Charles University
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BACHELOR THESIS

Production of alveolar flap by Czech high school students

Používání alveolárního švihu českými středoškolskými studenty

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I hereby declare that I have written this bachelor thesis titled "Production of alveolar flap by Czech high school students" by myself and that all the sources used during writing were properly cited. I further declare that this thesis was not used to obtain another academic title.

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ABSTRACT

This study investigates the prevalence of the alveolar flap, a key feature in the General American accent, among Czech high school students and explores factors possibly influencing its production. The theoretical part first introduces American English and its features. It then focuses on the voiceless alveolar plosive /t/ and its realizations, particularly the alveolar flap, before exploring accent attitudes and language exposure as a whole. In the practical part, 20 students from a high school in Prague were recorded reading a list of sentences, each containing a flappable /t/ sound in various positions. Afterward, each student was sent an online questionnaire on various factors that might influence their pronunciation. The findings revealed that students with teachers using the GA accent, students who are more exposed to English-language media and students who have a preference for American English in terms of accent produce the alveolar flap more frequently. Contrary to expectations, interaction with native speakers did not impact the flap rate.

KEYWORDS

alveolar flap, General American, pronunciation, Czech students

ABSTRAKT

Tato studie zkoumá výskyt alveolárního švihu, klíčového rysu obecné americké výslovnosti, mezi českými středoškolskými studenty a zkoumá faktory, které mohou ovlivňovat jeho produkci. Teoretická část nejprve představuje americkou angličtinu a její rysy. Dále se zaměřuje na neznělou alveolární plozivu /t/ a její realizace, zejména alveolární švih. Poté se věnuje postojům k přízvuku a kontaku s jazykem jako celku. V praktické části bylo nahráno 20 studentů z jedné střední školy v Praze při čtení seznamu vět, z nichž každá obsahovala zvuk /t/ v pozicích, kde bylo možné použít alveolární švih. Poté byl každému studentovi zaslán online dotazník týkající se různých faktorů, které by mohly ovlivnit jejich výslovnost. Výsledky ukázaly, že studenti, jejichž učitelé používají obecný americký přízvuk, studenti, kteří jsou více vystaveni médiím v anglickém jazyce a studenti, kteří preferují Americkou angličtinu z hlediska akcentu častěji produkují alveolární švih. Na rozdíl od očekávání neměla ale interakce s rodilými mluvčími na míru produkci švihu vliv.

KLÍČOVÁ SLOVA

alveolární švih, americký přízvuk, výslovnost, čeští studenti

Contents

Introduction

The alveolar flap, also known as the alveolar tap, is a sound found in many languages, including English. It is distinguished by a quick, striking movement of the tongue against the alveolar ridge. Most importantly for this study, it is also a fundamental feature of the General American accent.

After nearly three years of teaching Czech high school students, I have observed an interesting trend. While an overwhelming majority of my colleagues and most of my fellow future English teacher classmates favor the classic Southern Standard British dialect, this preference seems to be comparatively lower among students at my school and practically unnoticeable in their actual speech production. Being one of the two teachers at my school focusing on strictly using the General American accent when speaking, I wondered whether this preference of mine would indirectly influence my students to start employing aspects of GA themselves and perhaps even cause them to develop a noticeable preference toward American English. However, it is one thing to claim to prefer an accent and another to actually actively use it. Since it is beyond the scope of this study to examine the produced speech of a considerable number of students for all of the aspects and variations typically associated with the General American accent, we have decided to focus only on the alveolar flap, combining its phonological and phonetic features with the consequent sociophonetic features stemming from its use.

Expanding on the observation above, this thesis has several aims. The primary focus is to research the alveolar flap and its prevalence among Czech high school students. Additionally, this thesis will assess the impact of external influences, such as the teacher's accent, as well as students' own accent preferences on their pronunciation. Nevertheless, many students are undoubtedly exposed to English outside the classroom as well. Thus, it is crucial to investigate and account for factors like media consumption or interactions with both native and non-native speakers as well. American Hollywood actors, content creators, and social media influencers, the majority of whom *tap their Ts*, play a significant role in the lives of many Czech teenagers today. Therefore, this study will also explore to what extent the consumption of this type of media affects the students' actual production of the voiceless alveolar plosive.

The theoretical part begins with an overview of American English and its history, characteristics and influence. It then delves into the phonetic and phonological properties of the voiceless alveolar plosive /t/, its allophones and realizations across different English accents, with a particular emphasis on the alveolar flap. Following this, we then focus on language exposure and accent attitudes, both of which are critical components of our study.

The practical part will focus on the production of the alveolar flap by Czech high school students and the factors influencing its production. Specifically, it will examine whether students are more likely to produce the alveolar flap if their English teacher uses the General American accent, if they primarily interact with native American English speakers, if they are exposed to American media, and if they have a preference for American English. By analyzing these factors through recordings and questionnaires, the study aims to understand the impact of educational, social, and media influences on the phonetic choices of English language learners.

Theoretical part

1 American English

American English, a variant of the English language, has evolved significantly since its emergence in the early colonial period. Influenced by a myriad of factors including migration, cultural exchange, and technological advancements, it exhibits unique phonological, grammatical, and lexical characteristics distinct from other English dialects.

1.1 The history of American English

The origins of American English trace back to the early 1600s with the first successful colonies in the New World. Jamestown, established in 1607, and the Mayflower's arrival in Plymouth in 1620 marked the beginning of English settlement. These settlers, of which 90% came from the British Isles, continued to speak as they had in their homeland, resulting in English developing differently on each side of the Atlantic (Kovecses, 2000, p. 19).

Colonists in America incorporated words from many languages due to the diverse population in the colonies. The Dutch, French, Spanish, Native Americans, and Africans all contributed terms to American English. For example, Dutch words like *yacht* and *spook*, French words like *café* and *chowder*, Spanish words like *alligator*, and Native American words like *raccoon* and *squash* became part of the language. Africans introduced words such as *banjo*, *jazz and okay* (Hartsoe, 1994-95).

After American independence, there was a push to simplify and standardize American spelling, championed by Noah Webster. Webster's influence caused the dropping of the "u" from words like "honour" and simplified spellings like "public" instead of "publick." In 1806, Noah Webster published "A Compendious Dictionary of the English Language," the first true American dictionary. This milestone marked a significant achievement in American reference publishing. Webster then dedicated himself to creating "An American Dictionary of the English Language," published in 1828. To prepare, he supposedly learned 26 languages, including Anglo-Saxon and Sanskrit, to understand the origins of English. This dictionary, with 70,000 entries, was considered by many to surpass Samuel Johnson's 1755 British dictionary in both scope and authority. Webster's willingness to innovate was a key aspect of his influence, as he was the first to document distinctively American words like

"skunk," "hickory," and "chowder." He also advocated for simplified spelling, changing "musick" to "music," "centre" to "center," and "plough" to "plow." Some of his proposed changes, like "tongue" to "tung" and "women" to "wimmen," were less accepted, although he argued they more accurately reflected pronunciation (Merriam-Webster, n.d.). Overall, his efforts were key in helping shape the language's evolution and reflecting a growing cultural independence from Britain.

In recent years, American English has continued to evolve, influenced by various social, technological, and cultural factors. One significant development is the increasing prevalence of online communication, which has accelerated linguistic change and the spread of new slang and expressions. Social media platforms, in particular, have accelerated the rapid spread of the language (Crystal, B. & Crystal, D., 2014, p. 159).

1.2 American Culture

In the decades following World War II, American culture exerted strong influence on the rest of the world, mainly driven by strategic U.S. policies and the aggressive expansion of its media and entertainment industries. Despite the United States' promotion of international cooperation and the free flow of information, this often translated into a one-way path of cultural globalization, heavily favoring American content. The impact was evident in the global dominance of Hollywood films, with American movies making up around half of the European and Asian markets, 62 percent of the African market, 64 percent of the South American market, and three-quarters of the Central American and Pacific markets by 1949. Simultaneously, American news agencies like the Associated Press and United Press International expanded their reach dramatically, with the AP increasing its international sales from 38 countries in 1944 to 70 by 1952, thereby ensuring that a significant portion of global news was filtered through an American perspective (Fergie, 2022). Between 1996 and 2001, American films held a market share in the European Community ranging from 64% to 78%. (Paris, 2003). In 2019, the figure was 69% (Statista, n.d.).

1.3 General American accent and its aspects

Hughes et al. (2012) note the Received Pronunciation (RP) and General American (GA) as the most commonly considered options in terms of English varieties, with RP being the most common variety of British English used while GA is the most used variety of American English that "comprises that majority of American accents which do not show marked eastern or southern characteristics" (Wells, 1982, p. 470). In this thesis, unless citing research specific to RP, a more neutral term, Southern Standard British English (SSB), is going to be employed.

Most notable difference with General American accent lies in its rhoticity, which differentiates it from the other two most popular American accents, namely the Southern and Eastern accents. As to geography, eastern accents are spoken in Boston, eastern New England and New York City, while southern accents are spoken in the south of the USA.

Aside from the alveolar flap, we can find more notable vowel distinctions between GA and General British (GB). For example, the front open vowel /æ/, which makes words such as "pass" include the same quality as in the word "ban". Conversely, in GB pronunciation, these words feature an open back vowel of /ɑː/ (Crystal, B. & Crystal, D., 2014, p. 159).

Furthermore, GA lacks centring diphtongs, specifically /ɪə/, /ɛə/, /ɔə/, /ʊə/, which all glide towards the mid-central schwa and only appear in GB. In GA, an r-colored vowel is pronounced instead.

