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Accuracy and fluency in the speech of the advanced learner of English

Přesnost a plynulost v mluveném projevu pokročilých studentů angličtiny

Teze

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Abstrakt

Disertační práce analyzuje přesnost a plynulost mluveného projevu pokročilých mluvčích angličtiny, studentů anglistiky. Data čerpá ze žákovského korpusu sestávajícího z padesáti patnáctiminutových rozhovorů s těmito studenty a z paralelního korpusu obsahujícího stejně dlouhé rozhovory s rodilými mluvčími angličtiny. Přesnost v projevu českých mluvčích je zkoumána technikou chybové analýzy. Tak jsou identifikovány hlavní rysy pokročilé žákovské angličtiny, přičemž následné kvantitativní analýzy odhalují, že v celé skupině studentů, jejíž jazyková úroveň je nečekaně široká, se dva základní typy chyb vyskytují častěji než chyby jiné. Jsou to chyby v užití členů a slovesných časů. K popisu plynulosti je vybrán vzorek proměnných – tempo mluvy a frekvence vyplněných i nevyplněných pauz – a výsledky jsou porovnány s paralelním korpusem rodilých mluvčích. Ti mluví rychleji než většina ze zkoumaných studentů. Studenti nadužívají vyplněné i nevyplněné pauzy a produkují kratší úseky řeči mezi pauzami. Korelace mezi přesností a plynulostí nebyla na vzorku prokázána. Disertace je první analýzou takto rozsáhlého vzorku českých pokročilých mluvčích angličtiny. V závěru jsou navržena četná pedagogická a metodologická východiska.

Klíčová slova: přesnost, plynulost, chybová analýza, tempo mluvy, chybovost, pauzologie, jazyková pokročilost, mluvený jazyk, produkce jazyka

Abstract

The thesis analyses the accuracy and fluency exhibited in the spoken advanced-learner English of Czech students of English philology. It draws its data from a learner corpus comprising fifty 15-minute interviews with these learners and from a parallel native-speaker corpus of forty-nine 15-minute interviews. As regards accuracy, the learner data is analysed using techniques of error analysis. Salient features of advanced learner English are identified and the subsequent quantitative analyses reveal that throughout the entire group of students (which is characterized by what revealed itself to be a wide proficiency span) two groups of error types are found to be much more frequent than any other, namely errors in the use of articles and tenses. For the fluency measurements a small selection of variables has been chosen to describe speed fluency (speech rate) and breakdown fluency (the frequency of unfilled and filled pauses), and the results are compared with those for the parallel native-speaker corpus. The analysed native speakers are found to produce speech at a generally much higher rate than the majority of the learners. There does not appear — at least in the light of the given sample — to be any direct correlation between fluency and the frequency of errors. Moreover, the learners are found to overuse filled and unfilled pauses and to produce shorter speech runs. The study provides the first analysis of such a large sample of Czech advanced learners of English. The conclusion of the thesis offers numerous pedagogical and research implications.

Keywords: accuracy, fluency, error analysis, speech rate, error rate, pausology, advanced language proficiency, spoken language, language production

1. Introduction

The thesis explores advanced-learner English, and specifically the spoken production in English of Czech advanced learners. Of the many aspects and dimensions available for such a description it selects accuracy and fluency as the well-established components of the complexity, accuracy and fluency model (henceforth CAF) of language performance and proficiency. There are two main reasons for this approach – firstly, the CAF triad is a current state-of-the-art set of theoretically based approaches to and techniques of describing language proficiency and performance using linguistic means. It offers exactness and systematicity where other available descriptions of language proficiency, such as the CEFR (Council of Europe 2001), suffer from vagueness and inexactitude. Secondly, I wrote the thesis as a conclusion of a study programme entitled "Didaktika konkrétního jazyka", an applied-linguistics programme with the word "teaching" in its title. As I endorse the view that the science of teaching foreign languages is a field which rests on three main corner stones – linguistics, psychology and pedagogy – I find the CAF model to fit these dimensions perfectly: it is strongly based in linguistics and in cognitive psychology, and it has considerable potential for yielding strong pedagogical implications. I believe that at present no other method offers the researcher of learner language better methodology and stronger potential for practical application.

