THE IMPACT OF FLUENCY AND HESITATION PHENOMENA ON THE PERCEPTION OF NON-NATIVE SPEAKERS BY NATIVE LISTENERS OF GERMAN

Sandra Reitbrecht[1+2], Ursula Hirschfeld[1]

Martin-Luther-University Halle-Wittenberg[1], University of Vienna[2]
sandra.reitbrecht@univie.ac.at, ursula.hirschfeld@sprechwiss.uni-halle.de

ABSTRACT

The here presented and ongoing study addresses L2 fluency and hesitation phenomena in the context of speech effects in intercultural communication. It investigates the impact of fluency and hesitation phenomena on the perception of non-native speakers by native listeners of German.

The first results underline the importance and salience of hesitation phenomena and fluency for speech effects and suggest a higher consideration of these features in future studies. Native recipients' verbal reactions to L2 speech material show that they often make reference to features of L2 utterance fluency to explain how they perceive non-native speakers, their personality and their emotional state. Furthermore, Spearman's rank correlation tests for a certain number of fixed perceptual categories prove significant correlations between perceived fluency and the attributes *assured* ($r_{(309)}$=0.617, p<0.01), *well prepared* ($r_{(303)}$=0.589, p<0.01), *competent* ($r_{(305)}$=0.483, p<0.01), *relaxed* ($r_{(307)}$=0.375, p<0.01) and *nervous* ($r_{(309)}$=-0.322, p<0.01).

Keywords: German as a foreign language, Czech, French, fluency, speech effects.

1. INTRODUCTION

Speech fluency is an important feature of L2 oral proficiency. The *Common European Framework of Reference of Languages* names it beside range, accuracy, interaction and coherence as a qualitative aspect of spoken language use [2]. Current language tests for German as a foreign/second language (e.g. [5]) take it into account in their evaluation criteria.

This focus on speech fluency in second language learning and language testing led to a greater interest in perceived fluency in second language research and encouraged correlational studies and regression analysis that investigate the relation between features of utterance fluency in L2 speech (e.g. speech rate, pause time ratio, mean length of runs, number of hesitation phenomena) and the perception of fluency by (L1) raters. The results of these studies show correlations up to r=0.92 (p<0.01) for speech rate, r=0.91 (p<0.01) for the mean length of runs, r=0.86 (p<0.01) for speech time ratio and r=-0.798 (p<0.01) for the number of silent pauses (cf. [1, 3, 4, 9]). In contrast, the numbers of other hesitation phenomena such as filled pauses, repetitions and self-repairs achieve lower correlation coefficients for perceived fluency (cf. [1, 3, 9]). A recent regression analysis [1] shows that a combined model including speech rate, the mean length of silent pauses as well as the number of silent pauses, filled pauses, repetitions and self-repairs explains 83.78% of the variance of the fluency ratings, i.e. different fluency features contribute to the global impression of fluent or non-fluent L2 speech.

To sum up, the results prove a relationship between perceived fluency and features of utterance fluency in L2 speech although in some studies the correlation coefficients are considerably lower than the maxima quoted above.

The here presented and ongoing study in the context of German as a foreign language also addresses fluency in an intercultural communication setting (non-native speakers and native listeners of German), broadening the research interest. Its focus is not on the perception of fluency, but on the impact of fluency and hesitation phenomena on the perception of non-native speakers. Thus, it investigates if certain hesitation characteristics or degrees of fluency evoke ideas about the non-native speaker, his or her personality and emotional state and, more generally, if these features are important in the research on speech effects.

2. INVESTIGATION OF SPEECH EFFECTS: THEORETICAL BACKGROUND

Various scientific disciplines are concerned with the investigation of speech effects. Their research issues, objectives and methods differ considerably. However, most approaches assume that the speaker attempts to exert influence on the recipients in their understanding of spoken speech and consecutive behaviour. The recipients evaluate motives, content and anticipated consequences of the utterance and react accordingly. Thus, there is a direct relationship between utterance and effect, even if this is not a direct

monocausal relationship. One must differentiate between direct and indirect as well as between conscious and subconscious effects [7].

