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How Do Foreign Accents Impact Perception and Credibility?

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Abstract

The paper aims to investigate how foreign accents impact perception and credibility by looking at various experiments that the researchers have conducted. To observe the effects that foreign accents have on listeners, we outlined three critical areas: visual and auditory stimuli, subtitle comprehension, and perception. By having an in-group or native accent as our control group, we were able to evaluate how various accents, such as Dutch and German, have a subtle impact on the accuracy of the speakers rated and measured by the participants. Based on our analysis, foreign-accented speakers are perceived to be less credible. In addition, it was concluded that perception also plays a key role in the day-to-day life of non-native speakers. While more research would be beneficial, it is clear that foreign accents reduce the speakers' credibility and should be considered in environments such as job interviews and other social settings.

Introduction

Over the last century, immigration to the United States has increased rapidly. One field of investigation that has been overlooked is the perception of foreign-accented speakers on native speakers. These perceptions may play a critical role in people's lives due to the very nature of appearance, perception, and class. Do foreign accents have any effects on job acquisition? Are foreign-accented speakers viewed differently and, as a result, do their accents alter the amount of respect received? Are there any positive or negative stereotypes associated when hearing these foreign voices? Questions like these are what drives the inquiry of many. Recent studies comparing visual and auditory perception of foreign and native speakers, subtitle use, and daily-life perception are vital to the investigation on the impact of foreign accents.

Ultimately, recent findings have increased awareness of underlying biases and lowered discrimination based on a foreign accent. These series of analyses will inform us whether or not the present-day status quos have been met or challenged. In addition, these studies will allow us to cherish the diversity we have in the United States. Our paper will discuss how differing foreign-accented speakers each affect their perception and compare different languages alongside each other to determine a spectrum of which accent is affected from the most to the least.

Visual and Auditory Stimuli

Accents are developed in multilingual subjects; for some people, this accent may not be recognizable at all, but the auditory perception of foreign accents may affect their perception of the multilingual subject.

Researchers have studied cognitive processes to determine the impact of having a foreign accent on credibility. Native Dutch speaker and non-native speaker participants from the US, Germany, and Italy, were categorized as low- and high-status natives and low- and high-status foreigners. Each participant recorded introductions of themselves, their category, and multiple sentences for the listeners to judge as “definitely true”(1), “maybe true”(2), “maybe false”(3), “definitely false”(4), and “don’t know”(5). By comparing the responses of listeners to native and foreign speakers across the same social class, researchers could determine whether having an accent reduced the credibility of the speaker. The table below shows the behavioral responses associated with the three different types of sentences for Low-Status native, High-Status foreign, and High-Status native speakers. The percentage of answers for all three of the different sentences across the three types of speakers are relatively about the same. Since there was not a significant difference across the ratings of the different speakers, researchers could not draw

conclusions based on that data. To investigate further, the researchers tracked brain activity using an EEG and analyzed the data in the N400-time window, utilizing the N400 as an indication of the participants' acceptance of the sentences. The data determined that the High-Class Native speaker had a N400 pattern that had a more negative amplitude on the World Knowledge and Unknown statements relative to the True statements. On the other hand, the High-Class Foreign had a more negative amplitude only on the World Knowledge statements, as the Unknown statements had a similar signal to True statements. This means that the participants had more difficulty determining the truthfulness of an foreign-accented Unknown statement. They concluded that having a foreign accent reduced the credibility of the speaker and listeners found it more difficult to accept the information said by a foreign-accented speaker compared to the information said by the native speaker.

Researchers also studied the impact of foreign accents on memory in another experiment. Participants were asked to listen to a third of the sentences (60 sentences out of the 180 sentences) spoken by the High-Status or Low-Status native and High-Status foreign speakers and were asked to indicate which of the four photos of the speakers presented on the screen said that sentence. The listeners were able to associate the sentences said by the High-Status native speakers at a higher rate as compared to the association of the sentences said by the Low-Status native speakers (see Fig 1). These results imply that participants remembered the sentences spoken by high-status speakers more than those spoken by low-status speakers. Therefore, this

experiment indicates that the status of the speaker impacted memory recognition more than the accent of the speakers.