Moreover, another significant vowel distinction between GA and GB is the pronunciation of the vowel in words like "dog" and "fog" In GA, these words are typically pronounced with the /ɑː/ vowel, which is more open and back. In contrast, GB often uses a shorter, more rounded vowel, /ɒ/, making the distinction between these sounds more pronounced (Wells, 1982, p. 124).

Another significant feature is the realization of /l/. British speakers, for example, tend to produce a clearer [l] before vowels and a dark [ɬ] in all other positions. On the contrary, in GA, /l/ is much more velarized and tends to be realized as dark [ɬ] in every position of the word (Gimson, 1980; Wells, 1982).

2 The voiceless alveolar plosive

Before we focus on the detailed description of the target sound, the alveolar flap, the following chapter will address the voiceless alveolar plosive /t/. This sound is particularly interesting due to its variability and how differently it is realized across various accents, and understanding its manner of articulation and place of production provides essential context for our study.

2.1 Phonetic description of the voiceless alveolar plosive

From the phonetic perspective, the /t/ sound is classified as voiceless because the vocal cords remain apart and do not vibrate during the articulation of the sound. This contrasts with its voiced counterpart, /d/, where the vocal cords do vibrate.

The production of /t/ is generally split into three distinct phases shared by all English plosives (Ogden, 2017, p. 96). During the first phase, called the closing phase, two articulators, the tongue and the alveolar ridge, come together to create a closure, trapping the air behind it for a few milliseconds. This movement changes the vocal tract's shape, altering its resonances and making the closure's formation audible. What follows is the holding phase, sometimes called the compression phase (Roach, 2009, p. 26), during which the vocal tract is completely closed, and the velum is raised. The lungs continue to force the air out, building pressure behind the closure. This phase's duration varies, averaging around 50ms in connected speech. The release phase involves the separation of the articulators, releasing the trapped air and creating a burst of noise. Roach (2009, p. 26) identifies a possible fourth phase in producing this sound, called the post-release phase, which occurs during aspiration. The necessary /t/ we require for the alveolar flap to occur is called the intervocalic unstressed /t/. As it is unstressed, the fourth phase described above does not occur (Ogden, 2017, p. 103).

2.2 Phonological description of the voiceless alveolar plosive

Phonologically speaking, we need to prove the distinctive function of the target sound. We use the method of minimal pairs—pairs of words where only one sound changes, and this change alters the meaning of the word. For instance, let us consider the pairs "bat" (/bæt/) vs. "pat" (/pæt/) and "bat" (/bæt/) vs. "bad" (/bæd/). In the first pair, substituting /b/ with /p/

changes the meaning of the word, indicating that /b/ and /p/ are distinct phonemes. In the second pair, changing the final consonant from /t/ to /d/ also changes the meaning of the item, demonstrating that /t/ and /d/ are distinct phonemes.

The phoneme /t/ represents a common consonant in many languages, appearing in diverse linguistic contexts. In English, /t/ can appear in all major positions within a word: initial, such as in the *top* [tɑp], medial, such as in *butter* [ˈbʌtər], and final, such as in *cat* [kæt] (Ladefoged & Johnson, 2011, pp. 47, 57).

2.3 Alveolar flap

For many speakers, especially the Americans, the consonant between the vowels in words like *city*, *better*, and *writer,* which would originally be /t/, is actually a quick tap, where the tongue briefly touches the alveolar ridge. This sound is represented in the IPA with the symbol [ɾ], so "city" can be transcribed as [ˈsɪɾi]. Many Americans also use this flap sound when /d/ appears after a stressed vowel and before an unstressed vowel. Consequently, they do not differentiate between word pairs such as *latter and ladder* (Ladefoged & Johnson, 2011).

The alveolar flap is a key part of American English and is widely used by American speakers (Ladefoged & Johnson, 2011). Herd et al. (2010) examined how frequently American English speakers flap intervocalic post-stressed /t/ and /d/. Speakers flapped /d/ almost universally (99%) but flapped /t/ less often (76%). Female speakers flapped /t/ more frequently than male speakers.

The alveolar flap is mainly associated with and a key feature of North American English. However, it is also considered a stable part of English in Australia and New Zealand (Holmes, J. 1994). Furthermore, it can also be found in Hawaiian Creole as described by Sakoda and Siegel (2004). Hughes et al. (2013) report this feature in various British English dialects too, including those in Leicester, Hull, Liverpool, and Lancashire. Additionally, Gavaldà (2016) notes the occurrence of this feature in Standard Southern British English (SSB) as well (Skarnitzl & Rálišová, 2022, p. 2).

2.3.1 Terminological note regarding the alveolar flap

In *A Course in Phonetics* (2011), Peter Ladefoged chooses to distinguish between taps and flaps based on the direction the tongue moves in. According to him, in a tap, the tongue tip moves directly up to make contact with the roof of the mouth in the dental or alveolar region and then returns along the same path. In contrast, a flap involves the tongue tip curling up and back in a retroflex gesture before striking the roof of the mouth in the post-alveolar region as it moves forward to its position behind the lower front teeth. This difference in movement direction—back to front for flaps and up and down for taps—distinguishes the two. Flaps are typically retroflex but can also occur at other places of articulation, such as the alveolar ridge or teeth, making alveolar or dental flaps (p. 176).

"Taps occur as the regular pronunciation of /t, d, n/ in words such as *latter, ladder, tanner*. The flap occurs in words that have an r-colored vowel in the syllable. In words *dirty* and *sorting,* speakers who have the tongue bunched or retracted for the r-colored vowel will produce a flap as they move the tongue forward for the non-r-colored vowel" (Ladefoged, 2011, p. 176).

However, not every researcher shares the same sentiment regarding the distinction, and the terms alveolar taps and flaps are often used interchangeably (Skarnitzl & Rálišová, 2022, p. 2). The IPA Handbook, for example, makes no distinction between the two, and uses the symbol [ɾ] to represent both the alveolar tap and the alveolar flap.

Picard (1997, p. 3) concludes that even though tapping seems more fitting as an appropriate description of what is happening in the process of pronouncing the sound in English, he continues to refer to it as flapping in his text since “this still seems to be the more widely recognized appellation.” That is why we have decided to use the term *alveolar flap* in this study as well.

[t̬] is another notation that is sometimes used to indicate an alveolar flap, with the diacritic below the letter indicating voicing. In some phonetic descriptions, perhaps particularly those aimed at less technical audiences or in teaching contexts, this notation might be used to show that a normally voiceless /t/ is realized as a voiced flap by adding voicing. An example would be the same word *butter*, which might be notated as [ˈbʌt̬ɚ].

However, [ɾ] is the gold standard symbol used to represent the alveolar flap specifically according to IPA (International Phonetic Association, 1999).

2.3.2 Phonetic and phonological description of alveolar flap

Flaps and taps are consonants characterized by brief contacts between the tongue and the alveolar ridge. Unlike stop consonants, flaps do not involve a significant buildup of air pressure at the point of articulation, leading to minimal or no burst of sound when the closure is released (Zue & Laferriere, 1979).

The alveolar flaps tend to either occur in intervocalic environments, as in *better* [ˈbeɾɚ], in coda (syllable-final) prevocalic environments, as in *bottle* [ˈbɑɾəɬ] or word-finally and across word boundaries, e.g., in *get it* [ˈgeɾ ɪt]. It can also appear between a vowel and a syllabic lateral, as in battle [ˈbæɾɬ̩] (Wells, 1982).

Its place of articulation is usually alveolar, but it can sometimes be realized with a slightly more forward placement, making it dental or denti-alveolar, and it is apical, meaning it is pronounced with the tip of the tongue. The manner of articulation is a tap or flap, produced with a single contraction of the muscles, allowing the tongue to make very brief contact. Additionally, it is a voiced sound, indicating that the vocal cords vibrate during articulation. As an oral consonant, the sound allows air to escape only through the mouth. Furthermore, it is a central consonant, produced by directing the airstream along the center of the tongue rather than to the sides (Ladefoged, 1993).

Interestingly, there is no consensus on the length, with definitions varying widely in literature, such as it being 50ms, 10–40ms long, or half the duration of an average [t] (Charles-Luce, 1997; Malécot & Lloyd 1968). Tajima et al. (2015) notes that the usually associated closure duration of alveolar flaps is 20–40ms, with vocal folds vibrating throughout the whole closure, along with an absence of a release burst.

Acoustic research consistently shows that the closure duration of flapped /t/ is not a reliable cue for voicing. The significance of the preceding vowel duration as a cue for voicing remains debated. Earlier studies reported a 7–16ms difference, with vowels being longer before /d/ flaps, but Charles-Luce (1997) found that neither vowel duration nor word duration were significant independent cues (Herd et al., 2010).

2.3.3 Distinguishing between flapped /t/ and /d/

"In the past forty years, several acoustic and perceptual studies have been carried out in order to investigate whether /t/ and /d/ are neutralized when flapped; however, these studies fall short because no clear distinctions have been drawn between the acoustic nature of flaps and the acoustic nature of flapped tokens listeners perceive as /t/ or /d/." (Herd et al., 2010, 1.1)

Charles-Luce (1997) investigated how pragmatics and semantics influence the preservation of phonemic contrast. Pragmatics is the study of how context influences the interpretation of language, how speakers use language to achieve communicative goals and how listeners interpret language based on their understanding of the context and the speaker's intentions. (Yule, 1996). In the study by Charles-Luce (1997), what is specifically meant by pragmatics is how the presence or absence of a listener, as well as the biasing or neutral context of the passage, affect the way speakers produce and listeners perceive the phonemic contrast between /t/ and /d/ in flapped environments.

