

# PRELIMINARY RESULTS OF A SOCIOPHONETIC STUDY OF VOT AND POLISH TRANSNATIONAL IDENTITIES IN THE UK.

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## ABSTRACT

Abstract

This paper examines Voice Onset Time (VOT) of Polish voiceless stops in natural speech of members of the Polish transnational community in the United Kingdom. The results presented here are part of a larger sociophonetic project and suggest that aspirated voiceless plosives in Polish, characterized by longer mean VOTs, are associated with a cosmopolitan transnational identity. In contrast, shorter mean VOTs are typical of the speech of members of the community with a more nationally Polish identity.

**Keywords:** sociophonetics, VOT, Polish, language change, language contact.

## 1. INTRODUCTION

The study presented in this paper comes from a larger sociophonetic project investigating language change in the Polish spoken by a group of members of the new transnational Polish community in the British Isles. Extensive fieldwork has demonstrated that some of the Poles, who moved to the UK after the EU enlargement in 2004, are developing new speaking styles in Polish by drawing on selected English resources. Their use of aspects of these styles seems to correlate with whether their identity remains primarily oriented towards Poland and Polishness or whether they are more cosmopolitan in outlook and aspirations. One of the constituent features of the new speaking styles used by ‘cosmopolitan’ members of the community is aspiration of voiceless stops, an examination of which serves as a subject of this paper.

In contrast with English, where voiceless stops /p t k/ are aspirated when in the onset of stressed syllables [10], in Polish aspiration is not treated as a phonetic category [6], [16]. It does not occur in Standard Polish and if it does, it is ‘extremely weak and generally escapes the speakers’ attention’ [17]. Although it has been argued that emphatic contexts favor aspiration in Polish (e.g. [12], [13]), the latest studies show that the occurrence and degree of

lengthening depend on speaker’s experience of English and aspirated stops are perceived as a feature of English-accented Polish [16].

Aspiration, measured by means of voice onset time (VOT), has proven to be an interesting domain for sociophonetic research in various language contact situations (e.g. [5], [11]). The current study shows that mean VOT differs depending on the speaker’s sociocultural identity. The paper begins with a short description of the social side of the project and continues with a detailed analysis of voice onset time, which demonstrates different mean VOT values for different groups of speakers.

## 2. FIELDWORK AND THE NEW POLISH TRANSNATIONAL IDENTITIES

The study is based on a series of 28 one-to-one interviews conducted in South-Eastern England from July 2013 to August 2014. All speakers were Polish young adults who had come to the UK from Poland. At the time of the interview, the speakers were aged between 22 and 32. There were fifteen female and fifteen male speakers. All had moved to the UK after EU enlargement in 2004 and had spent between three and a half and ten years in the British Isles, the majority of them more than five years. 22 speakers had arrived in the UK at the age of 19, six were slightly older at the time of arrival, aged between 20 and 26. Most participants come from a range of medium-sized and large cities in Poland. All speakers whose interviews are analysed in this paper are native speakers of Standard Polish who originally came to Britain to study at university: they were educated first in Poland and then received higher education at one or more UK universities, which means they have similar linguistic profiles in both English and Polish. Additionally, the speakers have similar levels of education, which also makes them comparable in terms of social class (education is often closely related to socioeconomic class in Poland).

The interviews were conducted with the speakers in their homes or other low-noise environments. Each interview lasted between 48 minutes and 1h and 32

minutes. A Marantz PMD 660 recorder and two Audio-Technica AT8531 lapel microphones were used. The interviews were conducted in Polish and centered around a number of key questions related to the speakers' experiences of living in the UK, their language ideologies, views on nationhood and Polish and British cultures, their stances towards the UK, Poland and the world, and their social networks.