Figure 1. Describes the accuracy of the participants' memory for each kind of speaker (Foucart, 2019).

In the final experiment, researchers quantified the visual perception of foreign accents by measuring the change in pupil diameter before and after a photo of the speakers was shown. The purpose of this experiment was to determine if the visual perception of the speaker is correlated to the foreign accent. Between the three groups of speakers, there was no statistically significant difference (Foucart, 2019). However, as shown in Figure 2, the Low-Status native speakers had about an average of 2.5% change while the High-Status native speakers only had about an average of 2% change in pupil diameter. The results indicate that the Low-Status Native speakers

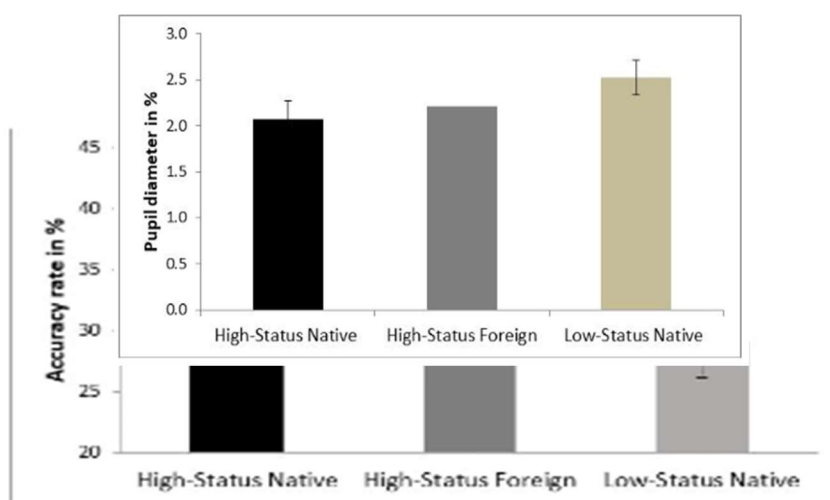


Figure 2. Indicates the pupillometry data in percentage per each speaker type (Foucart, 2019).

had a greater difference in pupil diameter than the High-Status Foreign and High-Status Native speakers. Researchers suggested “that a foreign accent affects the visual perception of the speaker, even when the person is not speaking” (Foucart, 2019).

In addition, there was a further study that used functional magnetic resonance imaging (fMRI) in which English speakers listened to Korean-accented English sentences with and

without visuals (Yi, 2014). Speakers spoke a total of 80 sentences; listeners were split into two groups that were either presented with video recordings or audio recordings of the speakers. The speakers were four native American English and four native Korean speakers between 18 - 35 years old, with an equal ratio of males and females. The participants listened to the recorded sentences and rated the clarity of each from 1 (unclear) to 4 (clear). The average rating for the clarity of the foreign-accented speakers with only audio was 2.55, while the average rating for the native accented speakers for the same condition was 3.28. For the audiovisual condition, foreign-accented speakers received an average rating of 2.57 and the native accented speakers received an average rating of 3.34. The results from this experiment suggest that foreign-accented speakers are perceived to be less clear than native accented speakers.

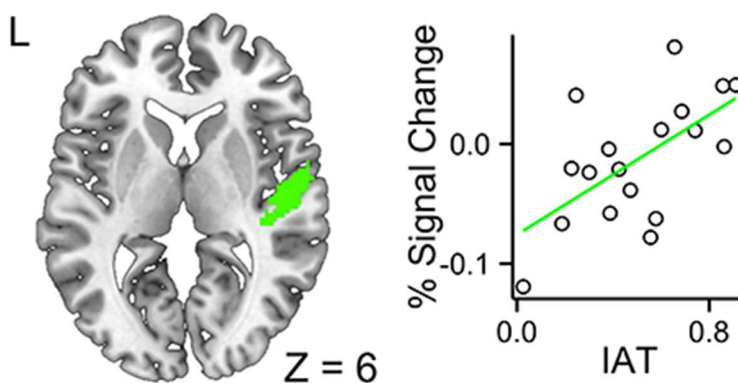
The use of an MRI scanner allowed researchers to estimate blood oxygen level dependent (BOLD) responses, indicating which parts of the brain are activated in response to the signals. When comparing the BOLD signals across the native and foreign accents, the data revealed that there was higher activity in a certain region of the brain that has previously been shown to be involved with creating phonological decisions (Hartwigsen, 2010).