Charles-Luce (1997) have shown that the presence of a listener significantly influences speakers' articulation, a phenomenon known as listener accommodation. In the listener-present condition, speakers tend to adjust their speech to be more precise and clear, a process identified as audience design. This is further supported by other research. (Bell, 1984).

This adjustment often involves the exaggeration of phonemic distinctions, such as the voicing contrast between /t/ and /d/, to enhance listener comprehension. Conversely, in the listener-absent condition, speakers feel less compelled to maintain precise articulation, leading to a reduction in the distinctiveness of /t/ and /d/. This relaxed articulation often results in neutralization, where the phonemic contrast between /t/ and /d/ diminishes and the sounds may merge into a single pronunciation, such as an alveolar flap [ɾ] (Labov, 1972). Thus, the presence or absence of a listener plays a crucial role in shaping phonemic articulation in spoken language.

Sharf (1960) was one of the first to examine the perceived occurrence of the alveolar flap, with the study involving 12 native American English speakers listening to recordings of a male and a female speaker pronouncing words with /t/ and /d/ in flapping contexts.

Participants were tasked with selecting the word they heard from a list of minimal pair counterparts, such as *catty* and *caddy*. The study found that listeners correctly identified the female speaker's productions 86.5% of the time, while the male speaker's productions were accurately identified 64% of the time. However, Sharf noted that the female speaker "used a [t] sound" rather than a flap, which would explain the difference in accuracy levels (p. 107). Malécot and Lloyd (1968) administered a similar test, but this time, the listeners performed much worse with 56.6% of tokens guessed correctly, which is near chance level, indicating that listeners are unable to reliably differentiate between flapped /t/ and flapped /d/.

Heffner (1940) and Chen (1970) investigated monosyllabic words with final voiced and voiceless consonants and found that vowels preceding voiced consonants were notably longer, while voiceless consonants had greater durations. This suggested that vowel and consonant duration differences might help differentiate flapped /t/ and /d/ in disyllabic words, thus preventing complete neutralization.

However, more recent findings of Herd et al. (2010) seem to disagree. Contrary to the expectation that vowel duration would serve as a significant cue for distinguishing between flapped /t/ and /d/ during perceptual experiments, listeners' accuracy rate was again around 50%. Interestingly, they seemed to predominantly rely on a d-bias, whereby flapped /d/ was more frequently perceived correctly than flapped /t/. Additionally, word frequency played a crucial role, with high-frequency words being identified accurately more often than low-frequency words.

2.3.4 Alveolar flap usage among non-native speakers

Kitahara et al. (2014) noted that alveolar flaps have seldom been studied in non-native learners because they are not contrastive, but being able to produce them could benefit learners, particularly if they aim to sound more native-like.

Indeed, research on second-language (L2) speech learning typically emphasizes the production and perception of sounds that differentiate words in the L2. There is significantly less focus on sounds that do not create lexical contrasts. Nevertheless, the ability to produce and perceive these non-contrastive sounds may be crucial for L2 learners if they wish to attain native-like proficiency (Tajima et al., 2015, p. 1).

Alveolar flaps are generally understood to be learned behaviors. Song et al., (2015) researched the development of different phonetic variations of alveolar phonemes in the speech of 2-year-old children. The main question was whether children initially produce a canonical form of a phoneme, such as /t/ with a clear closure and release burst, and later learn its other variations, or if they start by using the appropriate variants in the right contexts and then understand they are allophones of the same phoneme. Findings indicated that 2-year-olds produced these variants significantly less frequently than their mothers, often using the canonical forms instead. That suggests that young children initially produce fully articulated canonical phonemes in situations where adults would use non-canonical forms, then switch to using non-canonical, in this case the alveolar flap, once they grow older, likely due to outside influence. Kitahara et al. (2014) investigated the flap rates of native Japanese speakers and found that while most native Japanese speakers do not usually produce the alveolar flap, those who have spent some time living in North America are more likely to do so. An older analysis by Minematsu et al. (2002) seems to confirm the first fact. Their analysis of the English Read by Japanese (ERJ) corpus, which includes recordings of 202 Japanese students from 20 universities across Japan reading lists of English words and sentences, showed that these speakers produced virtually no alveolar flaps, indicating that Japanese university students generally do not produce them.

Tajima et al. revisited the the topic in 2015, this time much more thoroughly. When the flap rate was determined by dividing the number of tokens identified by the labellers as a flap or weak flap by the total number of tokens produced, it was found that Japanese English (JE) speakers produced alveolar flaps in 37.6% of the tokens. This rate varied significantly among speakers, ranging from 1.6% to 78.1%. (Tajima et al., 2015, p. 4)

The results also showed that Japanese English speakers produced alveolar flaps in "easy" phrases such as "get on" as frequently as they did within single words such as "letter." This indicates that producing alveolar flaps across word boundaries is not necessarily more difficult than producing them within words. However, JE speakers produced alveolar flaps less often in "hard" phrases like "get her," likely due to the additional phonological process of consonant reduction or deletion. Some JE speakers, especially those with high overall flap rates, even overgeneralized and produced alveolar flaps in words where AE speakers

typically do not, such as "thirteen." Furthermore, Tajima et. al. found that the age of first arrival in the US, duration of stay, and TOEFL iBT score were all moderately correlated with flap rate (Tajima et al., 2015, p. 5).

2.4 The glottal stop

The glotal stop, also referred to as *glottal replacement* or *glottaling,* is an allophonic variant that occurs when the /t/ sound is entirely substituted with a glottal stop [ʔ]. This means that an obstruction to the airstream is formed by the closure of the vocal cords, resulting in an interruption of the passage of air into the supraglottal organs. That air pressure below the glottis is then released by rapid separation of the vocal cords (Cruttenden, 2014, pp. 182-183).

As Trudgill noted, (1999, p. 136), T-glottalling is "one of the most dramatic, widespread and rapid changes to have occurred in British English in recent times". The glottal stop was viewed as a feature of working-class London speech in the previous century, specifically associated with the 'Cockney' accent, and was not characteristic of most RP speakers. It was often stigmatized to different extents and typically avoided. However, according to Fabricius (2002), glottalling was in the process of losing its stigma, and the receding of stigmatization is also mentioned by Hughes et al. (Hughes et al., 2013, p. 67). Today, while still considered a regional feature in certain contexts, the glottal stop has become a fully accepted feature in specific phonetic contexts and is commonly used by speakers of Standard Southern British English (SSB) (Lindsey, 2019, p. 67).

2.5 Other realizations of /t/ across accents

The voiceless plosive /t/ is a consonant whose pronunciation varies significantly across different English accents and might even be the consonant whose realization forms vary the most across the English-speaking world (Skarnitzl & Rálišová, 2022, p. 2). Some of these variations are common in many accents, such as the alveolar flap, while others, such as the ejective stop, are less frequent. It should be noted that all of these variations occur in citation speech and are not simply the result of failing to “hit the target” when speaking quickly (Ladefoged & Johnson, 2011, p. 61).

Firstly, we will explore aspiration because /t/, together with two other voiceless plosives /p/ and /k/, can be strongly aspirated, typically occurring when /t/ is at the beginning of a syllable, as in "table" [tʰeɪbl̩]. Strong aspiration is integral to dialects such as Irish English (Cruttenden, 2014, p. 164), but appears in a moderate manner in both SSB and GA. Additionally, when t is preceded by /s/, as in /st/, t is unaspirated and can sound like devoiced /d/ (Roach, 2009, p. 28). The following three allophonic variations affect the last stage in the production of plosives: inaudible, nasal and lateral releases. Inaudible release, indicated as [t̚], occurs when the stage of closure is being maintained, causing the air compression to weaken, resulting in an inaudible release since it lacks an audible burst. It is common at the end of words, such as *cat* [kæt̚], and is considered a feature of GB English (Cruttenden, 2014, p. 169). Nasal release, shown as [tⁿ], occurs when /t/ is released through the nose, typically before a nasal consonant, like in *button* [ˈbʌtⁿn]. It can often also occur between words, for example *cat nap* [kætⁿ næp]. Another variation, commonly found in Scottish English, would be the lateral release, noted as [tˡ], which happens when /t/ is released by lowering the sides of the tongue, often before a lateral consonant, as in *little* [ˈlɪtˡl] (Cruttenden, 2014, p. 171).

Examples of other, arguably less notable forms of realization include a process called approximation, in which /t/ is realized as the alveolar approximant [ɹ]. However, Skarnitzl & Rálišová (2022, p. 3) note that the range of words it applies to is quite limited, giving an example of *get off* [gɛˈɹɒf] or matter [ˈmæɹə] (Bocková, 2022, p. 34).

Another example is frication, sometimes called the *slit t*, or a voiceless apico-alveolar fricative. It is an allophonic variation where the /t/ is pronounced with a narrow constriction of the tongue against the alveolar ridge. This produces a sound that resembles a voiceless dental fricative [θ] or an affricate. This pronunciation is particularly associated with some forms of British English, notably in certain London accents and other southeastern English accents. It can also be found in some urban American English dialects. In practical terms, words like *butter*, which would typically be transcribed as [ˈbʌtər] in standard pronunciation, might be pronounced as [ˈbʌθər] or [ˈbʌt͡sər], where the /t/ is articulated with a fricative quality. “Slit t” also has a voiced variant, that is, a voiced apico-alveolar fricative (Skarnitzl & Rálišová, 2022, p. 12).