The interviews were orthographically transcribed using Elan [18]. Each speaker was given a serial number and a pseudonym. Transcription was followed by a qualitative analysis of the content of the interviews, which allowed for identification of eight cultural foci [3], e.g. self-identification as Polish, being religious, eating Polish food. These together with ethnicity scores of speakers' social networks established by means of a special task were put together to create a 'Polishness index.' In the index, one point was given for each cultural focus and for a Polish ethnicity social network score that was of 50% or above. Each speaker could receive a Polishness index score equivalent to any integer between 0 and 9. The index scores together with a qualitative analysis of the contents of the interviews, which revealed that the speakers presented themselves in different ways, lead to the emergence of two main groups: Polish Poles and Polish Cosmopolitans.

The index scores of Polish Poles were high in the range between 7 and 9. Additionally, during the interviews members of this group presented themselves as nationally Polish: they identified themselves with being Polish, maintained the Polish language and culture in the UK, actively participated in Polish organizations and surrounded themselves with other Poles. In contrast, the scores of Polish Cosmopolitans ranged between 0 and 3 and they did not present themselves as nationally Polish: they rejected nationality as a basis for identity, did not maintain Polish culture in the British Isles, did not engage themselves in the life of the Polish diaspora community and had more international social networks. Between the two groups there was a smaller intermediate group who identified themselves as Polish, maintained the Polish language and selected aspects of Polish culture, but did not surround themselves with Polish contacts and did not participate in Polish organizations to the same extent as Polish Poles.

The distribution of the speakers in relation to the two main sociocultural identities is presented in Table 1. As can be seen in the table, Polish Poles constitute

the biggest group, the majority of them being male speakers (10). Polish Cosmopolitan identity is represented by seven speakers (5 - female, 2 - male), while the intermediate group is composed of six individuals (5 - female, 1 - male).

**Table 1:** Distribution of sociocultural identities across all speakers.

Social Identity	Female	Male	TOTAL
Polish Poles	5	10	15
In-betweens	5	1	6
Polish Cosmopolitans	5	2	7
TOTAL	15	13	28

The numbers of individuals belonging to each group are not equal because sociocultural identity was not used as a criterion for sampling, but emerged during the data collection process. The aim is not to secure statistical representativeness, but to achieve saturation of the sociocultural categories studied [14]. However, an effort was made to conduct interviews with an equal number of female and male speakers.

The expectation is that Polish Poles will maintain Standard Polish norms, while Polish Cosmopolitans develop new ways of speaking with selected features of English which may index their new identities. The examination of one of the features constituent of the new speaking styles, aspiration of voiceless stops, is depicted in depth in the next parts of the paper.

### 3. CONTEXT AND METHODS

Voice onset time is defined here as 'the length of time after the release of a stop closure before the start of modal voicing for the following sound' [18] (66).

While English differentiates between short and long-lag VOT, Polish contrasts negative and short-lag VOT. In this study, results of three projects serve as points of reference for the English VOT: one from laboratory experiment data [9] and two from natural speech data - [2] and [19], all of which examined VOT in word-initial voiceless stops. The results of the studies are summarized in Table 2 below.

**Table 2:** Mean VOTs (ms) reported for English stops in word-initial positions in selected studies, presented for comparative purposes.

Study	p	t	k
Lisker&Abramson 1964	58	70	80
Byrd 1993	44	49	52
Yao 2007	48	51	58

In comparison with the studies on VOT in English, the data for Polish stops are scarce. The study that is used for comparison purposes in this paper is [17], which conducted laboratory experiments of disyllabic Polish words with stops in initial positions. Mean VOTs from this study are summarized in Table 3. There is no data available on Polish VOT based on studies of natural speech.

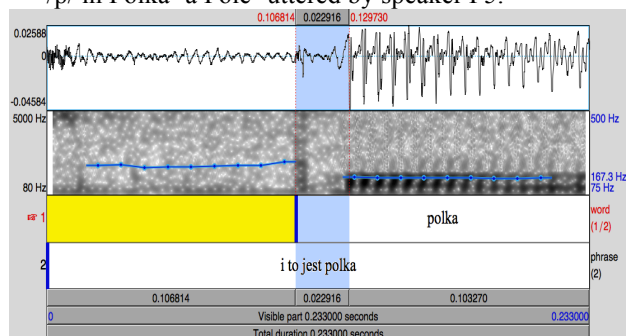
**Table 3:** Mean VOTs (ms) reported for Polish stops in word-initial positions in Keating et al. (1981), presented for comparative purposes.