It was further discovered that foreign-accented sentences evoked immense activity in the bilateral primary auditory cortices under the audio-only condition, whereas there was extensive activity in the occipital cortex under the audiovisual condition. The participants' Asian-foreign association was analyzed using IAT, which is an implicit association test. In social psychology, IAT is critical in deciphering and quantifying the degree of implicit bias which may not be evident in self-reported questionnaire entries. Participants with higher IAT scores were more likely to associate East Asian faces as "foreigners" under audiovisual conditions which can be interpreted to a more biased perception toward the non-native speakers (Yi, 3). It was revealed

that participants with higher IAT scores had greater activity in the right primary auditory cortex for sentences spoken by Korean speakers when audiovisual information was presented. It was also shown that foreign-accented speech with a visual aid increased the computational demand in this region, which can be seen in the BOLD image below.

Figure 3. The map of the brain on the left maps the location of the portion of the brain where activity was detected when the information was presented. The graph on the right indicates the level in the change in neural activity in the cortex based on their IAT (Yi, 3).

This study revealed that native American English listeners who had greater implicit bias with Asian to foreign and Caucasian to American associations experienced more hardships in comprehending English sentences that were spoken by native Korean speakers compared to native English speakers. The study on cognitive processes shows that having a foreign accent negatively influences credibility and reliability as a person regardless of social status. The results of having an accent can have serious consequences for everyday life as people with a foreign



accent are prone to be taken not as seriously, due to comprehension or credibility complications, when compared to individuals without an accent. This can negatively affect those with an accent in the academia or political world, for example. Thus it is important as multilingual species, to be alert of negative biases created to prevent discrimination.

Subtitles

Numerous subtitle enhancements have been developed since it was first included in a film over a century ago (Ivarsson, 2004). The effects of words displayed on a screen while interpreting the speaker is essential to one's comprehension of the content when viewing TV or movies. Literature points to the complexity of comprehension and the role of subtitles for all individuals despite monocultural or multicultural exposure. Subtitles have highly advantageous benefits, namely im prehension of videos (Gernsbacher, 2015).

The analysis of perception of subtitles can only proceed after considering the relationships and roles of the type of subtitles, exposure times, and how the participants conceived and recited these words. One study investigated the effect of subtitles for foreign-accented speakers on listeners (Mitterer 2009). Dutch participants listened to phrases in English, then asked to repeat the words spoken from *Kath & Kim* and *Trainspotting* episodes. Figure 4. Proportion of correctly repeated words per excerpt, split by old and new items and by accent types (Mitterer 2009).

Mean proportions of correctly repeated words and percentage gain over the control condition.

Type of Subtitle	Type of English			
	Australian English		Scottish English	
	New Items	Old Items	New Items	Old Items
No Subtitles	0.77 (+6%)	0.79 (+8%)	0.84 (+4%)	0.82 (+6%)
English Subtitles	0.79 (+9%)	0.85 (+14%)	0.86 (+6%)	0.84 (+8%)
Dutch Subtitles	0.72 (+1%)	0.79 (+8%)	0.83 (+3%)	0.84 (+8%)
Control	0.71	0.71	0.80	0.76

Half of the phrases were old items which came from exposed content, the episode they had already watched, and the other half was new items from different episodes from the same two audio excerpts. Participants were sorted into four groups: no subtitles, English subtitles, Dutch subtitles, and the control group. The control group was not fluent in either language and was used to test the possibility of word-specific learning. Only auditory responses from the speakers were recorded in this study to eliminate the confounding variable of visual processing.

