have some bearing on accent judgements. A visible discrepancy was observed between the ratings by native speakers and non-natives. The latter were more severe and assigned lower scores for accentedness, which seems consistent with some previous results of research on foreign accent (cf. e.g. Scheuer 2000). However, the fact that the judges were native or non-native did not have any significant impact on their correct identification of the subjects, i.e. NS and NNS performed equally well in this respect. This adds further support to the decision to include non-native proficient speakers as expert raters performing accent judgement tasks.

Summing up, the hypothesis that during L3 English performance the Polish speakers with strong L2 German will tend to be identified as German speakers was found to be true for lower level proficiency learners (elementary and beginners), however, it did not hold for more advanced learners of English. This meant that the tendency to be identified correctly as native speakers of Polish was correlated with the speakers' level of proficiency in L3 and a higher percentage of correct identification was observed at the intermediate level. Moreover, also accent judgements were correlated with the subjects' L3 proficiency levels, i.e. lower level subjects received significantly lower ratings than their more proficient counterparts. As expected, there were some discrepancies in accent judgements due to interrater variability. On the whole, the foreign accent ratings performed by expert judges on a sample of L3 English corroborated to a large extent previous research findings (e.g. Hammarberg & Hammarberg 1993, 2005; Fernandes-Boëchat 2007).

One has to bear in mind certain limitations of the present study. It remains partially problematic whether the L2 status effect can be treated as the only principal factor conditioning the source of cross-linguistic influence in the third language phonological acquisition. If we look at the typological proximity of the languages under study, it is evident that L2 German and L3 English are more closely related than L1 Polish, thus pointing to a greater potential for transfer between the typologically related rather than unrelated languages. Furthermore, one has to account for the participants' high proficiency in German as well as the intensity and recency of its use, factors which may have contributed to German being an important source of cross-linguistic phonological influence. The above mentioned limitations of the present study point to a potential interaction of the L2 status with other variables such as language typology and recency of use of the L2. Therefore, further research is necessary to investigate the effects of L2 status in a future study involving typologically unrelated languages and possibly the participants with a different L2 proficiency levels.

## **5. In search of an explanatory model**

In an attempt to explain the tendency to resort to L2-accented speech in L3 performance at the early stages of acquisition which seems to diminish with the advancement of language proficiency, the present author has investigated various theoretical models proposed for multilingualism.

In order to account for language control in multilinguals, Green (1998) proposes in his activation/inhibition model different levels of activation ranging from a language that is selected (i.e. controlling speech output), through active (i.e. retaining some role in the speaking process) to dormant (i.e. exerting no impact on the process through residing in long-term memory). An important implication of Green's model is the activation of more than one language in the mind of the multilingual although only one is selected for speaking. Green

(2000: 375) claims that "the subsystems mediating the comprehension and production of languages are separable and that different functional systems underlie different languages". This conclusion was based on research on brain-damaged multilinguals who retained their ability to speak some languages but not others. Following this line of reasoning, it appears from the present data that although L3 English is selected in a given speech act, L2 German may still remain 'active' in the speech process, especially at the beginner/elementary level. It may be so due to the recency and intensity of use of L2 German which frequently assumes a selected mode in the subjects' productions and thus may be difficult for the learners to switch off when speaking yet another foreign language. At a more proficient stage of L3 development, the L2 becomes more frequently deactivated assuming a 'dormant' status.

The idea of language control was further elaborated on by Grosjean (2001) who claims that after choosing a base language the multilingual speaker activates also other languages and refers to them occasionally in the form of code-switches. In his model, languages are activated to a different degree on a language mode continuum, i.e. a base language is the most active, whereas other languages are activated to a lesser degree depending on the situation, however, the decision concerning language activation is taken quite unconsciously.

Drawing on Grosjean's model, the present author posits a claim that the degree of gradual deactivation of the L2 on the phonological level depends on the level of L3 proficiency. It implies that the more proficient one is in the L3, the less activated the previously learnt other foreign language (L2) is at the level of phonological encoding (i.e. at the level of the formulator and articulator as specified in Levelt's 1989 model of language production adopted to multilingualism by de Bot 2004).

A partial explanation why L3 learners tend to rely more on the articulatory settings of the L2 rather than the L1 may be accounted for by the so called Role - Function model proposed by Hammarberg (2001). The findings of his longitudinal case study indicated that the L1 functioned as an external instrument language which had an instrumental role especially for metacomments, whereas the L2 played a 'supplier role' in L3 word formation and the informant's attempts to deal with new articulatory patterns in L3 English. One may thus hypothesise that the L2 functions as a special facilitator in phonological encoding of a new foreign language. A further explanation was provided by Hammarberg and Hammarberg (2005). Although the L1 influence acts as a basic constraint on articulation due to the established neuro-motor routine, which tends to be persistent in language learning, there may be a temporary coping strategy that overrides this basic constraint. The coping strategy is a reliance on L2, which functions at initial stages of L3 acquisition when L3 phonetic forms are too unfamiliar to master.

A similar line of thinking is represented by Fernandes-Boëchat (2007). In her Multilingual Role model she maintains that the preceding foreign language tends to play a predominate role of the external supplier during the initial stages of third language production. This model is based on the assumptions of the Cognitive Chain Reaction Theory (Fernandes-Boëchat 2007) and it posits that "each new foreign learning experience is linked, involuntarily or unconsciously, by the learner to one's preceding foreign language learning experience in a chain-like domino-effect fashion" (Fernandes-Boëchat and Brito-Siebeneicher (2008: 2004). The authors also claim that as the multilingual learners' competence in a new language increases, they tend to refer less frequently to the preceding foreign language. It is the immediately preceding foreign language that exerts the strongest impact on the initial L3 production, however, this process seems totally unintentional.

However varied the discussed models of multilingual acquisition appear, they provide a fairly general explanatory framework for the findings of the present study. Nonetheless, as stated by Marx (2008: 171), it has proven difficult to provide models explaining multilingual

language learning owing to great individuality demonstrated by multilinguals in the process of their language acquisition.

## 6. Conclusions

In conclusion, the present findings corroborate previous results concerning a significant effect of L2 on L3 phonological acquisition (cf. e.g. Hammarberg & Hammarberg's 1993, 2005; Fernandes-Boëchat 2007). The partial reliance on L2 phonetic encoding at early stages of phonological acquisition seems to be a coping strategy that outweighs the transfer from the L1. Although L2-accented speech prevails at the initial stages of TLA, it diminishes with the increase in L3 proficiency and gradual approximation to the target norm.

Taking into account the complexity of Third Language Acquisition one cannot ascribe the whole cross-linguistic influence only to the L2 status. The results of the presented studies are most likely a cumulative effect of several variables including the foreign language effect; psychotypology (English and German being Germanic languages, one may expect more cross-linguistic influence from German than from Polish) as well as the recency and intensity of use of L2 German by the subjects involved in the experiment. Consequently, a further investigation is necessary to explore the effects of L2 status alone in a study involving typologically unrelated languages and participants at different L2 proficiency levels.

Furthermore, future research will involve a further auditory and acoustic analysis of contrastive articulatory settings in Third Language Acquisition (i.e. L3 vs. L1 and L3 vs. L2) as a follow-up to a preliminary acoustic analysis of phonatory resettings in L3 English that involved a fundamental frequency distribution analysis, i.e. mean  $f_0$  frequency and pitch range (cf. Wrembel 2008). The author's ultimate goal is to provide a more comprehensive account of the contrastive articulatory settings of Polish, German and English in order to explore the sources of cross-linguistic influence in the process of articulatory resetting in L3 phonological acquisition.

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