

The Impact of Accent among Non-Native English-speaking Biology Lecturers on Student Comprehension and Attitudes

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Abstract

This study examined the attitudes of postgraduate biology students of three top-ranked Russian universities towards the foreign accents of non-native English-speaking lecturers. Fifty participants responded to a questionnaire, the main purpose of which was to explore the listeners' perceptions of professors' accents and their influence on students' ability to concentrate on and comprehend the lecture material. The research included a quantitative analysis of gathered descriptive data. The results of the study show Russian students' tolerant attitudes to foreign accents of non-native lecturers and demonstrate their readiness to comprehend non-standard English-medium speech of non-native representatives of the international natural sciences academic community.

Keywords: accent perception, foreign accent, non-linguistic professional discourse, Russian-speaking students, sociolinguistics, students' attitudes

The current global sociolinguistic paradigm welcoming non-standard varieties of English and inculcating tolerant attitudes to their spoken realisations has defined the shift from so-called “nativeness” and foreign accent reduction to achieving intelligibility and comprehensibility of an utterance in international non-linguistic professional discourse (Chien, 2014; Gill, 1994). The phenomenon of foreign accent softening, rather than total accent reduction, is said to be intertwined with maintaining a person’s national identity while removing phonological barriers constraining effective intercultural communication (Gill, 1994; Johnson & Frederick, 1994; Nelson, 2011). In the context of English being a means of international communication among speakers with different L1 backgrounds and various professional pursuits, the analysis of non-native interlocutors’ oral speech perception in natural sciences academic discourse presents a challenge for modern sociolinguistic research.

The objective of this study is to determine the evaluative judgements of Russian postgraduates towards non-native English-speaking biology lecturers in order to assess their level of tolerance to accented speech in an academic context. Accent bias has been linked to career possibilities, including those in academia, as non-native lecturers are commonly judged against native speaker pronunciation standards and ranked lower on dimensions relevant to teaching, such as competence and teaching quality (Hendriks et al., 2018). Native English accents have been historically highly regarded in Russian higher education, being associated with good education and prestige, making the probability of the presence of accent bias quite high. Maslova (2017) tapped into the perception of non-native speakers’ (NNS) foreign accent within the linguistic community of other NNSs. This study, however, seeks to explore Russian students’ attitudes toward non-native lecturers’ accents and assess their readiness to comprehend non-standard English-medium speech in the academic context. The most essential question in this study is whether the presence of a negative attitude towards a foreign accent stops the listener from making the effort to concentrate on the content of a lecture.

Literature Review

The concept of English as a Lingua Franca (ELF) has irreversibly changed the role of pronunciation, both its acquisition and instruction, in English as a second language (ESL) class. Much of the current research suggests that there is less emphasis on ESL students struggling to sound native-like (Chien, 2014; Derwing, 2010; Nelson, 2011) as the focus in language acquisition has shifted to intelligibility and comprehensibility as the most important features of ESL learners’ speech of any L1 backgrounds, as according to Nelson (2011),

Far from being an issue only across ‘native’ and ‘non-native’ varieties, intelligibility is a concern across any varieties, whether broadly or narrowly construed (p.33).

Still, much evidence coming from empirical studies shows that there is a huge gap between the requirements for those who use English as a professional tool and those who use it as a means of communication in non-linguistic professional environments. Regardless of the ELF status and enormous worldwide influence of English, in Wach’s study (2011), which involved 234 subjects, the majority of respondents (98% in Group A (n=132) and 83% in Group B (n=102)) agreed that it was preferable for teachers of English to have native-like pronunciation. The study by Coskun (2011) discovered that 38 out of 47 respondents, senior students of the English Language Teaching department, found having native-like pronunciation very important for a teacher of English. In the study by Maslova (2017), a questionnaire was administered to 23 teachers and 41 undergraduate students at Lomonosov Moscow State University (MSU). The results revealed that Russian teachers and ELT majors believed that “it was necessary to follow a particular

pronunciation norm while teaching English to those for whom this language is a professional tool” (p.10). At the same time, appealing back to ELF advocates (Modiano, 2009; Dimova, 2018) in non-native speaker (NNS) to NNS oral interaction in ELF, it becomes clear that

the traditional prescriptivism of English language teaching (ELT) in the Expanding Circle, which emphasizes the benefits of imitating the educated native speaker of SE [Standard English], has become unacceptable (Dimova, 2018, p.51).