3 Language exposure and accent attitudes

With accent preferences, accent motivation, and language exposure being important parts of our study's questionnaire, and the alveolar flap being a key part of the General American accent, the following section will be dedicated to investigating the importance of students pursuing native-like accents.

3.1 The pursuit of nativeness

The question of whether students should pursue mainly intelligibility or native-like pronunciation has been widely researched. In 2005, Levis identified them as two opposing principles; the Intelligibility Principle emphasizes clear and effective communication, prioritizing the ability of language learners to be understood by others without requiring native-like pronunciation. In contrast, the Nativeness Principle aims for learners to achieve pronunciation that closely mimics that of native speakers, focusing mainly on authenticity. Levis (2020) argues that English learners do not need to be like native speakers and considers attaining native-like pronunciation as not only unnecessary but quite unlikely as well. Derwing and Munro (2015) agree that variations in accent are normal and do not obstruct communication, and that native-like pronunciation can even be counterproductive in contexts where interactions with native speakers are minimal. Today, the nativeness principle's popularity and influence among have rapidly diminished among researchers, while the intelligibility principle has become much more common and accepted (Ketabi & Saeb, 2015, p.184–185).

However, this attitude is not necessarily always reflected by students. Scales et al. (2006) found that learners often set native-like pronunciation as a personal goal, viewing it as a benchmark of proficiency. These desires are linked to the perceived social and professional advantages of speaking with a native-like accent. Nowacka (2012) conducted a survey among international university students from Italy, Spain, and Poland, finding that 89% of them stated that learners should aim for a native-like accent. Further research from Poland seems to indicate the same phenomenon: learners generally prefer and aspire toward native accents (Szpyra-Kozłowska, 2015; Waniek-Klimczak et al., 2015). Czech learners do not seem to be an exception, with Skarnitzl and Brabcová (2018) finding that 70% of young Czech learners would like to acquire a native-like accent as well.

3.2 Language exposure

Exposure to the target language can have a variety of meanings, ranging from "living and working in the country where the language is spoken to simply listening to native speakers on the radio" (Richter, 2019, p. 104).

The environment plays a crucial role in language exposure, as it provides learners with extensive exposure to the target language. According to Krashen's (1982) research, acquiring a new language primarily occurs through exposure to ample comprehensible input. This input consists of any form of the second language (L2) that learners encounter and understand. If valid, exposure to the target language is a factor that will critically determine learners' success. Richter (2019, pp. 42, 83) defines success in pronunciation, which she refers to as *pronunciation mastery*, as the ability to reduce deviation from the generally accepted norms of the target language, with the key to that being increased exposure to the target language, alongside other factors, such as motivation, reduced anxiety, and even musical ability.

Language exposure varies significantly between English as a Foreign Language (EFL) and English as a Second Language (ESL) contexts, since in EFL settings, opportunities to use the target language are mostly limited to the classroom. Learners have fewer chances to encounter L2 in daily life, unlike in ESL environments where the language surrounds them. Thus, teachers in EFL contexts must provide more real-life interactions in class and encourage students to use resources like the Internet, school projects, or trips abroad (Červinková Poesová & Uličná, 2019, p. 2.5).

Despite the limited classroom exposure in EFL contexts, young people today are increasingly exposed to English through media from a very young age. Age plays a significant role in second language (L2) pronunciation acquisition, and this relationship is well-documented in the field of linguistics (Richter, 2019). Eyckmans (2017) conducted a study on thirty 11-year-old Flemish children who had not yet received formal English education. The evaluation involved tasks measuring their speaking, reading, writing and listening abilities. The findings indicated that a considerable number of these children were capable of performing at the A2 level of the Common European Framework of Reference for Languages (Council of Europe, 2001) despite their lack of formal instruction in English.

The children supposedly acquired English mainly through various media exposures, particularly through gaming and computer usage. Additionally, the study highlighted a notably positive attitude towards English among the children and revealed that, in certain contexts, they preferred using English over their native language when interacting with their peers.

Furthermore, Webb (2010) analyzed the scripts of 143 films to determine learners' exposure to low-frequency words through watching movies. The findings indicated that consistent movie-watching over an extended period can lead to substantial incidental learning of English vocabulary.

3.3 Student accent attitudes

In studies of native accents, the focus has largely been on the preferences for the General American Accent (GA) versus the General British Accent (GB) and how GA and GB are perceived. Attitudes are generally analyzed based on two evaluative aspects: status, like being seen as educated or intelligent, and solidarity, like being perceived as friendly or pleasant) (Dragojevic, 2017).

There have been a number of studies researching European EFL students' attitudes toward various accents of English, usually comparing RP and GA, and the results are inconclusive. Arvidsson (2017) performed a study comparing the two varieties, and found that AmE seems to be the variety both preferred and used by younger students in Sweden today. However, BrE was still the option preferred by teachers and the school system.

This is not necessarily a new trend. In Sweden, a survey conducted by Mobärg involving Swedish high school students showed that students had a clear preference for General American (Mobärg, 1999). Even roughly 25 years ago, Mobärg noted a certain trend toward GA among high schoolers, explained by the rise in popularity of American media among the younger population, that has been continuing ever since. Nevertheless, there have been studies where participants show preference toward British English. In Belgium, Simon (2005) conducted a study comparing the two, with RP emerging as the winner for the overwhelming majority (94%). Simon and Ellen argue that the difference could be explained by the level of education of the targeted students. University students, perceiving Received

Pronunciation as the more prestigious option, and the one they have been familiar with for longer, pick it as the preferred accent, while high school students gravitate more toward General American. An article carried out by Carrie, E. (2017) aptly called *British is professional, American is urban': attitudes towards English* reference accents in Spain further supports this statement.

Carrie (2017) examined the attitudes of 71 university students in Spain toward Received Pronunciation and General American. Cognitive, affective and conative responses from different speaker-produced voice recordings representing RP and GA accents were measured. The results indicated that students showed a greater desire to emulate RP due to its perceived status or prestige, while simultaneously expressing stronger feelings of solidarity and affinity toward GA speakers. This suggests that while RP is associated with higher social standing, GA resonates more with students on a personal and emotional level.

Recent research investigating Czech students' attitudes toward RP and GA was carried out in 2017 by Jakšič & Šturm. The results of this study seem to align with the results of the rest of the European studies, in which most students (78%) find the standard British accent to be more prestigious, while positive sentiments toward the accents vary based on personal preferences but are comparatively similar (p. 361). The study also took a look at one of the possibly correlating or causal factors that might influence the students' attitudes toward the accents, and a tendency to prefer the accent of the country they would like to live in was observed. The questionnaire that was part of the study also asked about their media consumption and recent trips, with American media dominating the first question while trips to Britain dominated the second. The study, however, did not investigate the possible influence and correlation of these experiences in contrast to the students' preferred accent.

Another research investigating Czech students' attitudes was carried out by Balek (2018). In it, 88 high school students rated various English accents by various factors, such as likeability, preference toward learning the accent and preference for teacher's accent. In all of these categories, Canadian English placed first, followed by the General American accent, then Northern English, and finally Received Pronunciation placing fourth.

Practical part

The aim of the practical part was to investigate the occurrence of the alveolar flap among Czech high school students and the factors that are possibly related to its production. In order to do that, a group of students from a high school in Prague was recorded reading a list of sentences, each containing a flappable /t/ sound in various positions. Afterward, each student was given an online questionnaire asking them questions regarding teacher accent, accent preference and media exposure and consumption, along with their self-perceived level of English. The recordings were then analyzed and compared with the data from the questionnaire.

Based on the above, the current hypotheses were formulated as follows:

H1: Students are more likely to produce the alveolar flap if their English teacher uses the General American accent.

H2: Students are more likely to produce the alveolar flap if they primarily interact with native American English speakers.

H3: Students are more likely to produce the alveolar flap if they are exposed to American media.

H4: Students are more likely to produce the alveolar flap if they have a preference for American English.

4 Method

To confirm the aforementioned hypotheses, 20 recordings from 20 different students were taken and analyzed for alveolar flap occurrence. The students were given a printed out copy of previously prepared sentences and asked to read them out loud. As a means to keep the environment equal for all of the subjects, all of the recording took place in the school's facilities. However, the subjects were free to fill in the online questionnaires wherever and whenever they felt comfortable. Every recorded student was anynomized by being assigned a recording number, which they entered into the online questionnaire. The questionnaire was the matched with the recording based on that number. The recording itself took place from late 2023 to June 2024.

