



The effect of muscular activity during speaking certain dialects of english on the development of facial muscles.

Особенности активности мышц лица при использовании различных диалектов английского языка.

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Purpose:

The purpose of this research project is to compare the various muscular activity between different dialects of english, and how it is portrayed on the development of facial muscles and structures.

Целью данной научной работы является сравнение мышечной активности между различными диалектами английского языка и того, как она отображается на развитие мышц лица.

Introduction

The English language differs in various places in the world: the United States, England, Ireland, Australia, and in other English speaking countries like India. Even when Americans smile, they are said to activate zygomaticus muscles, pulling the top lip upwards, more so than other nationalities, like Brits who activate the risorius muscle, pulling their lower lip sideways.

Smiling and frowning aside, we can delve into the mere verbal communication of these dialects to explore the following: (a) how an accent, is, in fact, a trained muscular “setting”, and not just a learned mental habit, (b) the muscular activity of specific dialects, and (c) how someone’s appearance may vary due to their spoken language.

(Перевод: Введение)

Английский язык отличается в разных местах мира: в Соединённых Штатах Америки, Англии, Ирландии, Австралии и в других англоязычных странах, таких как Индия. Мы можем наблюдать, что когда американцы улыбаются, они активируют скуловые мышцы, вытягивая верхнюю губу вверх, в большей степени, чем другие народы, такие как британцы, которые активируют мышцу смеха, вытягивая нижнюю губу вбок. Нам необходимо углубиться в простое словесное общение этих диалектов, чтобы исследовать следующее: (а) как акцент, на самом деле, является тренированной мышечной «настройкой», а не просто выученной умственной привычкой, (б) изучить мышечную активность в определенных диалектах, (в) как внешность человека может меняться в зависимости от его разговорного языка.

Materials and Methods

Используемые материалы и методы

The materials and methods being used are educational and scientific research and experiments to support our statements, asking ten subjects to speak american english, ten subjects to speak british english, and ten subjects to speak indian english, and comparing which muscles are the most active during speaking. Moreover, we will use videos of speakers of each country to also compare and contrast the different facial muscles being mostly active. These results will be used as personal evidence to our thesis.

Мы попросили десять человек которые говорят на американском английском, десять человек которые говорят на британском английском и десять человек которые говорят на индийском английском, сказать текст на английском, и снять на видео. Это будет пользоваться как сравнение наиболее активных мышц во время разговора.

Procedure

Different representatives of indian-english speaking, american-english speaking, and british-english speaking were asked to make a video reciting the following text:

Taking good care of your mouth, teeth and gums is a worthy goal in and of itself. Good oral and dental hygiene can help prevent tooth decay and gum disease—and can help you keep your teeth as you get older.

Researchers are also discovering new reasons to brush and floss. A healthy mouth may help you ward off medical disorders.

An unhealthy mouth, especially if you have gum disease, may increase your risk of serious health problems such as heart attack, stroke, and diabetes.

Video 1 & 2:

Indian english

Observations

We can see a strain of muscles that pull the corners of the mouth to the side and down more so than any other dialect of english. The sounds we hear originate more from the back of the throat, more so than any other dialect.

Key differences:

Voice box(larynx) :- in hindi vocal folds (chords) are held together so that they vibrate

- The movement of arytenoid cartilage
- Pulmonic egress :- (where air is exhaled from lungs)

State of the glottis :- the space between the vocal folds . Muscles inside the larynx make adjustments to the vocal folds in order to produce and modify vibration patterns for different sounds.

<https://www.dropbox.com/s/8fnohthe1w3sfw6/23aa1691-aa53-4c01-b0ee-0da3ba21a8e6.MP4?dl=0>

<https://www.dropbox.com/s/xjue27ikbtlnkob/778a646f-80f9-427e-a935-2b76aef6654d.MP4?dl=0>



Video 3: British English

<https://www.dropbox.com/s/ttj6yq5xy4fkv6p/Video%20May%2003%2C%202.mp4?dl=0>

Observations:

We can see that with a british accent, they use less overall muscle tension of the face, and that most of the movement is with the lower lip.



Video 4: American English

<https://www.dropbox.com/s/lgbt6all0mdwt5g/79e68872-b796-42aa-a233-c8c39c52c986.MP4?dl=0>



observations:

We can see that with American English, the speaker uses both the lower and upper lip almost with the same tension, and that the cheeks are being strained and lifted more so than any other dialect.

Hypothesis

Different dialects of english use different muscle strain, and therefore produce different accents.

Final notes: “Setting”.

The “setting” for an accent is the way that speakers typically hold the muscles in the tongue, face, throat and back of the mouth. The setting shapes the overall sound of the accent. You may have noticed that when an American speaks a foreign language, even if their pronunciation is pretty good, there’s usually still something American about how they sound. That characteristic sound comes primarily from the American accent setting.

What are the elements of accent setting? A lot of it is the position of the tongue: how far forward or back the tongue is, how high or low. The tongue feels slightly different for a different accent as well. English uses what is called a “tapered tongue”—the tip of the tongue is thin and light, and the weight of the tongue is shifted slightly back.

Tension of throat muscles:

Another aspect of accent setting is the tension in the muscles of the throat and the back of the mouth. We usually don't think about these muscles when we're speaking, but they have a powerful effect on the quality of the voice. Some languages sound as if the person is speaking from deep in the throat; others, as if the sound is coming through the nose. These characteristics are controlled by the way the speaker holds the muscles in the mouth and throat.

Conclusion:

As a result, we have found that mimic muscles used in American english, British english and Indian english differ in which exact mimic muscles, and to which level, are used during speaking. We used volunteers who read a 93 word paragraph and compared their facial movements to conclude that there is a difference in muscular activity of mimic muscles. The results show that American english speakers mostly use the buccal muscles, british use the muscles lowering the corners of the lower lip, and indians use the muscle lowing the corners of the lower lip, as well as very activated muscles of the larynx. Also, we found how, therefore, accents are just trained muscles working in a certain way to emit sounds, thus, some facial characteristics differ. For example, Americans have a certain setting that makes an american accent, as do british people, and Indians use their larynx more so, due to the fact that it's used in hindi. Furthermore, we explored the muscular activity and just which muscles make this difference in speech.

Final thoughts...

As a result of this project, I hypothesized that due to the different muscular settings and constant tension of these muscles during speaking, it can alter a person's facial characteristics, making someone look "American" or "British". I would like to further my study and continue to make discoveries in the future.

Thank you for your
attention!



Citations

Lametti, Daniel. “Can You Tell an Olympic Athlete's Nationality From Just a Smile?” Slate Magazine, 26 July 2012,

www.slate.com/articles/health_and_science/science/2012/07/olympic_smiles_how_to_identify_athletes_nationalities_based_on_their_facial_expressions.html?via=gdpr-consent.

Van Hook, Karen. “American Accent Setting: Foundation for an Excellent Accent.” News,

www.chosen-voice.com/news/news_article/american-accent-setting-foundation-for-an-excellent-accent.