Keating et al. 1981	p	t	k
Mean VOT (ms)	22	28	53
Standard deviation	10	9	20

During the fieldwork, a specific context for the occurrence of aspiration in the speech of Polish young adults in the UK was identified: syllable onset position in the nucleus of an intonational phrase. Drawing on existing studies of Polish intonation, an intonational phrase is defined here as ‘the domain of recurring intonation patterns and can be considered as unit of information’ [15] (158), e.g. *I to jest Polka* ‘And this is a Pole’ (Speaker P5). The intonational phrase corresponds to a major intonational phrase [15], which can only have one nucleus [4]. The unmarked position for the nucleus in Polish is the penultimate syllable in the phrase, but in emotional speech or marked utterances it can be moved towards the beginning of the phrase.

After identifying all contexts in an hour of each speaker’s speech, voice onset time measurements were taken in Praat [1]. All measurements were conducted manually. Only clearly audible tokens were selected. The voice onset time was measured from the onset of the stop burst to the first zero-crossing of the first periodic wave of the vowel following the stop. Figure 1 illustrates how VOT of a token of /p/ in *Polka* ‘a Pole’ from the interview with speaker P5 was measured.

**Figure 1:** Measurement of VOT for a word-initial /p/ in *Polka* ‘a Pole’ uttered by speaker P5.



## 4. RESULTS

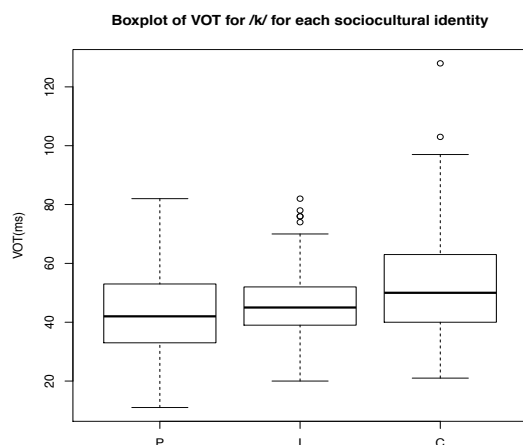
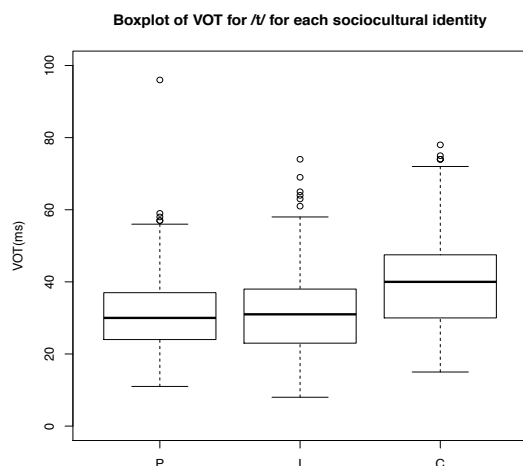
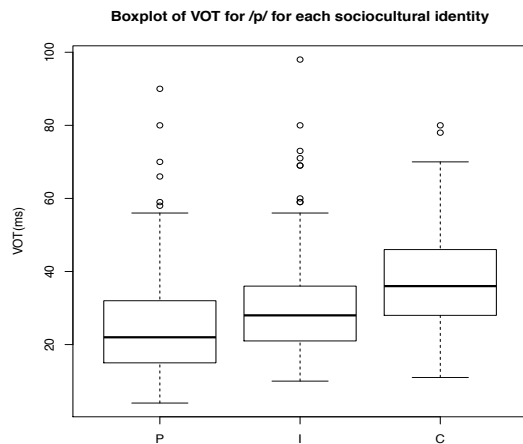
As sociocultural identities are unequally distributed across the male speakers, the results presented in this part of the paper focus only on female speakers (5 speakers per each sociocultural identity). Table 4 lists mean VOTs in (ms), standard deviations and the total numbers of tokens by place of articulation for each female speaker separately. Speakers are ordered according to their Polishness index scores in descending order from the highest score (9) to the lowest (0). Letters indicate sociocultural identity to which the speaker belongs: P – Polish Pole, I – In-between, C - Polish Cosmopolitan. The number of tokens varies from speaker to speaker and from stop to stop due to differences in frequency of the stops in the Polish language as well as due to the differences in length of the interviews. The numbers of tokens per speaker reflect the variation with an average of 37 tokens of /p/, 37 tokens of /t/ and 21 tokens of /k/ per speaker. The total number of tokens is 1428.

