

# Perception of the Russian Accent by American-English Speakers

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## Abstract

This paper aims to determine how the phonetic features of a Russian-English accent influence its perception by Standard-American-English speakers. Using recordings made by Russian-English speakers who have lived primarily in the St. Petersburg area and then moved to the United States, American-English speakers were then asked to rate the strength of the accent, how well they understood it, and their confidence in their answers. Results show a strong positive correlation between the number of Russian-specific phonetic alternations and correct responses, between phonetic features and perceived strength, and between the strength of the accent and the certainty of the response, along with mixed results regarding the correlation between strength and intelligibility.

## 1 Introduction

### 1.1 Motivation

This paper aims to answer the question of what in particular leads to the perception of strength and intelligibility of a Russian accent by American English speakers. It is not entirely clear necessarily what determines a person's perception of the strength a Russian accent, which is historically often exaggerated in the American media. For many people, media may be their primary source of hearing Russian accents, and though dialect coaches do exist in order to make these accents more accurate they are not always used or effective, and accents tend to be strong and over-exaggerated. To mitigate this, this study aims to present American English speakers with samples of actual Russian accents to see if they can determine that they are Russian accents or not, as well as their perceived strength, despite not always being as strong as the accents heard in American media. There also lies the question of intelligibility of the Russian accent - anecdotally, the author has heard that some people may have difficulty understanding thicker Russian accents. If this is indeed the case, it is also interesting to see how people would rate the intelligibility of different strengths of accents.

Determining which phonetic qualities most contribute to these two conclusions in a native English speaker's mind would be helpful for two parties mainly - for actors who wish to have a more accurate Russian-American accent in their work and also for those Russian immigrants who wish to may want to soften their accent for professional or other personal reasons.

### 1.2 Related Works

A very useful paper in determining phonetic features of the accent is the Bachelor's thesis of Alina Tumshevits from Charles University, focusing on the "Perception of Russian-accented Speech by Native and Non-native Speakers of English". In this paper, Tumshevits provides ample background information regarding the pronunciation difficulties that Russian-English speakers have, separating it into difficulties with consonant sounds and with vowel sounds, as well as differences with stress, intonation, and vowel length. The analysis, however, is a bit poor, as the judgements were made by five students with a "high degree of English proficiency" (not necessarily being surrounded by English to begin with), two of which were Czech students majoring in English who were actively studying with Russian students and thus were used to the Russian accent. The paper also did mention the significance of such a report

with respect to Russian representation in the media and hope to determine not just a positive or negative perception of the accent in general but also determine if the biases correlated to demographic data, which is outside the scope of this paper but interesting to note.[3]

Another paper, "Perceptual Assessment of the Degree of Russian Accent" by Lya Meister from the Tallinn Institute of Technology, focuses more on the Russian-Estonian accent perception. The topic is of course not directly related to a Russian-American accent, but the analysis model is also replicated in this paper - all of the phonetic data and judgements made by the evaluators was placed into a table and then plotted to determine the potential correlation between the accent strength due to presence of phonetic features and the score given. Meister finds a correlation between the two, which this paper also aims to replicate.[1]

An older paper from 1991 that is specifically focused on Russian-American accents is a paper by Irene Thompson from George Washington University, titled "Foreign Accents Revisited: The English Pronunciation of Russian Immigrants". Thompson not only asked Russian speakers to read a constructed paragraph, but also to talk spontaneously about their day. This paper found that the constructed paragraph (which had mostly words that were deemed difficult to pronounce for native Russian speakers) was "deemed to be more accented than spontaneous speech". The paper also brings up the finding that the level of experience of raters also played a role - the more experienced they were, the more lenient. This was a relatively extensive study, also determining the correlation between Age of Arrival (AAA) and perception of accent.[2]

The following analysis is inspired greatly by the above works - from the focus on different accent features, analysis model, and also by collecting demographic information regarding the Age of Arrival and daily usage of English.