Thus, due to the study’s focus on the role of pronunciation in communication between non-native speakers who use English as a lingua franca, those who belong to the professional linguistic environment have been excluded. The aim was to study accent perception in non-linguistic academic communication, namely, in the natural sciences academic community, in order to find out whether postgraduate students of biology of three top-ranked Russian universities give much attention to foreign accents of non-native speaking lecturers and to what extent a foreign accent might be an obstacle in processing accented speech.

Research in foreign accent perception or rating often involves native speakers as listeners and experts assessing the level of intelligibility of the accented speech of NNS (Gill, 1994; Johnson & Frederick, 1994; Lazaraton, 2005; Lowenberg, 2002; Seidelhofer, 2001) Moreover, experts and scholars themselves, being frequently zealous advocates of ELF, in their research compare NNS accents to native pronunciation. For example, Kennedy and Trofimovich (2008) assessed “how closely the pronunciation of an utterance approaches that of a native speaker” (p.461), while Julkowska and Cebrian (2015) looked at how similar the pronunciation of an L2 speaker is to the pronunciation of a native speaker of a particular language, which seems to contradict the idea of ELF in terms of sociolinguistic diversity and equality. Therefore, this study was planned as the one establishing a purely non-native English-speaking environment with both listeners and speakers of non-native L1 backgrounds, who use English as a lingua franca for research in the field of natural sciences.

Research Questions

In this study, the participants’ attitudes were collected in order to answer the following research questions:

RQ1: When students listen to a lecture on biology in English delivered by a non-native speaker, is it important for them that the lecturer does not have a foreign accent? If so, how important?

RQ2: Does the presence of the lecturer’s foreign accent prevent the students from concentrating on the content of the lecture? If so, to what extent?

RQ3: To what extent can students agree with the statement that non-native lecturers in their professional field should strive to reduce their foreign accents?

Apart from that, Russian-speaking students assessed foreign accents of the representatives of the international academic community that came from countries of the expanding circle of English whose contribution to the further development of every branch of biological sciences was equally significant and most prominent. The analysis of the classification of academic and research-related institutions outlined in the SCImago Institutions ranking of 2018 revealed that the three top countries in this regard were China, Germany, and France. Hence, specified pairs of questions (2 per country) were designed:

RQ4 – RQ6: How easy was it for the students to understand the content of a fragment of a lecture delivered in English by a professor from China (RQ4), Germany (RQ5) and France (RQ6)?

RQ7 – RQ9: When students listened to a fragment of a lecture delivered by a lecturer from China (RQ7), Germany (RQ8) or France (RQ9), did the lecturer's foreign accent prevent the students from concentrating on the content of the lecture?

Finally, some additional statistical tests were performed in order to look for possible meaningful correlations. It was hypothesized that the more the student was concerned about the presence of a national accent in a foreign lecturer's speech, the more it would impede their concentration on the lecture content.

Methodology

The participants in this study were 50 postgraduate biological sciences majors who belong to the natural sciences academic community of Lomonosov Moscow State University (MSU), Saint-Petersburg State University and Information Technology, Mechanics and Optical design (ITMO) University. The participants were chosen by the means of convenience sampling from these top-ranked Russian universities as they had established academic links with Lomonosov MSU where the study was based. Out of these 50 participants, 41 majored in Biology and 9 in Bioengineering and Bioinformatics. All the participants had attended or were still attending compulsory classes of English as a Foreign Language for biologists at the Upper-Intermediate level of language proficiency (marked B2 in Common European Framework of References) or higher (CEFR, 2018).

Prior to conducting the research, the study was piloted on a trial group of 10 participants – students of Lomonosov Moscow State University. Taking into consideration respondents' feedback and comments, several changes were introduced into the questionnaire.