The reason I chose spoken language and not written was fairly simple. Whilst I am aware of the considerable laboriousness and complexity of analysing spoken language, I am also deeply aware of the lack of spoken-learner-language research, especially in the context of Czech L1 speakers. It was my strongest motivation to contribute to this field and whilst I am aware of the many limitations and weaknesses of my research I feel grateful to have had the opportunity to provide such an extensive collection of data and related analyses.

The thesis contains six chapters. In its first one it provides the theoretical foundations in a discussion of the CAF model, and especially its fluency and accuracy components. Chapter 2 describes the data, Chapter 3 the method and the pilot study. Chapter 4 introduces the results and analyses of the accuracy data, whilst Chapter 5 does the same with the fluency measurements. Chapter 6 offers a conclusion, a discussion of limitations, pedagogical and methodological implications, and finally it makes several suggestions for future research.

2. Theoretical framework

The subject of study – advanced learner language – has attracted much attention in the past two decades which is concomitant with the development of the field of learner corpus research. It is partly because learner corpora are usually compiled by university-based researchers that the focus is on advancedness – university students are usually the most advanced language learners. The other part of the reason is that studying advancedness offers an invaluable insight into the final stages of language acquisition and provides an opportunity to compare the

achievement of the learners with the language produced by native speakers. This contributes to the understanding of nativeness, language acquisition, performance and proficiency.

The above-mentioned CAF model comprises of three dimensions of describing language performance: complexity, accuracy and fluency (see e.g. Housen et al. 2012). All are difficult to define and operationalise which is partly due to the fact that they are multifaceted and multidimensional in themselves. Of the many definitions of complexity, Ellis and Barkhuizen's (2005) "the extent to which the language produced in performing a task is elaborate and varied" provides a good example. The terms used in the definitions include elaboration, size, breadth, width, richness, sophistication, number, range, variety and diversity, which show how vast and difficult to operationalise the concept is. Many of these variables are then applicable to the different dimensions of speech such as lexis, syntax, discourse etc. In my thesis I suggest that the inclusion of complexity in the triad is somewhat problematic as I see complexity as an arbitrary dimension of language production, as a dimension which the user can choose to exploit or not – as if complexity can be switched on or off depending on the will and the competence of the speaker. In this light, accuracy and fluency are different, they appear to be less arbitrary as components of language production.

Fluency is a complex, multidimensional component which, in simple terms, is an expression of the ease with which the speaker produces language (as in Fillmore's (1979) "the ability to fill time with talk"). Two fundamental dimensions are recognized – the measures of the actual production, and the effect it has on the speaker. Research shows that the relationship between the two is not always predictable. The basis of the first is in the cognitive processes of speech production, as described e.g. by Levelt (Levelt 1989; 1999) and Kormos (2006). Their outward manifestation, called utterance fluency by Segalowitz (2010), is acoustically measurable once it has been successfully operationalised. The measures, called fluencemes by Götz (2013), include besides others speech rate, pause phenomena, length of runs, use of performance and hesitation phenomena, formulaic language etc. Perceptively, fluency can only be evaluated by external raters who record their impressions, whilst it is hard to determine exactly which components make the largest impression on the hearer. Like many others, for my own study of fluency I only chose a small selection of those variables which are generally seen as the most salient. These are speech rate and pause phenomena.

The study of accuracy has a long tradition which is strongly linked to language teaching and SLA research. It primarily deals with the concepts of error and norm. Accuracy is defined, for example, as "the extent to which an L2 learner's performance deviates from a norm (i.e. usually the native speaker)" (Housen et al. 2012) or "the ability to avoid error in performance" (Ellis 2008). Whilst these concepts are outwardly simple to imagine, defining the individual components causes many problems which are even greater when the subject of analysis is informal spoken language. To date there are no unproblematic definitions of errors, norms,

target-like and native performance. The view of errors has changed significantly – from the initial intolerance of errors in the language-learning process (e.g. Contrastive Analysis), through periods in which errors were seen as marks of the developmental stages (e.g. Error Analysis), to the current view of errors as innovations (e.g. the theory of English as a Lingua Franca). And whilst the study of errors seemed to reach a dead end towards the end of the 1980s, the emergence of learner corpus research and corpus techniques have brought them to the forefront of analytical interest yet again. The true value of their study is manifold – it does not only provide evidence of acquisition and cognitive processes but it can also be used for formulations of pedagogical implications and language-teaching materials, cf. e.g. Longman Dictionary of Common Errors (Turton and Heaton 1996).