### 1.3 Accent Features

The accent features that the recordings were scored for were taken from Tumshevits's thesis, as it was very well-documented there. Some features that were tested include:

- u vs. ʊ
- u vs. ʊ
- ʌ vs. a
- æ vs. a vs. ɛ
- i vs. ɪ vs. ɨ
- l vs. ɫ
- r vs. ɹ
- h vs. x
- Palatalization
- Final devoicing

More features are outlined in the Appendix. Other features that were considered were the distinction between d and ɖ or between d and z, but these features are not relevant in this situation. Other known features of the Russian accent that were not taken into account were stress patterns and length distinctions - although these are also large parts of classifying an accent as distinctly Russian, it was difficult to annotate this in a short period of time and difficult to quantify.

These phonetic alternations resulted in the construction of the paragraph below, that was read out by the subjects:

"That morning, I sat down at the beach and set my towel on the sand. I filled my bucket with water for my sandcastle and put it next to my phone. I did bring four sandwich halves, because I didn't know which flavors to pick. Then, while eating lunch, I looked west and saw the whale! It was very much stranded, and really quite heavy, so I didn't know what to do at the time. Without your assistance, I could not have moved it off the shore, so thank you again for helping me!"

## 2 Experiment

### 2.1 Experimental Setup

The data collected consists of seven different 1-minute recordings of varying degrees of Russian accents. The recordings are by people who have lived in St. Petersburg for a significant period of time, with one recording being an American accent of a person born in the United States as a control. Each recording has been hand-analyzed using Praat for finding the primarily “Russian” phonetic features that are already known to exist, as described in the Accent Features section. These have been mostly recorded on cell phones so the sound quality is not perfect, but the phonetic features were still distinctive enough in all cases for the data to be unaffected.

There are some important notes about the subjects:

- Subject 3 was the control - American accent of a person born in the US.
- Subjects 1,2,4,7 moved to the United States 25-30 years ago and are all around 50-60 years old.
- Subjects 5,6 moved to the United States 11 years ago, but Subject 6 was well under the critical age for learning new languages (below 9 years old) when they arrived, so they now have a distinctly American accent.
- The primary difference between respondents is usage: Some subjects used English daily at work and at home for many years, whereas some subjects only use English once a week.

Each one of these recordings, with the consent of those being recorded, was placed into a Google Form and shared on social media. The respondents listened to the recordings and then answered the following questions:

1. What accent is this?
2. Please rank the strength of the accent on a scale from 1 to 5 - 1 being no accent at all, and 5 being very strong/almost unintelligible.
3. Please rate how well you understand what the speaker is saying (on a scale from 1 to 5).
4. How certain are you of your answers (on a scale from 1 to 5)?

The certainty is especially important to record here, as it is useful to track the quality of the rating scale that is being used in the Google Form to determine strength. The initial assumption was that when it is a more strong accent, respondents will have a higher degree of confidence in their responses, but the level of certainty is also be compared to the correctness of the judgement to see a possible correlation.

Demographics of form respondents were also collected, and most were from the United States, primarily being in the 18-22 range. Most respondents also did not hear Russian or Russian accents in their daily lives, or rarely so.

NOTE: For subject 7, their recording was added a bit later to the Google Form, so only 24 respondents answered questions regarding the recording instead of 27. The results below were adjusted to account for this difference.

## 3 Analysis and Results

### 3.1 Praat Analysis and Pre-Rating

The Praat analysis was used to perform narrow transcriptions of the data, which were then compared to the alternations described in the Accent Features section. Using rubrics generated based on these alternations, the seven speakers were given a score out of 75, with each point representing a difference in pronunciation. A very heavy Russian accent would be given a 75 at most, whereas a lighter accent would be scored lower. Subject 3 was used as a baseline, and had an overall score of 0 for the alternations that are described. Rubrics are listed in Appendix 1.

For Subject 6, who arrived to the United States before the critical age, their Russian accent was completely gone and their speech had none of the alternations that were tested for.

These “raw scores” were then compared with data that was collected regarding their Perceived Strength, Intelligibility, and Certainty.