In the first part of the study, all the participants were administered an anonymous online questionnaire, which was specifically designed for this study (Appendix 1, Part 1). The items in the questionnaire matched the research questions of the study. The main aim of the questionnaire was to explore the participants' attitudes towards the presence of a foreign accent in the speech of a non-native English-speaking lecturer from their professional field, and reveal the effects of accented speech on students' ability to concentrate on the material without being distracted.

The questionnaire consisted of eleven 7-point Likert items, given that 7-point rating scales can be referred to as “balanced” (Friedman & Amoot, 1999, p. 119), which tends to increase the degree of “precision” of participants' answers (Cohen et al., 2017, p. 327). Each scale point was labelled by the researchers to minimise inaccuracies stemming from individual interpretation of numbers.

Anonymity of the questionnaire responses was ensured due to ethical considerations; no personal data was collected. Out of sustainability reasons the researchers opted for an online questionnaire; the study was conducted via Google Forms. The participants were provided with detailed written instructions for each part of the survey. By submitting the questionnaire, the participants consented for their responses to be used for research purposes. Each participant could access the questionnaire link only once to prevent answer falsification.

In the second part of the study, the students were asked to listen to a fragment of a lecture delivered by non-native English-speaking lecturers from China, Germany, and France (Appendix 1, Part 2). The respondents were instructed to fill in their answers after listening to the recording once. To prevent the participants from making unnecessary appearance-based judgements, the researchers removed the visuals and solely played an audio version of the fragment of each video. The main criteria for the choice of the video fragments were as follows:

- the lecture had to address a biology-related topic;
- the speaker had to come from a country which belongs to the Expanding Circle;
- the speaker's mother tongue was not English;
- the speaker was proficient in English;
- the speaker specialised in one of the branches of biology;
- the speaker belonged to the international academic community.

To ensure that the students' answers to both parts of the questionnaire were adequate, a separate fill-in-the-blank activity (Appendix 2) was designed, based on the script of each lecture fragment, and was aimed at checking their real understanding of its key topic points.

Results

Part 1 Descriptive Statistics (RQ1-RQ3)

To analyse the data, the participants' questionnaire responses were entered into JASP software¹. Responses for Questions 1 to 3 were treated as scale variables with possible integer values (1 to 7) corresponding to the questionnaire scale points. The descriptive statistics of the data gathered in the first part of the survey (N = 50) can be seen below in Table 1:

Table 1

Descriptive Statistics of the Gathered Data (Questions 1-5)

	RQ1	RQ2	RQ3		RQ1	RQ2	RQ3
Valid	50	50	50	Skewness	0.068	-0.055	-0.057
Missing	0	0	0	Std. Error	0.337	0.337	0.337
Mean	3.56	4.88	4.66	Kurtosis	-0.586	-0.501	-1.279
Median	3	5	4.5	Std. Error	0.662	0.662	0.662
Mode	3	5	6	Min	1	3	2
Std. Dev.	1.215	1.081	1.319	Max	6	7	7

¹ <https://jasp-stats.org/>

RQ1: When students listen to a lecture on biology in English delivered by a non-native speaker, is it important for them that the lecturer does not have a foreign accent? If so, how important?

For Question 1, the seven-point Likert scale ranging from “does not matter at all” to “fundamentally important” received the following responses. Most students stated that they found the foreign accent of a non-native English-speaking lecturer “somewhat unimportant” (n=20), followed by “somewhat important” (n=12), “neutral” (n=8), “not important” (n=6), “does not matter at all” (n=2), “really important” (n=2) and “fundamentally important” (n=0). Based on this descriptive data, approximately 56% of the participants in this study regard the presence of the foreign accent in the speech of a non-native lecturer in their professional field tolerantly. It can be hypothesized that the students are paying more attention to what the speaker is saying rather than how much in common their speech has with the pronunciation patterns of a native speaker of the English language.

RQ2: Does the presence of the lecturer’s foreign accent prevent the students from concentrating on the content of the lecture? If so, to what extent?