**Table 4:** Mean VOTs (ms), standard deviations and total number of tokens for each stop for each female speaker ordered in descending order according to their Polishness Index scores.

Speaker	/p/			/t/			/k/		
	Mean VOT (ms)	St.Dev	Number of tokens	Mean VOT (ms)	St.Dev	Number of tokens	Mean VOT (ms)	St.Dev	Number of tokens
P1	31.21	14.42	28	35.97	8.56	30	48.04	13.19	24
P2	20.93	8.74	42	31.73	13.98	49	36.71	10.35	24
P3	23.90	10.60	69	28.83	9.53	58	48.17	11.67	30
P4	27.82	16.33	45	28.49	8.76	39	35.50	15.05	22
P5	20.94	15.73	49	34.49	11.34	47	49.00	16.86	14
I1	33.92	15.62	26	34.16	8.68	38	45.00	12.93	16
I2	27.41	14.28	22	28.29	12.78	48	47.29	16.61	14
I3	29.62	9.84	42	31.52	10.25	50	44.53	7.49	17
I4	28.16	8.83	19	29.44	17.13	9	44.00	12.62	12
I5	30.43	16.65	58	33.64	13.73	39	49.18	14.21	34
C1	38.88	16.70	34	42.97	15.19	39	56.67	18.14	27
C2	31.85	7.51	34	34.13	10.27	30	45.47	10.64	15
C3	41.08	14.74	25	44.73	14.28	26	54.96	16.09	25
C4	37.69	10.71	35	39.91	13.52	35	52.46	21.09	26
C5	43.61	15.01	23	39.95	12.33	21	53.57	18.35	21

Figures 2, 3 and 4 show boxplots of VOT values for all three stops separately with respect to sociocultural identity. The labels on the x-axis indicate speakers’ identity in the following way: P – female Polish Poles, I – female In-betweens, C – female Polish Cosmopolitans.

**Figures 2-4:** Boxplots of mean VOTs for three stops for each sociocultural identity for 15 female speakers.



The figures show that female Polish Cosmopolitans have the longest mean VOTs for all three stops, while female Polish Poles have the shortest VOT values of /p/ and /t/. Results for /k/ are similar for all three groups with female Polish Cosmopolitans having the longest mean VOTs.

This is in line with [7], who observed the longest mean VOT for /k/ in Polish. It has to be borne in mind, however, that the current project is based on natural speech and [7] is a laboratory experiment. The longest mean VOTs for /k/ support the universal claim for VOT to be longer with more retracted places of articulation [8].

In comparison with [7], mean VOTs for all three groups are higher for /p/, which may suggest that there is an influence of proficiency in English on VOT as in [16]. However, the three groups of speakers behave differently with female Polish Cosmopolitans heading towards the English norms for natural speech [2]. Mean VOTs of /t/ resemble [7] for Polish Poles and In-betweens. Again, female Polish Cosmopolitans score the highest with mean VOT values in the direction of the English mean VOTs in natural speech [2],[19].