**TABLE OF FEATURES - OVERALL SCORES**

Subject Number	A1	A2	A3	A4	A5	A6	Total score (out of 75)
1	8	8	8	8	11	7	50
2	5	7	6	3	8	6	35
3	0	0	0	0	0	0	0
4	1	1	3	2	3	4	14
5	6	6	6	1	6	3	28
6	0	0	0	0	0	0	0
7	3	5	6	0	7	4	25

Figure 1: The total "phonetic features" scores for each subject. A1-A6 represent sentences 1-6, respectively.

As shown here, though there could have been a total score of 75, the thickest accent had a score of 50 - still considered to be quite high. The weakest Russian accent had a score of 14. Subject 6's score, as mentioned before is a 0, and everyone else's scores fall mostly evenly between Subjects 3/6 and 1. For the tables corresponding to the ranking in each sentence, please see Appendix 2.

### 3.2 Correlation Studies

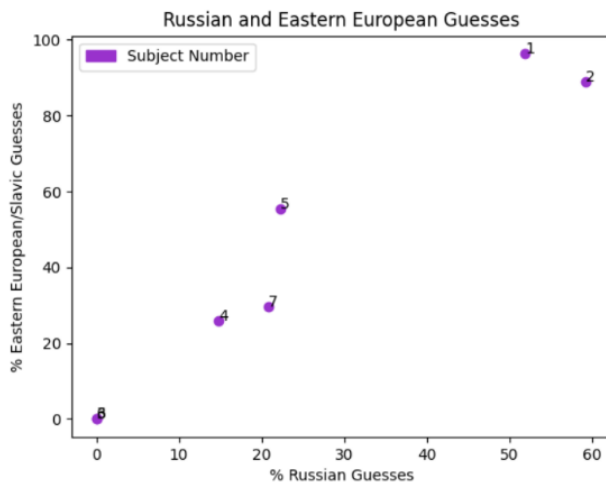


Figure 2: Graph determining the percentage of Russian responses versus the percentage of overall Eastern European or Slavic responses.

Figure 2 discusses the percentage of Russian responses versus the percentage of Eastern-European or Slavic guesses in total. This was important to check because, by leaving the question of what kind of accent each recording was open-ended, there were many interesting responses, sometimes quite far from the correct answer. In the end, only 60% of the guesses at most were Russian accents. Thankfully, the correlation between Russian and Eastern European guesses is almost perfectly linear, so it was determined that the two could be substitutes for each other in future calculations, such as on the following page. In general, it seems that speakers are twice as likely to call an accent "Eastern European or Slavic" instead of Russian, as there seems to be a strong conflation between all of the different kinds of accents in English speakers' minds, which was to be expected. A potential other hypothesis to pursue is to see if English speakers can, once told that the accents are different Slavic accents, be able to differentiate them at all.

It was thought, before gathering the data, that the less pronounced an accent is that there would be a point where the ability to determine the accent would sharply drop off. However, as seen in Figure 3, between the Eastern European/Slavic guesses and the raw features there is a clear and almost-linear positive correlation. This is promising, as it seems that even when the accent is not necessarily that strong phonetic features of the accent can still be determined. From the Praat analysis and scoring, the weaker accents tended to retain more palatalization in places and a couple of the vowel alternations; perhaps these distinctions alone can be enough in synthesizing a Russian accent.

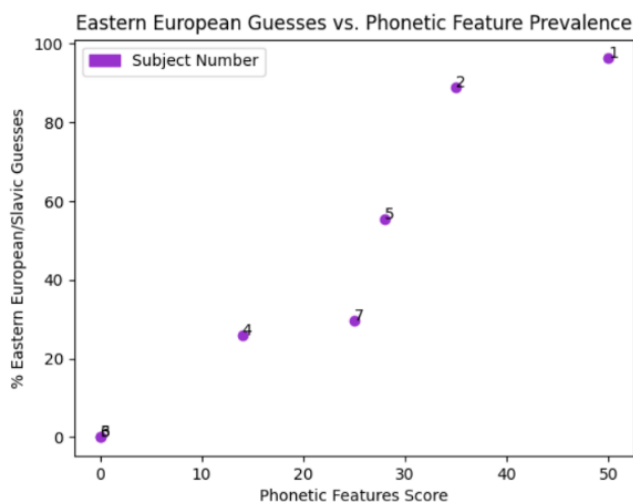


Figure 3: The percentage of Eastern European and Slavic guesses (including Russian) were compared against the raw scores for each test subject.