For Question 2, most participants stated that a foreign accent of a non-native lecturer “mostly does not interfere” (n=19) with their ability to concentrate on the lecture content, this answer was followed by “somewhat interferes” (n=11), “hardly interferes” (n=11), “moderately interferes” (n=6), and “does not interfere at all” (n=3). Generally, it can be concluded that approximately 66% of the participants in this study could concentrate on the lecture even if the speech of a non-native lecturer was characterized by the presence of a foreign accent. Such student experience does not seem surprising: nowadays, when English is being widely used as a lingua franca, it is hard to imagine a university lecturer who would be unintelligible to the point that it would seriously impede students’ concentration. Moreover, considering the extensive amount of non-native English input that students presumably receive in and out of the university due to open social media and other Internet resources, an even higher percentage of students reporting unaffected concentration would be anticipated.

RQ3: To what extent can students agree with the statement that non-native lecturers in their professional field should strive to reduce their foreign accent?

In the final question of the first part of the survey most students stated that they agreed with the given statement for the most part: although 17 participants “totally agreed” with it, these students did not consider it “crucial” for a lecturer to achieve native-like proficiency when it came to their pronunciation. Other students shared that they either “rather agreed, than disagreed” (n=13), or “rather disagreed, than agreed” (n=11); some respondents “partially agreed” (n=6) with the statement or considered it crucial and “absolutely agreed” (n=2). Only one respondent “disagreed” (n=1). Overall, 76% of the participants in this study were in favour of non-native speaking lecturers involved in English-medium instruction at the university level reducing their foreign accents. These results appear slightly contradictory to students’ responses in RQ1 and RQ2 and can be interpreted as a reflection of native speaker bias, as regardless of the reported satisfactory lecturers’ speech comprehensibility and intelligibility, the students expect their professors to match the native-speaker standard. This situation has been previously reported in higher education in other national contexts (e.g., the Netherlands) (Hendriks et al., 2018).

Part 2 Descriptive Statistics (RQ4-RQ9)

Responses for Questions 4 to 9 also were treated as scale variables with possible integer values (1 to 7) corresponding to the questionnaire scale points. The descriptive statistics of the data gathered in the second part of the survey (N = 50) can be seen below in table 2.

Table 2

Descriptive Statistics of the Gathered Data (Questions 4-9)

Descriptive statistics (3)						
	RQ4	RQ5	RQ6	RQ7	RQ8	RQ9
Valid	50	50	50	50	50	50
Mean	5.820	5.680	4.980	5.160	3.980	3.940
Median	6	6	5	5	4	4
Mode	6	6	5	5	4	4
Std. Dev	0.873	1.077	1.270	1.251	1.332	1.376
Descriptive statistics (4)						
	RQ4	RQ5	RQ6	RQ7	RQ8	RQ9
Skewness	-0.400	-0.642	-0.709	-0.445	0.415	0.161
Std. Error of Skewness	0.337	0.337	0.337	0.337	0.337	0.337
Kurtosis	-0.392	-0.074	1.081	-0.290	-0.334	-0.340
Std. Error of Kurtosis	0.662	0.662	0.662	0.662	0.662	0.662
Minimum	4	3	1	2	2	1
Maximum	7	7	7	7	7	7

RQ4 – RQ6: How easy was it for the students to understand the content of a fragment of a lecture delivered in English by a professor from China (RQ4), Germany (RQ5) and France (RQ6)?

In Question 4, most students stated that they found understanding the content of the lecture fragment delivered by the Chinese lecturer “easy” (n=23), this answer was followed by “mostly easy” (n=12), and “very easy” (n=11). There were no instances of a student who would find the content of the lecture fragment somewhat difficult to comprehend.

Answering **RQ5**, 90% of the participants stated they were quite comfortable when listening to a lecture delivered by a German professor regardless of their foreign accent. However, the French speaker (**RQ6**) in English seemed to be more challenging to understand for the participants in this study, because more than a third (36%) of them reported difficulty in understanding.

Another set of questions tapped into the students' ability to concentrate on the content of the lecture regardless of the lecturer's non-native accent (**RQ7 – RQ9**). The results are demonstrated in table 3.