When participants were tested on holistic measures of grammar and vocabulary learning, plot memory, or viewers' attitudes, the results suggested that foreign language subtitles, those that are the same language the speaker uses in the film, aids overall understanding of the information. However, native language (to the speaker) subtitles hinder their overall understanding of the information. Figure 4 suggests that Dutch participants who were able to correctly repeat words with Dutch subtitles performed at a lower rate than with English subtitles or even no subtitles at all—exhibited by both old and new words and phrases (Mitterer 2009).

The histogram compares Dutch participants' ability to repeat words across the four study groups (Mitterer 2009). With a confidence level of the new items above 95% ($p < .05$) and the old items above 99% ($p < .01$), this data strongly suggests that exposure to old items with same language subtitles as the video significantly improves one's retention of the information. Retention of information is a highly valuable skill and can be applicable when learning anything new or for review.

Although evidence of this phenomenon is lacking, a recent study examined the effects of subtitle speed on 74 participants whose native language was either English, Polish, or Spanish (Szarkowska, 2018).

Language	Subtitle speed		
	12 cps	16 cps	20 cps
	<i>M (SD)</i>	<i>M (SD)</i>	<i>M (SD)</i>
English	78.40 (17.75)	79.48 (18.17)	79.85 (15.97)
Polish	88.13 (10.55)	85.09 (13.08)	85.77 (11.75)
Spanish	73.00 (14.95)	77.53 (17.71)	76.93 (12.38)
Total	79.35 (16.00)	80.42 (16.76)	80.55 (13.94)

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Figure 5. Percentage of correct comprehension answers in Experiment 1 (Szarkowska, 2018).

The researchers originally believed, like most people would, that the slower the subtitle speed would lead to increased understanding of the speech and the faster subtitle speed would lead to a lesser depth of understanding. Surprisingly, even with new languages, the faster speed subtitles actually lead to higher levels of comprehension. Levels of comprehension were tested through the efficiency of the participants' recalling abilities with M being the mean and SD representing one standard deviation from the mean. Although not investigated in this study, this is intuitively coherent and plausible.

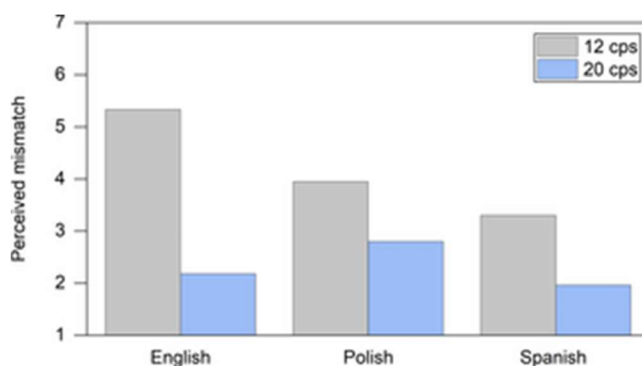


Figure 6. Perceived mismatch in clips with a known language soundtrack (English). Self-report on a scale 1–7, where (1) meant “no mismatch” and (7) “a lot of mismatches (Szarkowska, 2018).

It is probable that the focus during the longer subtitle appearance lengths diminished. Since the average American today has an attention span of a mere eight seconds, likely lower for the newer generations due to smartphones and other technology (Budd, 2017), the subtitles that stayed for

long periods of time throughout the speech notably led to decreased levels of engagement, leading to the lower comprehension scores shown in the table above. On the other hand, when subtitles were faster, the participants were indirectly forced to pay more attention in order to read the words before the subtitle disappears. When comparing the click speed tests we can observe that the slower speed (12 cps) caused much more confusion to the participants than the faster speed (20 cps) English subtitles. With nearly double the speed, the participants performed about two times better. With this insightful data, better learning processes can be leveraged to improve daily productivity, schools, and private institutions to improve efficiency in many lives.

Another study investigated the benefits of reading foreign-language captions while watching and listening to foreign speakers (Winke 2010). The 26 participants in the experiment were second and fourth-year learners of the four languages: Arabic, Chinese, Spanish, and Russian. They watched three short videos with and then without subtitles in a random sequence.