After checking for the correctness of responses as compared to the phonetic features, the next step was to determine if the strength had any relation to how many phonetic alternations were present in the data. The initial intention was to group these by sets of phonetic alternations to determine which sounds specifically gives a listener an impression of a Russian accent, but with the data collected this was not possible, so only the average strength and overall scores could be compared. There is strong positive, almost linear correlation, but with the amount of data collected it is difficult to tell whether that correlation is a straight line or is somewhat curved towards the bottom.

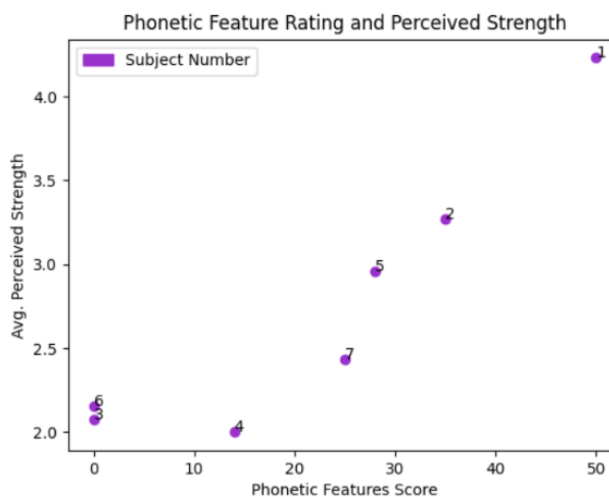


Figure 4: The raw scores are compared to the average perceived strength. It is unclear whether the true correlation is curved.

The strength perception analyses in Figures 3 and 4 could benefit from being looked at on a respondent-

by-respondent basis. In such a case where the same respondents are ranking accents, their own methodologies for rating data can cause a significant bias in their answer that should not be overlooked. This data was not normalized depending on each speakers' highest and lowest rating; for the purposes of this paper it was assumed that there would be an equal number of people who would tend to rate respondents higher and those who would rate them lower.

The intelligibility score versus the raw score, as shown in Figure 5, did not show such a strong correlation, and it would be difficult to determine whether there is any correlation at all. This may be a result of attempting to rate the perceived intelligibility on a 1 to 5 scale, and instead of having the data being somewhat evenly concentrated or following a similar trend as the strength and certainty data most people rated the perceived intelligibility for all subjects as 2 or below. There seems to be some upward trend but there are enough out-of-line data points that this could simply be a case of not enough data and a poor rating schema. Future iterations of this project could benefit from changing the schema or wording of the question to test if this hypothesis is true or not. For the sake of this examination, the intelligibility versus raw score data remains inconclusive.

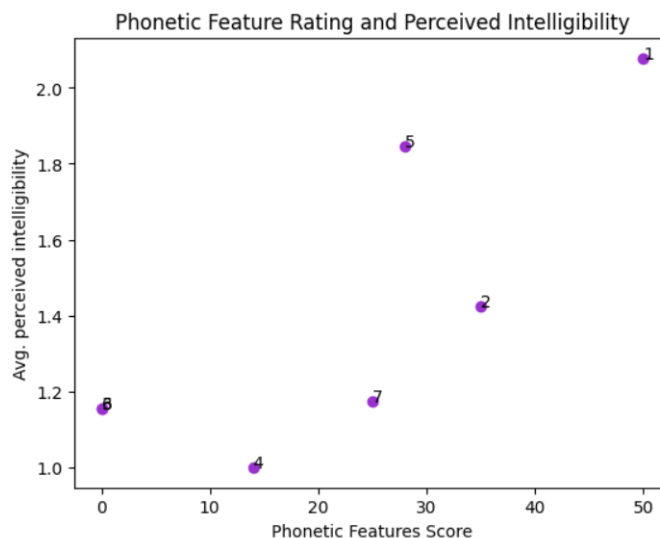


Figure 5: Raw scores are compared to the averaged perceived intelligibility. Any true correlation is difficult to determine.