4.1 Preparation of the testing material

A list of 30 sentences, each with a flappable /t/ sound, was created by the author of the study in cooperation with the study's advisor. The list was divided into 3 parts, each based on the position of the /t/ sound. The first 12 sentences each contained a word-final /t/ preceding a vowel, with a possible flap manifesting as in between two different words. The next 12 sentences each contained a word-medial /t/ preceding an unstressed vowel, as in *later* or *city*. Finally, the last 6 sentences contained a word-medial /t/ preceding a syllabic /l/ sound, such as *little* or *bottle.*

*1. Thank you for explaining it, I've go**t** it now.*
*2. Is tha**t** all?*
*3. Wha**t** a nice morning!*
*4. Why did you want to talk abou**t** it?*
*5. Sarah is good a**t** a wide range of sports.*
*6. Is i**t** a really big trouble for you?*
*7. She vanished withou**t** any trace.*
*8. I am nothing bu**t** a humble servant.*
*9. Please step ou**t** of the car, sir.*
*10. Could you tell him to shu**t** up?*
*11. There is a lo**t** of work to be done.*
*12. Tha**t** is an impressive piece of art.*

Figure 1 sentences containing a word-final /t/ preceding a vowel

*13. Let's leave it for la**t**er.*
*14. I sent my mother a le**tt**er last week.*
*15. This exam will test your reading abi**li**ties.*
*16. This is such a pre**tt**y flower.*
*17. I'm thirsty, could you get me some wa**t**er?*
*18. I want to go to bed, it's ge**tt**ing late.*
*19. Do you prefer to eat bread with bu**tt**er or olive oil?*
*20. Cu**tt**ing down trees is hard work.*
*21. My house is north of the **city**.*
*22. My daug**hte**r's name is Emily.*
*23. My uncle owns a really bea**uti**ful painting.*
*24. Do you consider yourself a com**put**er person?*

Figure 2 sentences containing a word-medial /t/ preceding an unstressed vowel

25. I'm a li**ttl**e bit hungry, can we stop somewhere?
26. We need to hurry to the hosp**it**al, you're injured.
27. Plastic bo**ttle**s can pose a risk to the environment.
28. Can you tell me your job t**itl**e?
29. It was a tough ba**ttl**e, but we managed to win it.
30. I'm thinking of getting a tu**rtl**e as a pet.

Figure 3 sentences containing a word-medial /t/ preceding a syllabic /l/ sound

Putting the sentences containing word-final /t/ preceding a syllable at the beginning of the sentence list decreased the likelihood of the participants finding out about the subject of the study. All of the sentences were relatively short and contained simple vocabulary to minimize the participants getting stuck on non-relevant parts of the sentence. These parts, however, were important to have the sentences sound natural. The list was piloted on two third-year students with a B1 level of English according to the Common European Framework of Reference for Languages (CEFR) and no problematic sentences were identified. Reading the whole sentence list was presumed to take around 2 to 3 minutes, an estimate that proved to be correct afterward. The sentences are as follows:

4.2 Preparation of the questionnaire

The online questionnaire (see Appendix 1) was created by the author of the study in cooperation with the study's advisor, using Google Forms as the platform of choice. The

language used for the questions was Czech, and the approximate time to fill out the questionnaire was 2 minutes. The questionnaire contained questions about the following:

- Recording number
- Teacher name
- Self-perceived level of English according to CEFR
- Frequency of media consumption in the English language
- Specific titles of media they like to consume
- Interaction with native English speakers and their country of origin
- English accent preference
- Reason for said preference
- English outside of the classroom environment

Since all of the students were from one school and only from certain classes, only 3 teachers in total could be named. The teachers had been asked beforehand about their accent of choice when teaching, with 2 teachers exclusively using the General British accent and one, concurrently the author of this study, exclusively using the General American accent. By matching an accent to the name of the teacher ourselves instead of leaving it to the respondents themselves, we can prevent any possible misunderstanding regarding teacher accent usage preference. The teacher using General American is a 22-year-old male with three years of English-teaching experience, during which there was a strong focus on exclusively using the American accent. The first teacher using GB is a 28-year-old male with five years of English-teaching experience, and the second teacher using GB is a 36-year-old female with 14 years of English-teaching experience. Both teachers claim to have a strong preference not only for the British accent but also for British culture as a whole.

4.3 Participants

The participants consisted of 20 Czech students of English, 17 female and 3 male, from a high school in Prague 9, with 17 of them being in the middle of their third year and 3 of them at the end of their first year when the recording took place. 32 third-year students

from a single class were directly approached to participate in the study, of which 17 agreed to take part. 3 students from the first year also expressed willingness to participate and were included to help increase and diversify the sample size.

4.3.1 Teacher accent

The participants were selected from 3 different classes, but since each class is further split into 2 additional subgroups, each subgroup usually has a different teacher. These teachers are free to use whichever accent they prefer during teaching independently of each other. Overall, 60% (12) students named a teacher using the General American accent as their English teacher, while 40% (8) students named a teacher using General British.

Since all of the third-year students are from the same class, if one chooses to exclude the 3 first-year students who also participated, one can also look at this study as a comparison of two halves of a single class, with one taught for almost 3 years by a teacher using the General British accent, and one taught by a teacher using the General American accent. Looking solely at the third-year students, 65% (11) students named the teacher using General American as their English teacher, while 35% (6) students named a teacher using General British.

4.3.2 Interaction with native speakers

Students were also asked about whether they often interact with native speakers and if they do, of which nationality the speakers are. 45% of students selected the option *I do not interact with native speakers*, 30% of them that they regularly interact with native speakers from the United States, 3 of them that they interact with native speakers from Great Britain, and 1 answered that they interact with native speakers from Canada.

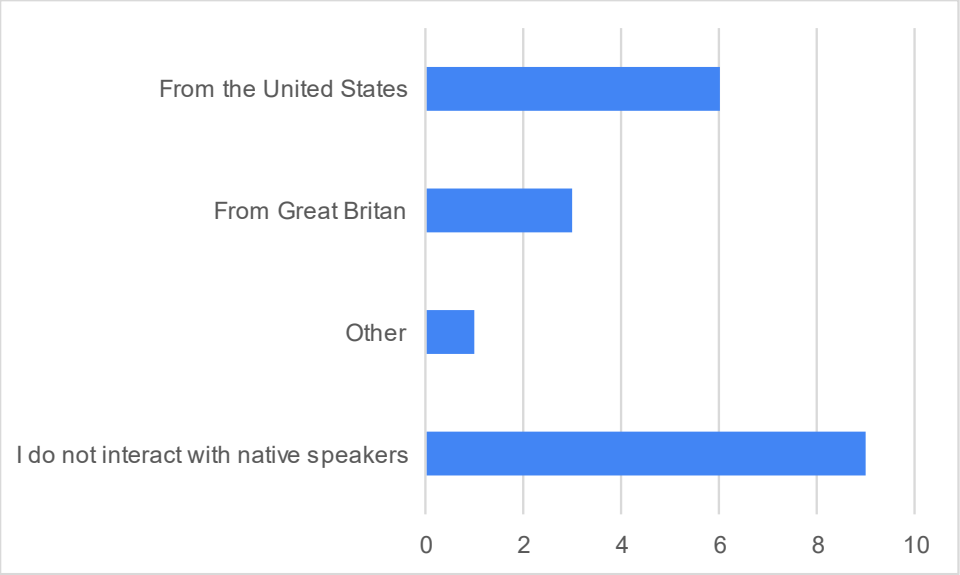

Figure 4 *In my daily life, I often interact with speakers from…*

Since it is reasonable to assume that frequent interaction with native speakers from the United States would make the students more prone to produce the alveolar flap themselves. For the purposes of the study, and to have a larger data sample, we have decided to include native speakers from Canada together with those from the United States. While Canadian English differs from American English in many aspects, it is generally agreed upon that the alveolar flap is a key part of both of the accents (Gregg, 2004).

4.3.3 Consumption of American and British media

The participants were asked about the frequency of their consumption of English-language media, specifically TV series, podcasts and movies. Furthermore, they were also asked for specific names of the English-language media they consume, since we assumed that not all participants are going to be reliably able to distinguish between American and British media themselves. The names of these media were then analyzed and assigned to a group based on the country of origin. Each participant was asked to provide an unlimited number of titles of media, for a total of 65 entries, with an average of 3.25 entries per respondent.

Unsurprisingly, American media dominated the list by a large amount, with students picking 49 movies, TV series or podcasts from the US and only 12 from the UK.

There was only one entry from another English-speaking country, which was the Australian *Surviving Summer*, and 3 entries were discarded for not being produced in or by an English-speaking country.

While one answer, *self-development/lifestyle podcast (American)*, was less specific than desired, it was still included in the American media group as a single entry. Considering that the point of this question was to determine the popularity of American media as a whole between individual students, duplicate entries, of which there were three, were counted as additional entries.