Videos for this experiment were three short documentaries about salmon, bears, and dolphins in English language. The original English-language videos were translated and subtitled with four target languages with all other sounds and background preserved. The video was shown two times: once with captioning and once without. Vocabulary tests were conducted, where the participants were asked to translate the target words into English. To compare their knowledge prior to watching with subtitles, participants were asked to respond on the following scale from 1 to 5 with 1 being “I did not know this word before watching the video” and 5 being “I definitely knew this word before watching the video.”

This study reveals that subtitles reinforce the acquisition of vocabulary, which allowed the participants to understand and then determine the meaning of the video. The participants who were presented with subtitles in the first viewing were able to recognize more nphotoovel words

than the participants who were presented with subtitles in the second viewing. The participants supported that the captions helped draw their attention to the language of the video, whereas it was a more challenging task when done without any captions. The subtitles helped isolate what the participants regarded to be significant and helped them understand the words in the videos better.

By incorporating captions in the videos, the overall depth of understanding almost doubles (Mitterer 2009). Attributing using all senses, multiple aids encapsulates several modes of learning to best serve the participant. The more inputs that have been incorporated, the better one's retention is. Many students today only use one or two modes of learning. Diversifying the methods of studying they use can drastically improve their understanding of the content (Kharb, 2013). As a result, subtitles, specifically foreign subtitles when learning foreign languages, can aid in the comprehension of foreign-language videos. Therefore, we can conclude that exposure to old items with native language subtitles notably improves one's retention of the items presented, higher speed subtitles are strongly correlated with higher levels of memory compared to slower ones, and synchronization of subtitles is significant to heighten the listener's focus. With these conclusions in mind, learning foreign languages can be improved and optimized.

Perception

When exploring the perception of accented speakers, there are many avenues available for analysis, including self-perception, outsider judgment, and the impact of regional accents. These can all manipulate the day-to-day life of an individual in many scenarios. For example,

speech impacts how friendships and connections form, identity, and how likely one is to be hired. Research has uncovered that “language is a predominant cue for social categorization”, and causes people to group themselves with accents they perceive to have “more positive personality traits” (Kozlowski, 2015, 12-13). Accented speakers are impacted heavily through impressions of themselves and judgment from native speakers, both of which may impede their daily lives.

In a recent study, foreign accents were explored through self-perception. Twenty four German female participants listened to their own English speaking voice and three other participants' voices and rated each phrase out of 60 total phrases based on how well the speech was pronounced (Mitterer, Eger & Reinisch, 2020). To eliminate the confounding variable of the bias of underrating or overrating their own accents their speech was altered to sound like male voices. The data reveals that the participants rated themselves higher in comparison to other participants where a rating system commonly used in German settings deems 1 as “very good pronunciation” and 6 “poor pronunciation”(Mitterer, Eger & Reinisch, 2020). There was a significant difference between the ratings, in which listeners on average placed their own voice closer to a 2 and other voices at about a 2.5 value. The results demonstrate that people considerably found their altered voices to be more proficient over other participants. This indicates that language learners would hear less of their own mistakes in their accent in a learned language and may not be able to fix mispronunciation, this even if desired. It was noted that the consequences of this could be an explanation for “fossilization”, where language learners “persist in speaking with an accent even after many years of practice” (Mitterer, Eger & Reinisch, 2020, p.10).

As a result, foreign-accented people face more discrimination than native speakers in relationship growth, cultural fluency, and career-building. An article in *The New Republic* reveals the gravity of these effects. One study revealed that “accent alone can induce a cultural frame-shift in biculturals” (Robb, 2014). In other words, hearing a specific accent can change how a sentence is culturally perceived by one who has a bicultural background. This results in changes in the acceptance of social behaviors that vary across different cultures. For instance, if a bilingual individual heard someone explaining how they left a tip spoken both in Japanese and English, they would recognize the Japanese speech to be ruder as it is rude to tip in Japan. The other phrase would be perceived as more acceptable as tipping in English speaking countries is more accepted.