In language teaching, fluency and accuracy have been part of teachers' everyday vocabulary especially since the publication of Brumfit's (1984) study in which he suggested that oral activities in the classroom should be designed in such a way that they promote either fluency or accuracy as if the two dimension excluded each other. The relationship of the various dimensions has since been proved to be very complex by research studying, for example, the effect of task variability or planning on their interaction (e.g. Skehan 2001; Ellis 2005) but the real contribution of Brumfit's study was in that it succeeded in spreading the idea that classroom activities and practice may focus not only on accuracy but also on fluency. This has been developed by many researchers, most notably Gatbonton and Segalowitz (2005), Nation (2009) and Wood (2012).

3. The data

The data used for my study was collected as part of the LINDSEI project organized by the Centre of English Corpus Linguistics (CECL) at the Université catholique in Louvain. LINDSEI is a family of national subcorpora of spoken advanced-learner interviews and at the time of writing contains interviews with 750 advanced learners. The Czech component (LINDSEI_CZ), which I recorded and transcribed between 2012 and 2014, contains fifty 15-minute interviews with c. 125,000 words and c.13 hours of recorded speech (see Table 1).

Table 1 LINDSEI_CZ – description of the data

Choice of topic for Task 1	Length of A & B turns[1] in tokens	Length of B turns only in tokens	Duration of A & B turns (hh:mm:ss)	Duration of B turns (hh:mm:ss)	Mean length of interview in tokens	Mean duration of interview (mm:ss)
Country = 22 Film/play = 18 Experience = 10	123,761	95,904 mean = 1,918 (SD = 407)	12:52:25	10:37:42	2,475 (SD = 386)	15:27 (SD = 2:14)

[1]The phrase "A turn" and "B turn" denote utterances made by the interviewer and the interviewee respectively.

LINDSEI uses an institutional definition of advancedness (Ortega and Byrnes 2008) and specifies that the participants are to be 3rd- or 4th-year students of English philology. LINDSEI_CZ speakers are thus 3rd- or 4th-year students of English philology at the Department of English Linguistics and ELT Methodology, Faculty of Arts, Charles University in Prague. Table 2 shows a small summary of some of the collected learner metadata.

Table 2–2 LINDSEI_CZ — participant metadata

	Mean age	Mean length of studying English at school prior to university	Mean length of studying English at university	Length of stay in an English-speaking country	L3
n = 50 Female = 43 Male = 7	22.5 years (SD=1.6)	9.9 years (SD=2.6)	3.4 years (SD=0.9)	mean = 9.9 months (SD = 25.8) med. = 1.2 months	German (25x), French (14x), Spanish (7x), Dutch (1x), Italian (1x), Russian (1x), none (1x)

The second part of the data is the parallel corpus LOCNEC which was recorded and transcribed by CECL. It is made up of interviews with forty-nine native speakers, students of English philology at the University of Lancaster.

Speakers in both of the subcorpora performed three tasks – a planned monological task, an interview, and a spontaneous story reconstruction based on a picture story. Subsequently the interviews were transcribed using guidelines provided by CECL.

The transcriptions were then error tagged using the Louvain error-tagging system (see Dagneaux et al. 1998). Errors were defined as deviations from the native-speaker norm as described in contemporary grammars of the English language. Queries were discussed with a native speaker. In future versions, more annotators will be called upon to increase the reliability of the tagging.

4. The method

The analyses of the data are based on a corpus-driven approach using both quantitative and qualitative computer-aided error analyses and contrastive interlanguage analyses (Granger 2015) whilst making use of native and non-native-speaker comparisons along with non-native-speaker comparisons per se. The project evolved in several stages – recording, transcription, error identification and tagging, pilot study, computer-aided error analysis, fluency measurements, and contrastive interlanguage analysis.