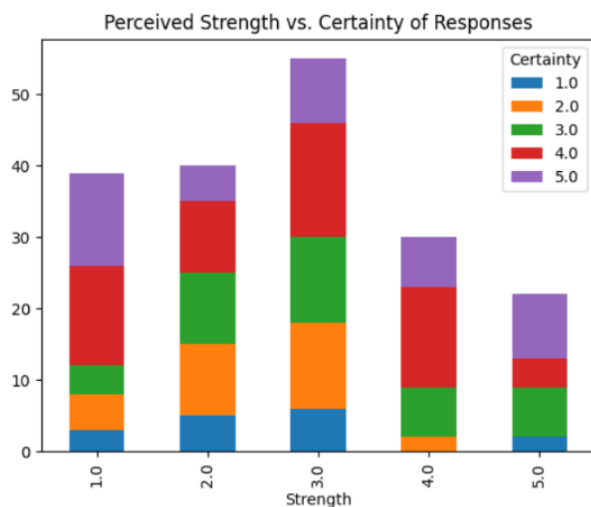


Figure 6: The certainty of responses were grouped by the average perceived strength.

### 3.3 Analysis Notes

In general, more data is necessary. Having only seven data points was very limiting in the amount of significant correlation that could be made. Although there were 27 responses to the form, this only made the averages for strength and intelligibility to be stronger and give more validity to those specific data points, whereas the end result is that there are still only seven recordings to judge. That being said, correlations could be observed in most cases.

What also would have been interesting to judge was how each respondent historically responded to each subject, as the way that the form was structured resulted in data that would be conducive to a panel analysis. Unfortunately, this could not be done because of the lack of data, but would be an interesting concept to explore in the future.

The certainty versus strength response is one of the more interesting correlations that did not seem to be pursued in other studies. From Figure 6, it can be observed that the more strong the accent is perceived to be, the more certain the respondent is with their answer. For strengths of 4 or 5, there are only one or two speakers reporting a certainty of 1 or 2. For lower-strength accents this seems to also be the case - this part of the data may be skewed, however, due to the fact that two of the seven subjects had clear American accents. Most people guessed somewhere in the 2-3 range for most of their answers, and when the result was less clear (for 3.0) there is a fairly even distribution of all levels of certainty.

### 3.4 Remarks

During the ranking, it appeared that the longer the subject was speaking, the more "mistakes" they would make in their speech. A similar phenomenon would occur when using common phrases such as "very much" or in "again".

Another interesting note is that not many people got that the accents were Russian, with one person provided the explanation - "I thought that all Russians rolled their r's when speaking English". Other people noted - "I know that Russian accents mix up their v's and w's so I was looking for that". Whether or not these observations were consciously noted during the testing or not is unclear, but it may be a good explanation for why lighter accents (which do not have these features so prevalently) were guessed correctly less often.

Some of the more interesting responses were those who likened some of the accents to Peruvian or Portuguese. This result was expected by the author, as Portuguese has many phonetic features that are similar to Russian, and it is common for people listening to Portuguese and Russian without knowing either language to confuse the two.

## 4 Conclusion and Further Analysis

The lack of data points resulted in more brief results than were initially expected. Despite this shortcoming, there is still strong positive almost-linear correlation between the number of phonetic features and the perceived strength of the accent.

Further analysis would benefit from having more recordings, with even more varied Ages of Arrival (AoA) and usage frequencies. Another hypothesis to potentially explore is that the AoA is not necessarily the key contributor to a lighter accent - it seems that AoA instead is more of a defining feature when people are younger but not necessarily important past the critical age, where one would expect that daily usage would more so define the strength of the accent.