For Question 7, most participants stated that the foreign accent of the Chinese lecturer “hardly interferes” (n=19) with concentrating on and comprehending the content of the lecture fragment, followed by “mostly does not interfere” (n=12), “does not interfere at all” (n=12), “somewhat interferes” (n=5), and “moderately interferes” (n=2). Generally, it can be concluded that the vast majority of the participants in this study (86%) had no trouble understanding the lecture delivered by a Chinese professor from their professional field.

As for the German lecturer, most participants stated that his foreign accent “mostly does not interfere” (n=16) with concentrating on the lecture content. Other students shared that the German accent in English “hardly interferes” (n=14) with it, this point was followed by “does not interfere at all” (n=7), “somewhat interferes” (n=7), “moderately interferes” (n=5) and “interferes very much” (n=1).

As for the French professor, most participants stated that his foreign accent “somewhat interferes” with their ability to concentrate on the lecture content. Other students shared that the French accent in English “mostly does not interfere” (n=11), “moderately interferes” (n=11), “very much interferes” (n=7), “hardly interferes” (n=4), “does not interfere at all” (n=2), and “completely impedes concentration” (n=1). See table 3. Generally, it can be concluded that only 34% of the participants in this study did not experience much difficulty concentrating on the content of the lecture delivered by the French professor.

Table 3
Students' Responses to Questions 7-9

RQ	Completely impedes concentration	Interferes very much	Moderately interferes	Somewhat interferes	Mostly does not interfere	Hardly interferes	Does not interfere at all
RQ7 (Chinese)	0	0	2	5	12	19	12
RQ8 (German)	0	1	5	7	16	14	7
RQ9 (French)	1	7	11	14	11	4	2

Part 3 Additional Tests

Another goal was to reveal if there was any correlation between students' attitudes to the importance of the absence of accent in their non-native lecturer's speech and its link to students' self-reported concentration and comprehension abilities. Spearman's correlation coefficient statistics indicated the following (see table 4):

Table 4
Spearman Correlation Coefficient

Variables		Spearman's rho	p	Lower 95% CI	Upper 95% CI
RQ1	RQ2	-0.341	0.016	-0.565	-0.069

The results indicate that there is a statistically significant moderate negative correlation between variables, that is, the more important the absence of accent, the more the foreign accent of the non-native lecturer speaking English impedes concentration on and understanding of the lecture content, as reported by the students. These findings might suggest that if a participant sees the lecturer's foreign accent as an issue, it prevents that individual from making a special effort to become accustomed to the phonological peculiarities of the lecturer's speech in an effort to make sense of the lecture content, which explains the self-reported absence of understanding.

Discussion, Limitations and Recommendations for Further Research

In Part 1 of this study, most participants reported that they wanted the non-native biology lecturers to strive to reduce their foreign accents (RQ3). Combined with the results of RQ1 and RQ2, this finding seems slightly contradictory. Most students report their tolerance in RQ1 by stating that having or not having an accent is generally not crucially important for a biology lecturer, as well as admitting that it does not typically impede concentration on the lecture content (RQ2). However, most respondents still believe that non-native lecturers should try to reduce their accent, which probably reflects the native-speaker bias persistent in their minds, as has been previously reported by other researchers in the field (e.g., Kelch & Santana-Williamson, 2002).

In Part 2, the students' reported ease of comprehension of accented speech varied according to the lecturers' L1 accent, and the Chinese lecturer was judged as the most comprehensible. The French lecturer was reported as the least comprehensible, with his accent affecting the students' ability to concentrate on and understand the content of lecture. However, generally, most students still stated that the effect that the non-native accent had on their concentration in the lecture was minimal, except for the French lecturer. The significance of the research also lies in the finding that the more important the absence of accent was to a particular student, the more difficult it was for that student to comprehend the content of the lecture and to concentrate on it. From previous research it is known that speech can be accented but still perfectly comprehensible (Kang et al., 2010). Therefore, the current findings might suggest that if a participant views the lecturer's foreign accent as an issue, it prevents them from making a special effort to become accustomed to the phonological peculiarities of the lecturer's speech in order to make sense of the lecture content. This would explain the self-reported absence of understanding. The ability to concentrate and comprehend therefore seems to be subjective. Clearly, self-reported measures are not fully reliable when it comes to comprehension as they only portray the students' individual viewpoints. More studies are warranted to compare the students' reported comprehension of non-native lecturers' accented speech with their actual quantitative comprehension scores on the same task. It seems that, considering the data gathered in Part 1, it could be expected that the students' actual comprehension will be better than what they report due to the presence of the native-speaker bias.