The pilot study which was carried out on a sample of 6 learners and 6 native speakers tested the practicality of the chosen techniques and the applicability of the selected statistical analyses. Accuracy was operationalised as the frequency of errors (error rate, henceforth ER) which is a ratio of a number of errors per hundred words (henceforth phw). Fluency was narrowed down to Skehan's (2003) speed and breakdown fluency which subsume speech rate,

and pause-related phenomena. As a result of the pilot study, which proved the feasibility of the selected techniques, research questions and hypotheses were formulated dealing with the establishment of the most problematic areas and the sources of errors, the variance between the learners, correlations between the type of errors and error rates. For fluency, the hypotheses expect the students to be slower than the native speakers in all of the task and produce more filled and unfilled pauses, and shorter speech runs.

5. The results — accuracy

In total, 1,299 errors were identified. The analysis showed that grammatical (54.66%) and lexical (33.41%) errors were most frequent. Other categories (morphological, lexico-grammatical, word order, infelicities) were marginal (see Table 3).

Table 4–1 Frequencies of errors in Tasks 1, 2 and 3, and in all tasks together

	Task 1		Task 2		Task 3		All tasks	
	Count	%	Count	%	Count	%	Count	%
Morphological errors (inflectional, derivational)	0	.0%	3	.5%	0	.0%	3	.23%
Grammatical errors	328	61.1%	327	55.6%	55	31.6%	710	54.66%
Lexico-grammatical errors	24	4.5%	34	5.8%	13	7.5%	71	5.47%
Lexical errors	146	27.2%	195	33.2%	93	53.4%	434	33.41%
Word redundant/missing, word order errors	26	4.8%	18	3.1%	7	4.0%	51	3.93%
Infelicities	13	2.4%	11	1.9%	6	3.4%	30	2.31%
Total	537	100.0%	588	100.0%	174	100.0%	1,299	100.00%

Detailed analyses were carried out within the different categories of errors. Thus within grammatical errors, errors in the use of articles proved to be most frequent (37.32% of all grammar errors), followed by errors in the use of the tenses (18% of all grammar errors). Of all tense errors, 71.9% involved the use of the present perfect. As regards lexical errors, erroneous use of single-word expressions was more frequent (66.8% of all lexical errors) than multi-word expressions (30.2%). A closer look at the group of lexical single errors revealed a large number of erroneously used prepositions (especially *in*, *at* and *on*), confusing word-pairs (e.g. *make/do*, *talk/say* etc.) and L1 transfer errors (e.g confusing *learn* and *teach*).

An ANOVA test did not prove a significant difference in error rates between the individual tasks ($p > .05$) and consequently one global error rate was used for each speaker rather than a separate error rate for each task. The calculation of error rates proved a large dispersion amongst the students ranging between .21 errors phw (i.e. one error every 476 words) and 4.19 errors phw (i.e. one error every 24 words). Such a large dispersion on the one hand showed that there were unexpectedly large differences between the analysed speakers, on the other hand, it made it possible to use the fact to divide the learners into accuracy bands (calculated as distance from the mean ER) and determine which of the errors were present in all

of the groups. These were then considered persistent errors. The analysis showed that the use of articles and tenses was problematic even for the most accurate speakers.

Overall, the results were similar to the findings for advanced learners in the German subcorpus of LINDSEI (Götz 2015), and went contrary to many claims in literature that lexical errors in advanced learners are more frequent than grammatical.

The results clearly point at possible pedagogical outcomes, mainly that practice of articles and tenses is not only problematic but possibly also rather neglected in Czech English-language classrooms, and that such practice still has its place even for advanced learners. However, contemporary language textbooks do not provide a sufficient number of exercises for these aspects and especially not for the practice of articles.

6. The results – fluency

A small selection of four fluency variables was measured: speech rate (henceforth SR), frequency of unfilled (UPs) and filled (FPs) pauses, and the mean length of runs (MLR). ANOVA tests showed that in all of these variables task variability played an important role. Consequently, performance in all of the tasks was considered separately.