Alongside verbal means of expression, there is a range of other variables which influence the effect structure: the social and cultural context, internal and external situation of the participants as well as para- and extralinguistic content [8]. This very broad definition of effect is operationalized by different researchers depending on their scientific interests.

In intercultural communication settings, non-native utterances are strongly characterized by a foreign accent caused by articulatory and prosodic interferences. These interferences influence the (intended) speech effects on native recipients to a high degree. Beside typical features of foreign accent, it is also worth investigating the importance of hesitation phenomena in their characteristic L2 occurrence for speech effects and for the perception of non-native speakers in intercultural communication, a research gap the present study wants to close.

3. METHOD

3.1. Non-native speakers

The non-native speakers in this study were thirteen students of German. Six of them were Czech native speakers who studied at a university in the Czech Republic. The other seven participants were French native speakers who studied at a university in France. Including their learning experience at school, they have learned German for between six and fifteen years. Regarding their study experience, six participants were at the beginning of a Bachelor's programme, seven participants in a Master's programme.

Table 1: Non-native speakers

	L1	Learning years	Study years
S1	Czech	11	6
S2	Czech	12	1
S3	French	10	1
S4	French	10	1
S5	Czech	14	4
S6	French	10	5
S7	Czech	12	2
S8	French	6	1
S9	French	13	8
S10	French	10	5
S11	French	6	1
S12	Czech	15	4
S13	Czech	14	4

On the one hand, all participants were learners above a beginners' level. On the other hand, the differences in the learning biographies allowed a certain range of performances within the target group, namely students of German.

3.2. L2 Speech material

Telling a picture story was used as speech elicitation task. The participants got a maximum of five minutes of preparation time. Then, they had to tell the story in German. They were allowed to look at the stimuli while speaking, but they were not allowed to take any notes. The duration of the speech samples ranged from 59 to 145 seconds. Speech rates ranged from 1.4 to 3.2 syll/s.

3.3. Native listeners

The listeners were native speakers of German studying in a German as a foreign language programme at a university in a German speaking country. Each participant listened to one or two speech samples. A total of 322 responses by 171 recipients were collected. Table 2 shows the distribution of the listener groups over the thirteen L2 speakers and the number of listeners in each group.

Table 2: Distribution of listener groups

Listeners	Speakers
Group 1 (n=26)	S1, S2
Group 2 (n=22)	S3, S4
Group 3 (n=30)	S5, S6
Group 4 (n=30)	S7, S8
Group 5 (n=20)	S9
Group 6 (n=14)	S10, S11
Group 7 (n=29)	S12, S13

3.4. Procedure

The data of the perception study was collected in a questionnaire survey. While listening several times to the L2 speakers' performances of the picture story task, the native listeners completed the questionnaire starting with open-ended questions and moving to closed-ended questions. The purpose of the study was only explained after the questionnaire survey to avoid any impact on the results.

The two relevant questions for the here presented aspects of the study are the following: In the first step, listeners should answer the open-ended question how they perceived the non-native speakers and should explain their perceptions. Such verbal data was collected for the listener groups 1 to 5. In a further step, the listeners should rate certain speech- and speaker-related categories in a six-point Likert

scale from *fully appropriate* to *definitely not appropriate*. Under these categories *fluent* was listed as well as the following attributes to the speaker's personality and his or her emotional state: *assured* (*sicher*), *nervous* (*nervös*), *relaxed* (*entspannt*), *well prepared* (*gut vorbereitet*), *competent* (*kompetent*) and *making an effort* (*bemüht*). Rating data was collected from all seven listener groups.

At the qualitative level, the answers to the open-ended question provide insights into the native speakers' attitudes, their concepts and interpretations of (non-)fluency and hesitation phenomena. At the quantitative level, the listeners' comments enable conclusions about the salience of (non-)fluency characteristics in non-native speech and their general importance in the perception of non-native speakers. Furthermore, the ratings in the closed-ended rating-task provide results regarding the strength of correlations between perceived fluency and the above quoted speaker-related attributions.