## 5. CONCLUSIONS

As expected, the universal tendency for VOT to be longer with a more retracted place of articulation [8] is supported by this study.

The paper also shows the relationship between the mean VOT and sociocultural identity. Mean VOTs for all three stops are the longest for female Polish Cosmopolitan speakers with values heading in the direction of the English norms for natural speech. For Polish Poles and In-betweens, mean VOT values are lower for all three stops. Thus, the paper demonstrates that mean VOT in Polish depends on a sociocultural positioning of the speaker.

## 6. REFERENCES

1. Boersma, P., Weenink, D. 2014. Praat: Doing Phonetics by Computer. Version 5.4.04", accessed April, 2012, <http://www.praat.org/>.
2. Byrd, D. 1993. 54 000 American Stops. *UCLA Working Papers in Phonetics* 83, 97-116.
3. Cheshire, J. 1982. *Variation in an English Dialect*. Cambridge: Cambridge University Press.
4. Grabe, E., M. Karpiński. 2002. Universal and Language-Specific Aspects of Intonation in English and Polish. *Proc. 15<sup>th</sup> ICPHS Barcelona*, 1-4.
5. Heselwood, B., McChrystal, L. 1999. The effects of age-group and place of L1 acquisition on the

- realization of Panjabi stop consonants in Bradford: An acoustic sociophonetic study. *Leeds Working Papers in Linguistics and Phonetics* 7, 49-69.
6. Jassem, W. 2003. Polish. *Journal of the International Phonetic Association* 33, 103-107.
  7. Keating, P., M. Mikoś, Ganong III, W. 1981. A Cross-Language Study of Range of Voice Onset Time in the Perception of Stop Consonant Voicing. *Journal of Acoustical Society of America* 70, 1260-1271.
  8. Ladefoged, P., Maddieson, I. 1996. *The Sounds of the World's Languages*. Oxford: Blackwell.
  9. Lisker, L., Abramson, A. 1964. A Cross Language Study of Voicing in Initial Stops: Acoustic Measurements. *Word* 20: 384-422.
  10. Lisker, L., Abramson, A. 1967. Some Effects of Context on Voice Onset Time in English Stops. *Language and Speech* 10: 1-28.
  11. Nagy, N., A. Kochetov. "VOT Across the Generations: A Cross-Linguistic Study of Contact-Induced Change." In P. Siemund, I. Gogolin, M. Schulz and J. Davydova (eds), *Multilingualism and Language Contact in Urban Areas: Acquisition - Development - Teaching - Communication*. John Benjamins, 19-38.
  12. Rubach, J. 1974. Some Remarks on Aspiration in Received Pronunciation with Reference to Polish. *Psicl* 2, 97-103.
  13. Ruskiewicz, P. 1990. Aspiration in English and Polish: An Overview. *Papers and Studies in Contrastive Linguistics* 25, 147-161.
  14. Small, M. 2009. 'how Many Cases do I Need?' on Science and the Logic of Case Selection in Field-Based Research. *Ethnography* 10, 5-38.
  15. Wagner, A. 2011. Automatic Labeling of Prosody. *Speech and Language Technology* 14/15 (special edition), 157-167.
  16. Waniek-Klimczak, E. 2011. Aspiration in Polish: Sound Change in Progress? In M. Pawlak, M. Bielak *New Perspectives in Language, Discourse and Translation Studies*. Berlin: Springer-Verlag.
  17. Wierzchowska, B. 1971. *Wymowa Polska*. Warszawa: Państwowe Zakłady Wydawnictw Szkolnych.
  18. Wittenburg, P., H. Brugman, A. Russel, A. Klassmann, Sloetjes, H. 2006. ELAN: A Professional Framework for Multimodality Research.
  19. Yao, Y. 2007. Closure Duration and VOT of Word-Initial Voiceless Plosives in English Spontaneous Connected Speech. *UC Berkeley Phonology Lab Annual Report*, 183-225.