As regards speech rate, Task 3 (picture description) proved to be the most taxing, causing a drop in the SR in both groups of speakers. In all of the tasks the learners were significantly slower than the native speakers. The ranges, means and deviations are given in Table 4. Pearson's correlation test showed that there was a large negative correlation between the frequency of UPs and the SR, showing that a large part of the slower SR of the learners could be explained by the high frequency of UPs they used.

As regards the frequency of UPs and FPs, these were much higher for the learners than for the native speakers. The log-likelihood tests proved a significant overuse of both values on part of the learners in all of the tasks. The ranges, means and deviations are given in Table 4. Correlation tests showed that slower speakers were found to use more UPs and FPs.

Table 4 Comparison of non-native (NNS) and native (NS) speech rates (SR), frequency of unfilled pauses (UP), frequency of filled pauses (FP), and the mean lengths of runs (MLR) in LINDSEI_CZ and LOCNEC

	Task 1				Task 2				Task 3			
	min.	max.	mean	SD	min.	max.	mean	SD	min.	max.	mean	SD
SR (NNS)	116	206	152	20.97	119	204	157	19.72	84	190	138	22.09
SR (NS)	155	243	203	23.51	167	267	210	24.53	106	265	174	34.49
UP (NNS)	1.65	26.8	11.7	5.56	1.1	42.1	10.55	6.72	1.43	34	14.9	7.3
UP (NS)	1.2	9.88	4.53	2.31	1.1	9.3	3.92	1.95	1.03	19.59	7.47	4.43
FP (NNS)	.4	19.74	7.06	4.18	.89	18.58	6.78	4.16	.41	14.34	6.69	3.7
FP (NS)	.77	7.16	3.03	1.55	.7	8.14	2.64	1.58	0	12.88	4.02	3.01
MLR (NNS)	3.67	11.1	7.17	2.1	3.72	11.72	7.46	2.36	2.85	10	5.91	2.01
MLR (NS)	7.15	18.98	11.16	3.27	7.11	23.25	11.49	3.71	5.22	19.4	11.19	3.97

As regards the MLR, the learners produced shorter speech runs than the native speakers. However, due to the considerable laboriousness needed to calculate the MLR, only 25 speakers from each group were included. The results are shown in Table 4. A correlation comparing the MLRs and the UP rates showed a large negative correlation ($p < .0005$) proving that the more UPs a speaker produces the shorter his speech runs are. The test thus revealed that calculating the MLR along with the UP rate, as is commonly done, is duplicitous.

Overall, the results are very similar to the measurements carried out by Götz (2013) in the German version of LINDSEI. Clearly, advanced-learner fluency is comparable irrespective of their L1.

The results show that as regards fluency the learners underperform in all of the assessed variables when compared to native speakers and that the results of the best of them are comparable only with the mean values of the native speakers. For a large number of the students, there is thus still much room for development.

7. Conclusion

The thesis presents the first large-scale study of spoken advanced-learner English of Czech students. As I have outlined in the presentation of the results (above), the thesis – in accordance with its aims – succeeded in identifying many salient features in the accuracy and fluency of Czech advanced learners of English and provided a comparison of their fluency with that of native speakers. The thesis thus deepens our understanding of advancedness and shows a selection of more or less suitable techniques for exploring it. It also has several pedagogical, teacher-training and research implications.

As for pedagogical implications, the thesis shows that even very advanced learners frequently make some fairly basic errors. We may assume that this might be the result of previous teaching and suggest that more attention is paid at earlier stages to these problems. Moreover, in advanced classes and textbooks a systematic attention to the problematic aspects ought to be paid, which is rarely the case. The analysis of lexical errors revealed that many of these repeat and may be categorized in such a way that lists of problematic words can easily be compiled and used in teaching. The occurrence of so many basic errors in the speech of the advanced learners suggests that these errors might point to areas teachers tend to neglect despite the availability of dictionaries of errors (published or online) and learner dictionaries which frequently target these areas. The results of the fluency analysis shows that there is much room for improvement and that the adoption of specially designed fluency development techniques (such as Gatbonton and Segalowitz's (2005) ACCESS) ought to be considered for adoption in advanced classes, and that more attention ought to be paid to the development of formulaic language (Wood 2012) and strategic use of performance phenomena (Götz 2013).