4. RESULTS

4.1. The salience of L2 utterance fluency

To investigate the salience of L2 utterance fluency all explicit references to hesitation phenomena (silent and filled pauses, filler words, sound lengthening, repetitions and self-repairs), fluency and speed of speech delivery in the native listeners' comments in the open-ended question were taken into account. The analysis of these verbal reactions to the L2 speech material shows that 78.1% of the native listeners mentioned one of the features listed above in their comments on one of the non-native speakers or on both of them. Thus, utterance fluency can be considered as a salient characteristic of non-native speech and a fairly present concept when evaluating non-native speech. This conclusion is also supported by the fact that the listeners did not only refer to non-fluency, but also to fluency in its positive sense. To that effect, even in the comments on one of the most experienced speakers in this corpus (S9: 13 years of learning experience) features of utterance fluency were mentioned in eleven of the twenty questionnaires even though this advanced learner had a speech rate of 3.2 syllables per second (cf. mean values as 2.6 syll/s [10] and 3.3 syll/s [6] for German L1 speech rates) and produced only four filled pauses, one repetition and six self-repairs on a total of 72.8 seconds of speech time.

4.2. Types of connotations and interpretations of hesitation phenomena and L2 utterance fluency

Native listeners referred to hesitation phenomena and fluency and interpreted them in multiple ways. Three frequent types of comments are presented here to give some insights into these connotations and interpretations as well as into the variation between individuals. The examples are cited in their English translation as well as in their original German form.

In general, the native listeners' comments show that hesitation phenomena and the rate of speech delivery are frequently used by the listeners to explain or support their impressions of the speaker's personality and his or her emotional state as the following examples emphasise:

- S2/L11: *quite self-confident: speaks fast* (*ziemlich selbstsicher: spricht schnell*),
- S4/L44: *a little impatient: speaks fast and filler particles eh…* (*etwas ungeduldig: spricht schnell und Füllpartikel eh…*),
- S6/L49: *insecure because of ÄHM* (*unsicher durch ÄHM*).

Noticeable in this context is the fact that listeners individually associate different connotations with one hesitation category. Self-repairs or the strategy to correct or reformulate parts of speech are for example interpreted in multiple, even contrary ways. On the one hand, positive qualities such as *eloquent* (*sprachgewandt*), *advanced* (*fortgeschritten*) and *ambitious* (*ehrgeizig*) are attributed to the speakers using self-repairs. On the other hand, attributes such as *insecure* (*unsicher*) or *nervous* (*nervös*) are also mentioned related to the strategy of correcting or reformulating one's own speech.

Other listeners relate hesitation phenomena to processes and strategies of speech planning. They mention for example the non-native speakers' issues in lexical retrieval or they assume that the German learners speak slowly and with many pauses because they want to avoid grammatical errors, i.e. they refer to (the overuse of) monitoring in speech planning.

In a third type of comments, the native listeners use explicitly the attribute *fluent* or *non-fluent* and relate it to speaker-focussed categories. This type of verbal reaction corresponds to the quantitative data that was elicited in this study by the ratings on a six-point Likert scale for certain attributes.

4.3. Correlations between perceived fluency and attributions to non-native speakers

The rating task in the questionnaire was conducted with the goal to get information about the strength of correlations between perceived fluency and certain assumptions about L2 speakers, their personality and their emotional state (*assured*, *nervous*, *relaxed*, *well prepared*, *competent*, *making an effort*). Table 3 shows the Spearman's rank correlation coefficients for the total number of ratings as well as the lowest

and the highest value when the coefficient was calculated for each speaker individually. Missing values were excluded pairwise.

Table 3: Correlations between perceived fluency and the listed speaker-related attributes

Category	Total	Min.	Max.
assured	0.617** (n=309)	0.113 (n=21)	0.765** (n=29)
nervous	-0.322** (n=309)	-0.040 (n=21)	-0.413* (n=29)
relaxed	0.375** (n=307)	0.061 (n=29)	0.564* (n=14)
well prepared	0.589** (n=303)	-0.097 (n=19)	0.907** (n=13)
competent	0.483** (n=305)	0.136 (n=26)	0.648** (n=21)
making an effort	0.109 (n=308)	-0.014 (n=21)	0.627** (n=26)
Note: * = p<0.05; ** = p<0.01			