4.3.4 Rate of consumption of English-language media

Looking at the results, the frequency of English media exposure yielded more promising results than the previous factor. What might prove to be more influential, however, is the degree of consumption of English-language media as a whole. The participants were asked about the frequency of their English-language media consumption, and the possible answers were *every day, almost every day, twice a week, once a week, once a month, basically never* and *other.*

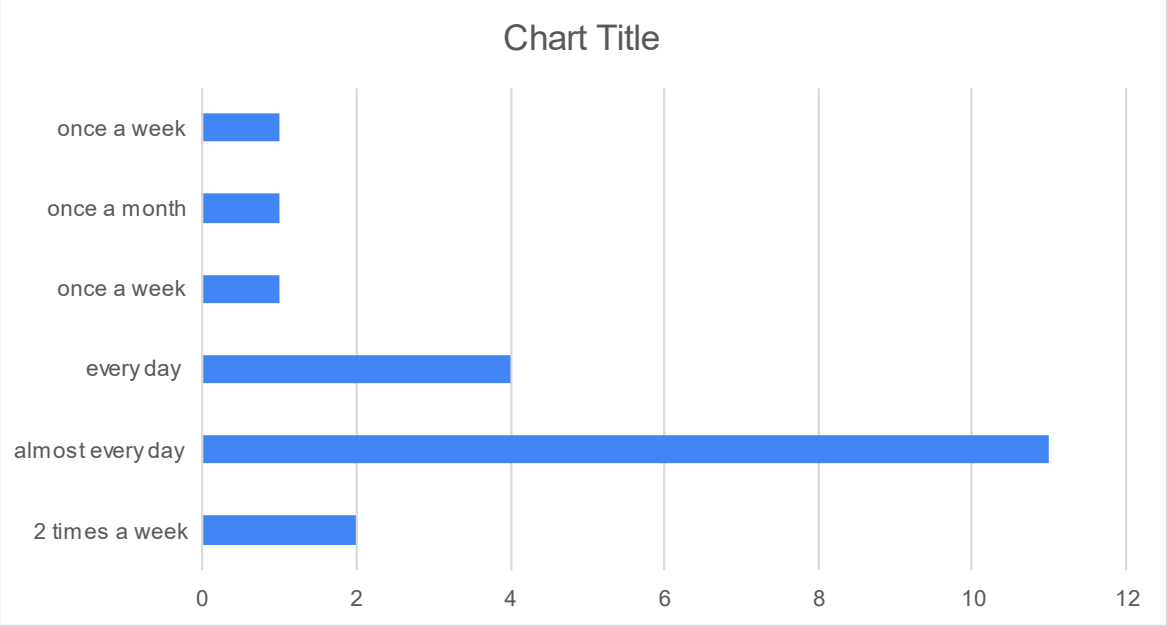

Figure 5 Rate of English-language media consumption

The horizontal axis shows the number of students

The bar chart shows the frequency of consuming English-language media among students. A*lmost every day* was the most popular option chosen by 11 students, indicating they watch or listen to English media quite frequently. 5 students consume English-language media every day. 2 students do so twice a week. Both *once a week* and *once a month* were selected by 1 student each. These results show that of the surveyed students, most engage with English media almost daily, while there are only a few students who do so less frequently.

4.3.5 Accent preference

All of the students were also asked whether they prefer American, British, other or no particular English in terms of accent. Out of the 20 participants, 13 responded with a preference for American English, while 7 responded with no specific preference, with no students picking the option of *British English* or *other*. These responses wildly differ from what Jakšič & Šturm (2017) and Brabcová & Skarnitzl (2018) found in Czech speakers, where the split of preference and positive attitude toward the General American accent and Received Pronunciation was approximately equal. The results of this study also seem to significantly differ from most results on the European scale (Carrie, 2017; Ladegaard & Sachdev, 2006), but are in line with the theory that preference for the General American among European students is on the rise (Richter & Weissenbäck, 2022).

Respondents were also asked to justify their accent preference. 7 participants mentioned that they find American English easier to understand, describing it as *more comprehensible* and *natural sounding* than the rest of the accents. 2 participants mentioned they prefer it because they are more used to it from American social media, TV series, movies and music. Additional 2 responded that they had always studied American English ever since they were young. One mentioned that they consider it more colloquial, which is in line with previous research investigating student attitudes toward the General American accent (Dragojevic, 2017; Carrie, 2017). Finally, one person answered that they consider American English to be more distinctive.

4.3.6 English level

The school prides itself on preparing students extensively for future administrative positions and on its second foreign language education (German, French and Spanish), but English is not necessarily the main focus of the school. Looking at the whole sample again, the self-perceived level average according to the CEFR was as expected, with the participants most commonly choosing the B1 and B2 levels to self-assess themselves. 15% (3 students) picked the A2 level, 35% (7 students) the B1 level, 35% (7 students) the B2 level, and (3 students) 15% the C1 level. No students picked A1 or C2 as their levels.

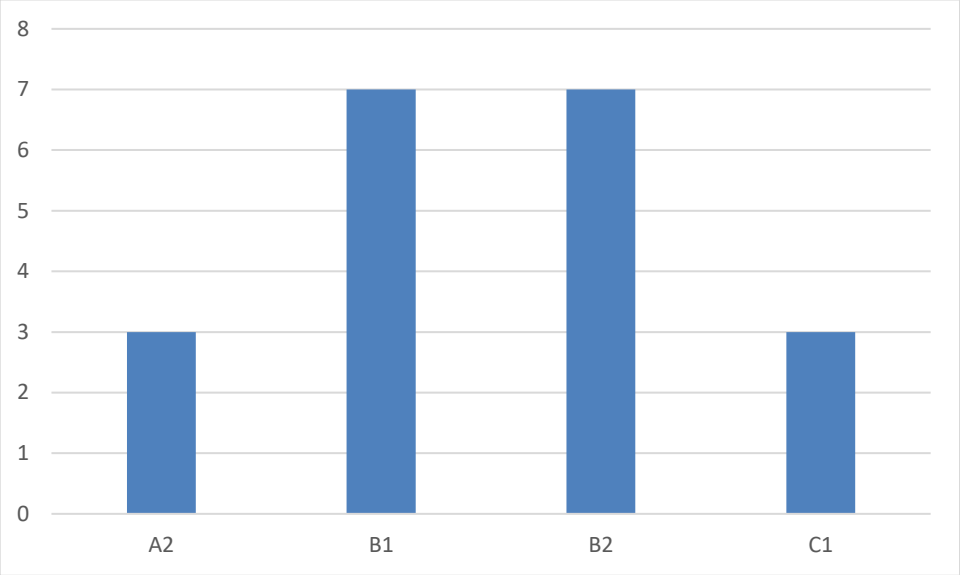

Figure 6 Students‘ self-perceived level of English (n=20)
The vertical axis shows the number of students.

4.4 Data collection and analysis

Each participant was taken to a classroom, given the handout with a list of the 30 sentences, and was asked to read out loud. Participants were recorded using a mobile device, with the 30 sentences being read in rapid succession. 3 recordings were interrupted, either by the student themselves or by outside influence, and had to be split, but were then compiled together to fit into one, with one recording corresponding to one participant in the end. The participants were not informed of the study’s theme, nor were any instructions regarding pronunciation given, and the students were briefed that there is no correct or wrong way to

approach the oral production. Participants were then sent a shared link through the Microsoft Teams platform that the school uses and were assured that their responses would remain anonymous and that there were no right or wrong answers. Some basic instruction regarding the questionnaire was given; the student was to enter the recording number he was assigned to after the recording process, which was then used to match the recording with the questionnaire's responses, answer the questions and send in the questionnaire as soon as possible to prevent any misunderstandings with recording numbers.

Each recording was imported into the Audacity software, where it underwent perceptual analysis. The analysis of the data was done using Microsoft Excel tables. For the data from the questionnaire, tables were created in order to compare the responses. For the recordings, every recording had its own table consisting of the thirty sentences, along with a "FLAP" and "NO FLAP" column next to it, which the assessors marked with an *x* symbol based on alveolar flap occurrence. Each recording was perceptually evaluated by two assessors, the author of the thesis and one English teacher from the same school, in June 2024. If there were disagreements regarding a particular token, it was noted down, and the sentence was analyzed again a few days later with a third teacher present. There was a total of 3 assessors, all employed as English teachers at the school the experiment took place, and all of them had been aware of what the alveolar flap is beforehand and had been able to correctly identify it before the experiment took place.

Regarding the final data analysis, and this study, we adhere to a significance level of $\alpha=0.05$ to determine the statistical significance of our findings. This chosen level serves as a critical threshold in hypothesis testing, guiding our evaluation of whether observed results are likely due to chance or indicate a meaningful relationship within our data. By setting $\alpha=0.05$, we establish a standard of confidence that aligns with widely accepted practices in scientific research.

5 Results

In this chapter, the results of the questionnaire and findings based on analyses of the taken recordings are presented and directly compared.

5.1 Alveolar flap production

The analysis of the recordings from 20 Czech high school students reveals a notable occurrence of the alveolar flap in their English pronunciation. Out of the total instances where a flappable /t/ sound might have been present, students produced the alveolar flap 366 times out of 600, accounting for 61% of the occurrences.

The differences in average flap rates depending on the position of /t/ were moderate, with the flap rates of sentences containing a word-final /t/ preceding a vowel, a word-medial /t/ preceding a vowel and a word-medial /t/ preceding a syllabic /l/ sound being 57.5%, 65% and 60% respectively. It seems that the most suitable position for flapping is in the middle of words.