Should an extension of this experiment occur with more recordings, the Google Form response format would also benefit from some modification. Being able to randomize the order in which recordings are presented to form respondents would allow for a less biased overall result, as features such as "perceived strength" and "certainty" tend to be often based on previous judgements. Such a study would also benefit from splitting these recordings into multiple smaller Google Forms - with seven recordings, respondents were already taking around 5-10 minutes to answer the questions, and by the end they have the potential to be more biased than they were at the start of the form.

## 5 Acknowledgements

The author would like to thank Danko Sipka for his assistance in creating the proper structure for this assignment, as well as providing the idea to look into the certainty of results, as this is not a feature that has been often looked into when doing data analysis. The author would also like to thank her mother for her invaluable help in finding Russian-American English speakers who were willing to make recordings for this project. The author would also like to thank Bas Jaspers with assistance in determining the most informative way to present the data collected.

## References

- [1] Lya Meister. Perceptual assessment of the degree of russian accent. In NODALIDA, 2007.
- [2] Irene Thompson. Foreign accents revisited: The english pronunciation of russian immigrants†. *Language Learning*, 41:177–204, 1991.
- [3] Alina Tumshevits. Perception of russian-accented speech by native and non-native speakers of english. Charles University Department of the English Language and Literature, 2019.

## 6 Appendix

### 6.1 Appendix 1: Scoring Rubric

The way that the sentences were scored is as shown below. The total score that a speaker could get is 77 - one point for each mistake on the words in quotations. An American-English accent should get in the 0-5 range, while a degree of Russian-American accent should get higher.

A1: That morning, I sat down at the beach and set my towel on the sand.

Total possible score: 12

- d/ð ("that", "the")
- a/a/o ("down", "on")
- æ/ɛ ("that", "at", "sat", "set", "sand")
- ɹ ("morning")
- i/I/i ("beach")
- "towel"

A2: I filled my bucket with water for my sandcastle and put it next to my phone.

Total possible score: 11

- a/a/o ("I", "my")
- i/I/i ("filled", "it")
- ɹ/r/- ("for")
- l/L ("filled", "sandcastle")
- u/ʊ ("put")
- ʌ/a ("bucket")
- æ/ɛ ("sandcastle", "and")
- u/ʊ ("to")

A3: I did bring four sandwich halves, because I didn't know which flavors to pick.

Total possible score: 12

- Palatalization ("did/didn't", "which")
- l/L ("flavors")
- ɹ/r ("bring", "four", "flavors")
- æ/ɛ ("sandwich", "halves")
- ə/o ("because")
- i/I/i ("sandwich", "did/didn't")
- w/v ("which")

A4: Then, while eating lunch, I looked west and saw the whale!

Total possible score: 10

- d/ð ("then")
- l/L ("while", "lunch", "looked", "whale")
- t/r ("eating")



- a/o ("saw")
- u/ʊ/ʊ ("looked")
- w/v ("west", "whale")

A5: It was very much stranded, and really quite heavy, so I didn't know what to do at the time.

Total possible score: 15

- i/ɪ/ɪ ("it", "didn't")
- a/ə ("was", "what")
- Palatalization ("very", "really", "heavy", "didn't")
- u/ʊ ("to", "do")
- w/v ("was")
- æ/ɛ ("stranded")
- ɹ/r ("very", "really")
- h/x ("heavy")

A6: Without your assistance, I could not have moved it off the shore, so thank you again for helping me.

Total possible score: 17

- v/w ("without")
- ð/z ("without")
- ɹ/r ("your", "shore", "for")
- u/ʊ/ʊ ("could", "moved", "you")
- Palatalization ("assistance", "it", "again", "helping", "me")
- æ/ə/ɛ ("have", "thank")
- s/θ ("thank")
- h/x ("helping")

## 6.2 Appendix 2: Sentence Scores by Subject

The below tables consist of the phonetic alternations that were detected in each subject. If the alternation was detected for each example word (with the exception of final devoicing, which was maximally counted three times) the subject would have a point added for each alternation.