The following practical implications may be drawn for the teaching at my department. The students' proficiency proved to be so varied that it might be worthwhile to consider placing them in different proficiency groups for practical language so that their specific needs could be targeted with more accuracy. Also worth considering in this respect is offering practical language courses in all years of the study programme, and not just in the first. A brief presentation and analysis of the completed transcriptions in a teacher-training class showed that students had very little awareness of features of spoken language. It would thus appear beneficial to offer linguistic courses specializing in spoken language description to all teacher trainers.

Last but not least, there are also implications for language testing. The results showed that the design of the picture description task (Task 3) caused considerable slowing down and increase of dysfluency in both the learners and natives. Such tasks are, however, regularly used at language exams without the examiners' being aware how difficult they are. The question we need to ask is whether language examiners are fully aware of the specificities of spoken language production and whether they can appropriately assess it.

As regards research implications and direction for future research, the thesis mentions several, of which I choose only a small selection here. It appears clear that in future years the design of learner corpora must follow much stricter guidelines so that comparable results may be obtained. More discussion by the research community spurred by corpus metaanalyses is required to this end. The design of learner corpora and their purpose ought to be better defined so that appropriate metadata may be collected. The proficiency of corpus participants needs to be carefully assessed. Also of great value might be multi-modal learner corpora, collecting samples of different genres of both speech and writing by the same learners. To obtain more comparable results, authors ought to report more openly and in greater detail on the techniques they use to obtain their results. This is frequently not the case.

As regards the future outlook of LINDSEI_CZ, a panel of raters will be called upon to provide a more reliable error identification. The recording will also be assessed for fluency by native-speaker raters. Plans are being drawn for compiling an intermediate LINDSEI_CZ for the purpose of pseudo-longitudinal learner-language research.

7.1 Limitations

Analysing spontaneous spoken language presents the researcher with many challenges most of which stem from the somewhat fickle nature of speech, for whose description linguistics with its bias for written language (Linell 2005) has yet to develop appropriate methodology and techniques. The resulting analyses and conclusions are thus to be understood in this light. However, the identification and awareness of these limitations contribute to the process of finding more adequate solutions. Some of the limitations are inherent in the field of learner

corpus research which, owing to its short history, is still waiting for the establishment of standardized principles.

The weak points of the present study are due both to the nature of the data and to the methods used. The thesis, in its final chapter, discusses these in some detail and suggests solutions, but owing to the format of the present document I can only give here their enumeration.

As for the data they are especially: the unsuitable definition of advancedness and the resulting lack of homogeneity of the data[2]; lack of metadata; gender imbalance of the participants; insufficient detail of instructions by the corpus organizers resulting in the existence of corpora which may not be fully comparable within the LINDSEI project; application of unaligned transcription with a hazy definition of pauses.

In the accuracy section the main limitations are: unreliable error identification; lack of detail in the error-tagging system especially as regards lexical errors; exclusion of pronunciation errors; insufficient definition of the term "word" used in the frequency measures (i.e. per hundred words); lack of implementation of a system of division into units of speech (e.g. AS-units)[3].

The main limitations in the fluency section are: small selection of observed variables and the consequent focus only on speed and breakdown fluency; problematic identification and measuring of the lengths of pauses; the classification of filled pauses as words (cf. Kjellmer 2003; Götz 2013).

Many of these limitations stem from the design of the corpus, others are the result of the choice of more practicable rather than some of the more suitable but extremely laborious techniques. However, all of the limitations present directions in which the research can continue in the coming years.

7.2 Concluding statement

The thesis proves that learner corpora offer large volumes of invaluable data whose principled and disciplined analyses can have important implications for the understanding of L2 acquisition, advancedness, language proficiency and many other phenomena. It can also have important pedagogical applications. I believe that the thesis has made at least a small contribution to this exiting endeavour.

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[2]See Carlsen (2012) on the fuzzy nature of proficiency in learner corpora.

[3]See Foster et al. (2000)

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