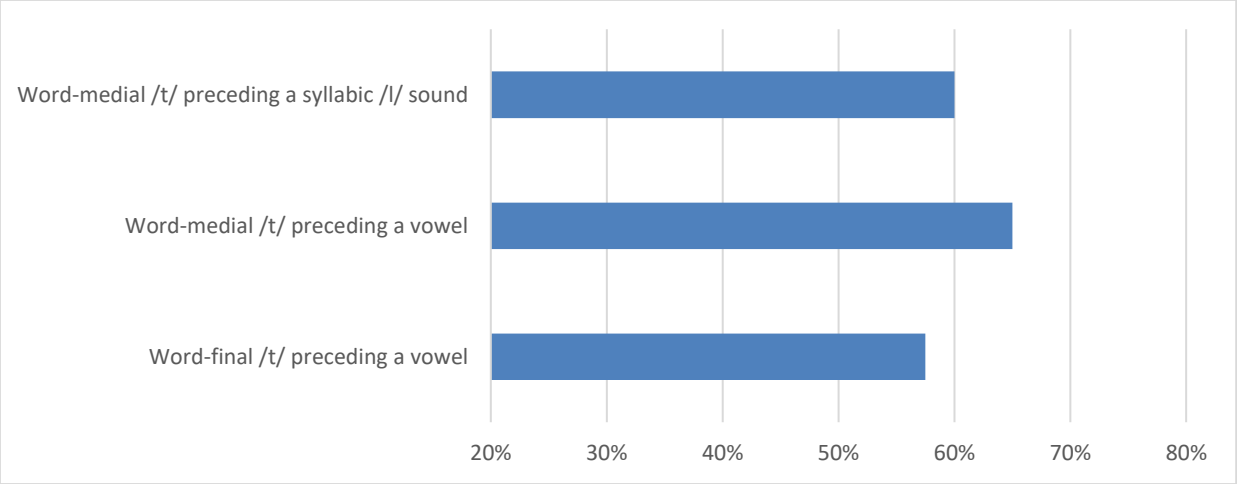

Figure 7: Alveolar flap production by /t/ position

However, the disparities were significant when it comes to individual sentences. For example, sentence number 10, *Could you tell him to shut up?,* had a very high flap rate of 95%, which means that all but one of the speakers produced the alveolar flap when reading

it. This might have been caused by the phrase's popularity in modern media. Another word with a high flap rate was surprisingly *battle.* Although many students pronounced the vowel part of the word with a noticable Czech accent, i.e., they pronounced it as [ˈbeɾl] instead of [ˈbæɾl], they still produced the alveolar flap most of the time. Conversely, phrase number 26 *We need to hurry to the hospital, you're injured.,* had a flap rate of 15%, with only 3 speakers producing an alveolar flap when reading the word *hospital*.

Flap rate	Sentence text	Sentence number
15%	We need to hurry to the hospi**t**al, you're injured.	26
25%	I am nothing bu**t** a humble servant.	8
30%	Is i**t** a really big trouble for you?	6
30%	Do you consider yourself a compu**t**er person?	24
35%	She vanished witho**u**t any trace.	7
45%	Is tha**t** all?	2

Figure 8 Sentences with the lowest flap rate

Flap rate	Sentence text	Sentence number
85%	Why did you want to talk abou**t** it?	4
85%	I sent my mother a le**tt**er last week.	14
85%	My uncle owns a really beau**t**iful painting.	23
90%	Plastic bo**tt**les can pose a risk to the environment.	27
90%	It was a tough ba**tt**le, but we managed to win it.	29
95%	Could you tell him to shu**t** up?	10

Figure 9 Sentences with the highest flap rate

The data set illustrated great differences among the respondents, with one participant almost completely avoiding flapping (10% flap rate with 3 flapped tokens out of 30 flapped) on the one hand and on the other hand two participants producing a flap in nearly all sentences (97% flap rate with 29 tokens out of 30 flapped).

5.2 Teacher´s English accent as a factor in alveolar flap production

The group of students who named a teacher using the General American accent as their English teacher had an average flap rate of 65.28%, compared to a flap rate of 54.58% belonging to the group of students with a teacher using the General British accent. A p-value of 0.03, which is less than the common significance level of 0.05, . This indicates that there is a statistically significant difference in flap rates between students with American accent teachers and those with British accent teachers. If a teacher consistently uses alveolar flaps in their speech, students are more likely to notice and imitate these sounds. Therefore, our first hypothesis was confirmed.

If we compare only the third-year students, the difference between the two groups stays about the same. The group with a teacher using GA had a 63.03% flap rate (n=11), while the group with a teacher using GB had a rate of 51.1% (n=6).

5.3 Interaction with native speakers as a factor in alveolar flap production

The group of 7 participants that interact with Northern American speakers (6 interact with American speakers, 1 with Canadian speakers) in their daily life averaged a 57.9% flap rate. The group of 3 that interact with the British averaged a 66.7 % flap rate, though the sample size was too small to draw any significant conclusions. The group that does not regularly interact with any native English speakers averaged a 64.1% flap rate. Based on these results, no clear connection between the interaction with native speakers and flap rate was found, and we reject our second hypothesis.

5.4 Consumption of English-language media as a factor in alveolar flap production

Overall, the participants' media choice was overwhelmingly American. Nevertheless, we identified 4 respondents who each picked at least 2 British titles. Analysing the flap rate of these 4 participants revealed a rate of 60%, compared to a rate of 61.25% of the other 16 students, suggesting there might be no significant link between naming British media titles and flap rates. This is, however, hardly surprising, considering that all of the 4 students also named American titles as their selected media.

Next, we analyzed the correlation of the alveolar flap rate and the degree of English-language media consumption. The correlation came out as r= 0,49253, and with the p-value at 0.028, it is statistically significant at the 0.05 significance level. Thus, we can conclude that there is a significant correlation between the two, and we can confirm our third hypothesis.

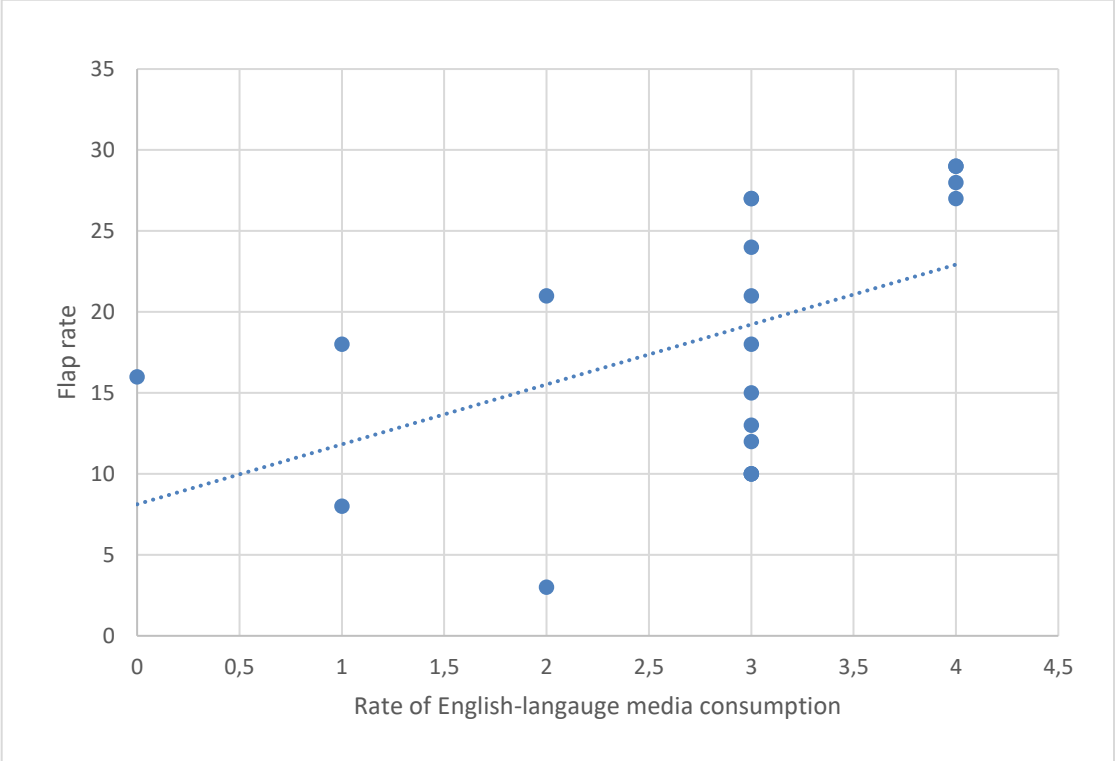

Figure 10 Flap rate by self-perceived level of English by rate of English-language media consumption (n=20)

5.5 Accent preference as a factor in alveolar flap production

Comparing the average flap rate of the group with a preference for GA (13 respondents) with the group with no specific preference (7 respondents), the results were 66.15% and 51.43% respectively, showing a difference of 14.72%, thus confirming our hypothesis that students who note a preference for American English produce the flap more than students who do not.

5.6 English level as a factor in alveolar flap production

As learners advance in their English proficiency, they tend to acquire more native-like phonological patterns. At higher proficiency levels like B2 (Upper-Intermediate), learners are more likely to have been exposed to and practiced advanced pronunciation.

More experienced or proficient learners may have greater awareness of the nuances of English phonetics. Therefore, if they wish so, they are more likely to recognize the alveolar flap in practice and actually produce it.

Comparing each student's self-perceived English level using CEFR levels to their flap rate, individual CEFR levels were converted into numbers from 1 to 6, with 1 corresponding to the A1 level and 6 corresponding to the C2 level. The flap rate was not converted to percentages this time and simply represents the amount of flaps produced by the student, with the maximum being 30.

The correlation coefficient came out as r=0.443. The corresponding p-value is 0.049, indicating that the correlation is on the borderline of being statistically significant at the 0.05 significance level. Given the borderline significance, it is prudent to interpret these results with caution. Further research, especially one with a larger sample size, may be necessary to confirm these findings and to ensure the robustness of the observed relationship.