5. DISCUSSION AND FURTHER WORK

To sum up, these first results of the here presented and ongoing research project on the impact of fluency and hesitation phenomena on the perception of L2 speakers (above a beginners' level) proved the salience of utterance fluency in intercultural communication settings. In detail, the qualitative analysis of the native listeners' comments on the L2 speech samples identified some typical ways of interpreting hesitation phenomena and the rate of speech delivery: (1) attributions to the speaker, his or her personality or emotional state, (2) references to processes and strategies in L2 speech planning and (3) associations of perceived fluency with speaker-related perceptual categories.

Such associations were also investigated in a correlation test with fixed categories. Table 3 shows that the six categories are correlated to the perception of fluency to different extents. The attributes *assured* and *well prepared* correlate more strongly with perceived fluency than *relaxed* or *making an effort*.

Nevertheless, the variation in the verbal data (e.g. the individually divergent interpretations of the use of self-repairs) as well as the speaker-related differences in the quantitative rating data (see the minimal and maximal values in table 3) underline the complexity of communicative processes and hence the limited external validity of results obtained in a research project under certain communicative conditions.

Therefore, these first results emphasise the necessity of further research steps in this project, i.e. a more differentiated analysis of the verbal data as well as a detailed analysis of the L2 speech material and its characteristics. Such an analysis of each speech sample followed by statistical tests that investigate correlations between the variables of utterance fluency (e.g. speech rate or the number of certain hesitation categories) and the native listeners' ratings of certain attributes may enable explanations for the reported speaker-related variation and give deeper insights into the relationship between utterance fluency and hesitation phenomena on the one hand and perceptions of L2 speakers, their personality and their emotional state on the other hand.

6. REFERENCES

[1] Bosker, H. R., Pinget, A.-F., Quené, H., Sanders, T., de Jong, N. H. 2013. What makes speech sound fluent? The contributions of pauses, speed and repairs. *Language Testing* 30/2, 159-175.

[2] Council of Europe (eds.). Common European Framework of Reference for Languages: Learning, Teaching, Assessment http://www.coe.int/t/dg4/linguistic/Source/Framework_EN.pdf.

[3] Cucchiarini, C., Strik, H., Boves, L. 2002. Quantitative assessment of second language learners' fluency: Comparisons between read and spontaneous speech. *Journal of the Acoustical Society of America* 111/6, 2862-2873.

[4] Derwing, T. M., Munro, M. J., Thomson, R. I., Rossiter, M. J. 2009. The relationship between L1 fluency and L2 fluency development. *Studies in Second Language Acquisition* 31, 533-557.

[5] Goethe Institut (eds.) 2014. *Materialien zur Prüfung Goethe-Zertifikat B2. Prüfungsziele, Testbeschreibung*. Goethe Institut: München http://www.goethe.de/gzb2.

[6] Gut, U. 2009. *Non-native Speech. A Corpus-based Analysis of Phonological and Phonetic Properties of L2 English and German*. Frankfurt a. M.: Peter Lang.

[7] Hirschfeld, U., Neuber, B., Stock, E. 2008. Sprach- und Sprechwirkungsforschung (Artikel 45). In: Knape, J., Gardt, A., Fix, U. (eds.), *Handbuch Rhetorik und Stilistik*. Berlin/New York: de Gruyter. (Handbücher zur Sprach- und Kommunikationswissenschaft 31.1), 772-786.

[8] Hirschfeld, U., Stock, E. (eds.) 2010. *Sprechwissenschaftlich-phonetische Untersuchungen zur interkulturellen Kommunikation Russisch – Deutsch*. Frankfurt a. M.: Peter Lang. (HSSP 33).

[9] Kormos, J., Dénes, M. 2004. Exploring measures and perceptions of fluency in the speech of second language learners. *System* 32, 145-164.

[10] Raupach, M. 1980. Temporal variables in first and second language speech production. In: Dechert, H. W., Raupach, M. (eds.), *Temporal Variables in Speech. Studies in Honour of Frieda Goldman-Eisler*. The Hague: Mouton, 263-270.