However, some limitations should be noted, namely, there is no indication of whether any of the participants in this study (1) are simultaneous bilinguals, (2) have extensive experience in third language acquisition of Chinese, German, or French, or (3) have completed their bachelor's degree in the same professional field as their master's. Future research could exclude from the sample those respondents who come from other professional backgrounds, primarily focusing on the students who have successfully completed their bachelor's studies with the major in natural (biological in particular) sciences and have been attending a compulsory English for Special Purposes class for at least 3 academic years while not being simultaneous bilinguals.

Conclusion

Overall, this study demonstrated that a majority of study participants regard the presence of the foreign accent in speech of a non-native lecturer in their professional field tolerantly. This neutral attitude points to the students' probable readiness to comprehend non-standard English as a medium of instruction from non-native representatives of the international natural sciences academic community. However, the presence of native-speaker bias even in non-linguistic academic environments was also noted. It is hoped that with the continuous future spread of English as a lingua franca the native-speaker ideology will give way to an enhanced acceptance of academic professionals from a variety of L1 backgrounds in the eyes of university students so that greater learning may be the result.

This study and similar studies in other national contexts might prompt other universities dealing with the same issue to start actively promoting intelligibility-based pronunciation instruction instead of following a native-speaker model. If intelligibility were to actually become the main criteria for assessing spoken language of a non-native speaker in an academic environment, NNS lecturers and students would be more likely to participate in conferences and other international events in academia without the fear of being misjudged for failing to sound like a native speaker.

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Appendix 1 Part 1

- 1. When you listen to a lecture on biology in English delivered by a non-native speaker, is it important for you that the lecturer does not have a foreign accent? If so, how important?**

1	2	3	4	5	6	7
Does not matter at all	Not important	Somewhat unimportant	Neutral	Somewhat important	Really important	Fundamentally important

- 2. Does the presence of the lecturer's foreign accent prevent you from concentrating on the content of the lecture? If so, to what extent?**

1	2	3	4	5	6	7
Completely impedes concentration	Interferes very much	Moderately interferes	Somewhat interferes	Mostly does not interfere	Hardly interferes	Does not interfere at all

- 3. To what extent can you agree with the statement that non-native lecturers in their professional field should strive to reduce their foreign accent?**

1	2	3	4	5	6	7
Strongly disagree	Disagree	Rather disagree that agree	Rather agree than disagree	Partially agree	Totally agree, but it is not crucial	Absolutely agree, it is crucial

Appendix 1 Part 2

- 4. How easy was it for you to understand the content of a fragment of a lecture delivered in English by a professor from China?**

1	2	3	4	5	6	7
Extremely hard	Very hard	Somewhat hard	Somewhat easy	Mostly easy	Easy	Very easy

- 5. How easy was it for you to understand the content of a fragment of a lecture delivered in English by a professor from Germany?**

1	2	3	4	5	6	7
Extremely hard	Very hard	Somewhat hard	Somewhat easy	Mostly easy	Easy	Very easy

- 6. How easy was it for you to understand the content of a fragment of a lecture delivered in English by a professor from France?**

1	2	3	4	5	6	7
Extremely hard	Very hard	Somewhat hard	Somewhat easy	Mostly easy	Easy	Very easy

7. When you listened to a fragment of a lecture delivered by a lecturer from China, did the lecturer's foreign accent prevent you from concentrating on the content of the lecture?

1	2	3	4	5	6	7
Completely impedes concentration	Interferes very much	Moderately interferes	Somewhat interferes	Mostly does not interfere	Hardly interferes	Does not interfere at all

8. When you listened to a fragment of a lecture delivered by a lecturer from Germany, did the lecturer's foreign accent prevent you from concentrating on the content of the lecture?