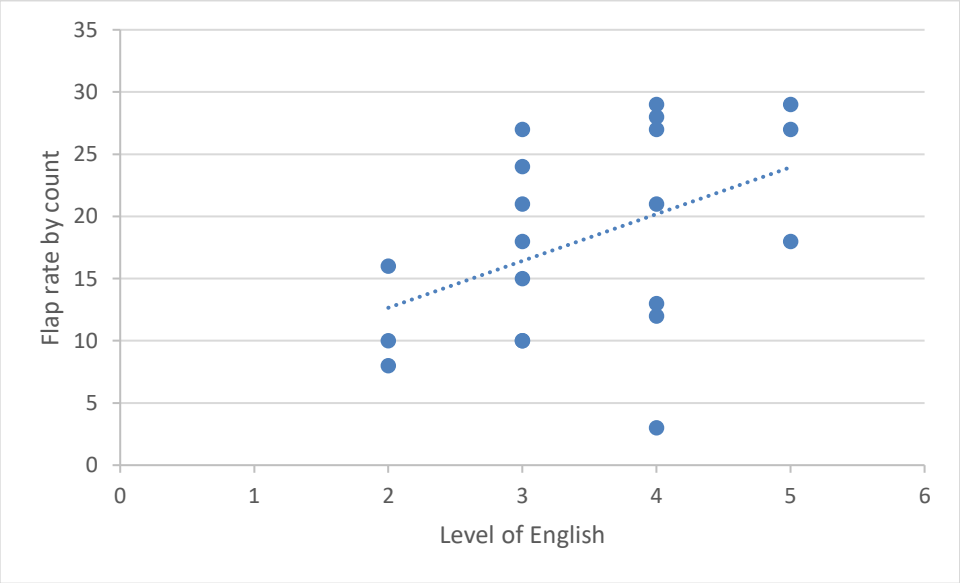

Figure 11 Alveolar flap production in relation to self-perceived level of English (n=20)

5.7 Selected results of individual students

The results of the student with recording number 16 stood out as particularly interesting. This student was one of the two with the highest flap rate (95%), and their speech in general showed major signs of the General American accent, such as significant rhoticity or at times substituting /ɒ/ with a longer, unrounded wovel /ɑː/. Nevertheless, they answered that their teacher's accent is General British, they do not prefer any particular accent and do not interact with any native speakers in their daily life, making this student quite discordant with most of our hypotheses. Furthermore, they were one of the four selected students who named at least 2 British media titles when asked about their media consumption. They did, however, have a very high degree of English-language media consumption (every day), some of which was American, as well as a higher self-perceived English level (B2), indicating that this might be the decisive factor in some of the students' alveolar flap production.

The responses of the other student who achieved a 95% flap rate were not as surprising, with teacher accent and accent preference both being American. Their media consumption consisted of only American podcasts, which they listened to every day. They did, however, note no daily interaction with native speakers either, again indicating that it might not be a relevant factor when it comes to alveolar flap production.

5.8 Other findings

The following two sub-chapters refer to topics not directly examining the target sound of the alveolar flap but are directly related to topics like accent preferences and language exposure.

5.8.1 Self-perceived level by accent preference

Since accent preference is a key part of this study, we also decided to compare the self-perceived levels of English between the group who picked American English and those who did picked no accent preference. On the previously mentioned scale based on CEFR levels where A1 is 1 and 6 is C2, students who have a preference for American English in terms of accent averaged a score of 3,69, being closest to the B2 level. In comparison, students who answered that they do not have any particular English accent preference a score of 3.14, being closest to the B1 level.

5.8.2 Rate of consumption of English-language media compared to self-perceived level of English

Sánchez-Auñón et al. (2023) conducted a systematic literature review on the use of films in teaching English as a foreign language, demonstrating that films significantly enhance various language skills by providing authentic linguistic input and cultural context, as well as having an important effect on pronunciation. Since comparing self-perceived English levels with alveolar flap rates showed that there might be a connection, we decided to compare self-perceived English levels with media consumption. Each rate of media consumption was assigned a number from 0 to 4, with 0 representing the *once a month* answer and 4 representing the *every day* answer. Just like in our previous comparison, the horizontal axis represents levels according to the Common European Framework of Reference for Languages, where 1 corresponds to A1 and 6 to C2.

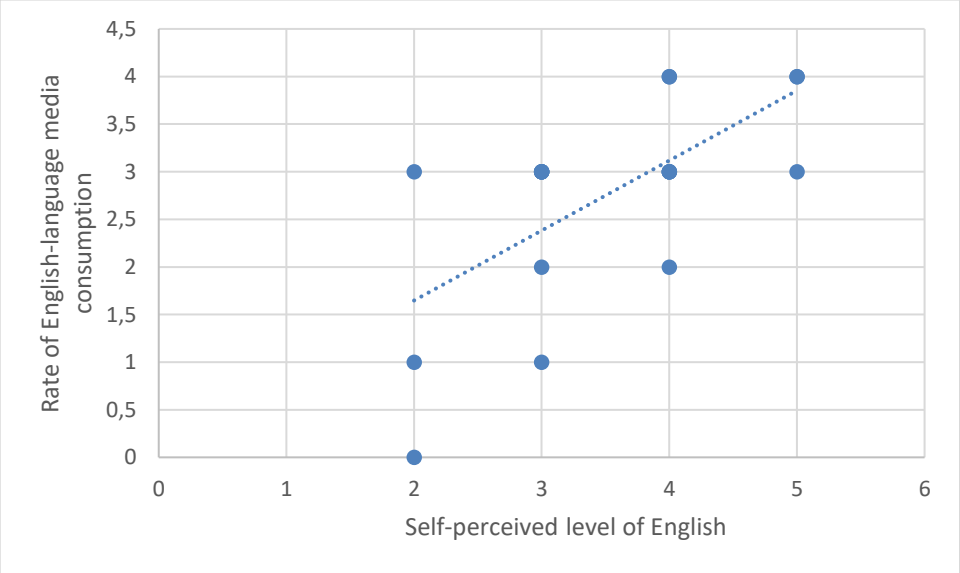

Figure 12 Self-perceived level of English by rate of English-language media consumption (n=20)

Comparing the two statistics above, we get an r=0,650064, which is statistically significant at the α=0.05 level, confirming that the students who rate their English levels higher tend to consume more English-language media.

6 Conclusion

The study aimed to investigate the occurrence of the alveolar flap among Czech high school students. and identify factors that might influence its production. By analyzing the recordings of students reading sentences containing flappable /t/ sounds and comparing these with responses to a detailed questionnaire, several important findings emerged.

First, the data clearly showed that students whose teachers used the General American accent were more likely to produce the alveolar flap. The difference in flap rates between students with American-accented teachers and those with British-accented teachers was statistically significant, confirming the hypothesis that teacher accent is a relevant factor in pronunciation modeling.

Contrary to initial expectations, interaction with native English speakers did not significantly impact the production of the alveolar flap, leaving our second hypothesis unconfirmed. Perhaps due to the limited sample size and the varied nationalities of the native speakers involved, we did not find any significant differences between the two groups.

Media consumption rate emerged as a significant factor influencing alveolar flap production. Students who frequently consumed English-language media showed higher flap rates. This supports the third hypothesis that extensive exposure to English through media can lead to more native-like pronunciation patterns.

The group who preferred American English showed a moderately higher flap rate than the group with no particular preference. Surprisingly, no student in this study selected British English as their accent of preference.

Furthermore, we also investigated the correlation between self-perceived language levels according to CEFR and alveolar flap rate, and while this factor was slightly correlated to alveolar flap production, it was on the borderline of significance.

Teacher accent, the degree of media consumption, and their accent preferences are significant factors influencing pronunciation skills. These findings also suggest that motivation and engagement, reflected in students' accent preferences and media consumption habits, play a role in mimicking native-like pronunciation.

This study has limitations that future research could address. The sample size was relatively small and limited to one school, which may affect the generalizability of the findings. Expanding the study to include a larger and more diverse sample across different schools and regions could provide more robust data. Additionally, the reliance on self-reported data for media consumption and accent preference may introduce bias. Future research could use more objective measures, such as tracking actual media consumption habits and employing pronunciation assessment tools to evaluate accent preference and proficiency more accurately.

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APPENDIX

Dotazník - bakalářská práce

1. Číslo nahrávky:

   _____

2. Jméno učitele angličtiny:

   _____

3. Ročník studia

   Označte jen jednu elipsu.

   - ◯ 1.
   - ◯ 2
   - ◯ 3
   - ◯ 4.

4. Svoji úroveň mluvené angličtiny odhaduji na

   Označte jen jednu elipsu.

   - ◯ A1
   - ◯ A2
   - ◯ B1
   - ◯ B2
   - ◯ C1
   - ◯ C2

5. Filmy/seriály/podcasty v angličtině konzumuji

Označte jen jednu elipsu.

- ◯ každý den
- ◯ téměř každý den
- ◯ dvakrát týdně
- ◯ jednou týdně
- ◯ jednou měsíčně
- ◯ v podstatě nikdy
- ◯ Jiné: _____

6. Uveďte prosím konkrétní příklady - názvy filmů, seriálů nebo podcastů, které jste za poslední rok v angličtině konzumovali.

_____

_____

_____

_____

_____

7. V denním životě se nejčastěji setkávám s rodilými mluvčími angličtiny

Označte jen jednu elipsu.

- ◯ ze Spojených států
- ◯ z Velké Británie
- ◯ z Kanady
- ◯ z Austrálie
- ◯ s rodilými mluvčími angličtiny se nesetkávám
- ◯ Jiné: _____

8. Z hlediska akcentu preferuji

Označte jen jednu elipsu.

- britskou angličtinu
- americkou angličtinu
- Nepreferuji žádný akcent
- Jiné: _____

9. Uveďte prosím důvod, proč preferujete daný akcent

_____

_____

_____

_____

_____

10. Mluvenou angličtinu používám

Označte jen jednu elipsu.

- pouze na hodinách aj
- Jiné: _____