**TABLE OF FEATURES - A1**

Subject Number	a/ɑ/o ("down", "on")	æ/ɛ ("that", "at", "sat", "and", "sand")	Final devoicing (for all sentences)	i/ɪ/ɨ ("beach")	awə/ou, "towel"	Total score
1	0	5	2	1	1	8
2	1	4	0	0	0	5
3	0	0	0	0	0	0
4	0	1	0	0	0	1
5	2	2	1	0	1	6
6	0	0	0	0	0	0
7	0	2	1	0	0	3

Figure 7: Sentence: "That morning, I sat down at the beach and set my towel on the sand."

**TABLE OF FEATURES - A2**

Subject Number	a/ɑ/o ("I", "my")	i/ɪ/ɨ ("filled", "it")	ɪ/r ("for")	l/ɫ ("filled", "sandcastle")	u/ʊ ("put")	ʌ/a ("bucket")	æ/ɛ ("sandcastle", "and")	u/tʊ ("to")	Total score
1	1	1	0	2	1	0	1	1	8
2	0	2	0	2	0	1	1	1	7
3	0	0	0	0	0	0	0	0	0
4	0	0	0	0	0	1	0	0	1
5	0	1	0	1	1	1	2	0	6
6	0	0	0	0	0	0	0	0	0
7	0	1	0	0	1	1	2	0	5

Figure 8: Sentence: "I filled my bucket with water for my sandcastle and put it next to my phone."

**TABLE OF FEATURES - A3**

Subject Number	Palatalization ("did/didn't", "which")	l/L ("flavors")	r/r ("bring", "four", "flavors")	æ/ε/a ("sandwich", "halves")	ʌ/o ("because")	i/i/ɪ ("sandwich", "did/didn't")	w/v ("which")	Total score
1	1	1	2	1	1	1	1	8
2	2	0	2	1	1	0	0	6
3	0	0	0	0	0	0	0	0
4	2	0	0	1	0	0	0	3
5	2	0	0	0	1	2	1	6
6	0	0	0	0	0	0	0	0
7	1	1	1	1	1	1	0	6

Figure 9: Sentence: "I did bring four sandwich halves, because I didn't know which flavors to pick."

**TABLE OF FEATURES - A4**

Subject Number	l/L ("while", "whale")	i/i/ɛ ("eating", "west")	a/o ("saw")	u/ʊ/ʊ ("looked")	w/v ("while", "west", "whale")	Total score
1	2	2	1	1	2	8
2	2	0	1	1	0	3
3	0	0	0	0	0	0
4	0	0	1	1	0	2
5	0	1	1	1	0	1
6	0	0	0	0	0	0
7	0	0	0	0	0	0

Figure 10: Sentence: "Then, while eating lunch, I looked west and saw the whale!"

**TABLE OF FEATURES - A5**

Subject Number	i/ɪ/ɨ ("it", "didn't")	a/ʌ ("much", "what")	Palatalization ("very", "really", "heavy", "didn't")	u/ʊ ("to", "do")	æ/ɛ ("stranded")	ɪ/r ("very", "really", "stranded")	h/x ("heavy")	Total score
1	1	1	3	1	1	3	1	11
2	1	1	2	1	0	2	1	8
3	0	0	0	0	0	0	0	0
4	0	1	1	0	0	1	0	3
5	1	1	2	1	1	0	0	6
6	0	0	0	0	0	0	0	0
7	2	1	2	0	0	1	1	7

Figure 11: Sentence: "It was very much stranded, and really quite heavy, so I didn't know what to do at the time."

**TABLE OF FEATURES - A6**

Subject Number	ɪ/r ("your", "shore", "for")	u/ʊ/ʊ ("could", "moved", "you")	Palatalization ("assistance", "it", "again", "helping", "me")	æ/ə/ɛ ("have", "thank")	s/θ ("thank")	h/x ("helping")	Total score
1	1	2	1	1	1	1	7
2	0	2	3	1	0	0	6
3	0	0	0	0	0	0	0
4	0	2	2	0	0	0	4
5	0	1	2	0	0	0	3
6	0	0	0	0	0	0	0
7	0	2	1	1	0	0	4

Figure 12: Sentence: "Without your assistance, I could not have moved it off the shore, so thank you again for helping me."