1	2	3	4	5	6	7
Completely impedes concentration	Interferes very much	Moderately interferes	Somewhat interferes	Mostly does not interfere	Hardly interferes	Does not interfere at all

9. When you listened to a fragment of a lecture delivered by a lecturer from France, did the lecturer's foreign accent prevent you from concentrating on the content of the lecture?

1	2	3	4	5	6	7
Completely impedes concentration	Interferes very much	Moderately interferes	Somewhat interferes	Mostly does not interfere	Hardly interferes	Does not interfere at all

Appendix 2

Audio segment from video 1. Chinese lecturer. Central nervous system and blood brain barrier

Listen to the speaker and fill in the gaps in the text with the words given below. There are some extra words which you do not need to use.

•*drain them* •*spinal cord* •*diencephalon* •*lymph drain bearer* •*brain stem* •*die encephalon*
•*telencephalon* •*blood-brain barrier* •*cerebellum* •*gore-tex* •*vellum* •*spiral core* •*cortex*

There're four parts, four big parts of our brain. One is telencephalon here, the biggest part of our brain including cortex. Diencephalon here, the middle part, the inside part of our brain. Cerebellum, this part here and brain stem. Brain stem connects our brain with the spinal cord. Before we get into the four major parts of our brain, let's look at the blood-brain barrier.

There're four parts, four big parts of our brain. One is _____ here, the biggest part of our brain including _____. _____ here, the middle part, the inside part of our brain. _____, this part here and brain stem. _____ connects our brain with the _____. Before we get into the four major parts of our brain, let's look at the _____.

<https://www.coursera.org/learn/advanced-neurobiology1/lecture/jLUk8/1-1-2-central-nervous-system-and-blood-brain-barrier>

Audio segment from video 2. German lecturer. Folic Acid: Preparing for Pregnancy

Listen to the speaker and fill in the gaps in the text with the words given below. There are some extra words which you do not need to use.

•fall eight •methylate DNA •petal wealth •folate supply •contraception •bear out
 •B vitamins •maternal •be vitamins •penetrate RNA •vitamin B9 •nocturnal
 •phosphate supply •vital benign •fetal health •folates •preconception period

There are specific nutritional aspects in the preconception period which are of importance for both maternal and fetal health. In particular, folate supply is essential to support healthy fetal development. Folates comprise a group of substances that belong to the B vitamins. Folate is also known as vitamin B9. It is essential for numerous body functions. The human body, for example needs folate to synthesise, repair and methylate DNA.

There are specific nutritional aspects in the _____ which are of importance for both _____ and _____. In particular, _____ is essential to support healthy fetal development. _____ comprise a group of substances that belong to the _____. Folate is also known as _____. It is essential for numerous body functions. The human body, for example needs folate to synthesise, repair and _____.

<https://www.coursera.org/learn/nutrition-pregnancy/lecture/CJs4d/folic-acid-preparing-for-pregnancy>

Audio segment from video 3. French lecturer. Treating oxidative stress as a way of dealing with the African AIDS epidemic

Listen to the speaker and fill in the gaps in the text with the words given below. There are some extra words which you do not need to use.

•c'est la vie •nutrition •hatred of the prius •ox sedative press
 •chronically infected •equilibrated •HIV •trance mission •tonically inspected
 •oxidative stress •maltuition •transmission •get rid of the virus

The scientist is answering to the question: “Is treating oxidative stress one of the best ways to deal with the African AIDS epidemics?”

I think this is one way to approach, to decrease the rate of transmission, because, I believe, HIV, we can be exposed to HIV many times without being chronically infected, our immune system will get rid of the virus within the few weeks if you have a good immune system, and this is also the problem of African people. Their nutrition is not very equilibrated, they are in oxidative stress, even if they are not infected with HIV, so their immune system doesn't work well already. I think this is one way to approach, to decrease the rate of _____, because, I believe, _____, we can be exposed to HIV many times without being _____, our immune system will _____ within the few weeks if you have a good immune system, and this is also the problem of African people. Their _____ is not very _____, they are in _____, even if they are not infected with HIV, so their immune system doesn't work well already.

https://www.youtube.com/watch?v=JrzV_xnhlGY