These cultural frame-shifts are explored through a study that had 52 Americans and 14 bilingual Iranian-Americans who listened to a virtual agent speak using a different accent (Dehghani, Khooshabeh, Huang, Lia Oganessian, & Gratch, 2020). Researchers created an embodied conversational agent (ECA) shown to each participant during the experiment; the ECA creates a “convenient platform to isolate unique cultural characteristics and realize them through simulation” (Dehghani et al, 2020, p.1). Each participant read the same story and was greeted by the ECA in either an American or Iranian accent. Participants then filled out a questionnaire about the story they read and the appropriateness of the characters’ actions. The following charted data (with a scale of 1-6; 1 = appropriate at all and 6 = completely appropriate) demonstrates a large difference perceived in the story by Iranian-Americans when the agent spoke with the two different accents.

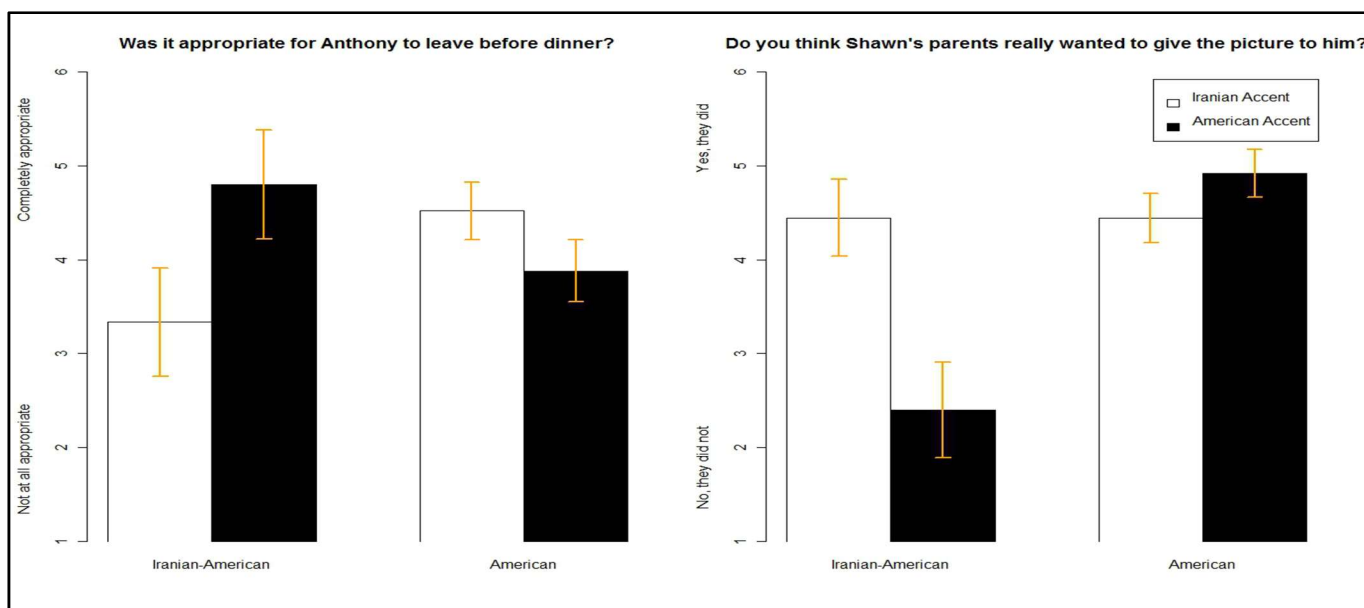


Figure 7. The two graphs measure the level of appropriateness of a certain situation using numbers 1 through 6, 6 being the most appropriate and 1 being the least. The black represents a speaker with an American accent and white being an Iranian accent (Dehghani et al, 2020, p.1).

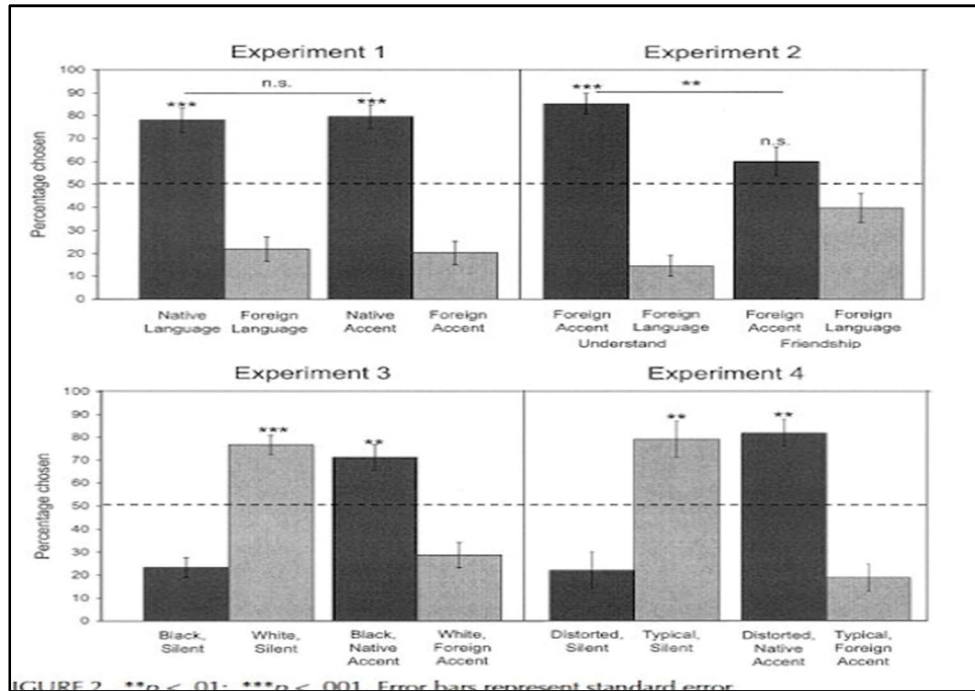
The bicultural speakers found it less appropriate to leave before dinner and more appropriate to take the picture when the ECA used an Iranian accent, as hospitality should not be refused (leaving early and not accepting a gift) in Iranian culture. Conversely, these actions were perceived as more appropriate when paired with an agent with an American accent, as leaving before a meal and refusing a gift is more polite in American culture. The culture frame-shifts were less prominently observed with American participants, which could be due to individuals with a “multicultural background (33% African-American, 14% Latino)” (Dehghani et al, 2020, p.8). Therefore, the data demonstrate a frame-shift occurring more strongly in explicitly bicultural individuals than the American participant group.

Beyond cultural influence, relationships are impacted at a very young age due to foreign pronunciation. Robb stated that research from Harvard University discovered that 5-year-old kids are more influenced by speech than race when picking friends (2014). Another experiment

studied 16 monolingual English speaking five-year-olds' preferences for friends (Kinzler, 2008). Participants chose their friends based on recordings of the French language, French-accented English and American English paired with pictures of either Black or white children in different combinations (i.e. Black student, native accent vs. white student, foreign accent). The following figure shows the percentage of children who chose playmates based on their race and accents in four experiments (Kinzler, 2008, p.57).

Figure 8. The graphs 1,2, and 4 all represent the data in terms of percentage of children who chose a particular person to be friends. Experiment 2 represents the percentage of participants who understood and befriended one of the subjects (Dehghani et al, 2020, p.8).

For the specific trial of race pitted against foreign accent, when silent, almost 80% of the children chose the white friend. However, when the white friend was identified having a French accent, about 75% of the participants chose the native accented black student. It is evident that children would prefer a black student as a friend over a student with a foreign accent. This has tremendous weight in showing one-way speech can be a detriment to an individual's ability to



create a social space for themselves. These differences impede the human need for interpersonal relationship building and growth for foreigners.

Speech also puts accented speakers at an economic disadvantage as discussed in *The Perception and Evaluation of Job Candidates with Four Different Ethnic Accents*, a research paper that found “a strong Ethnicity x Job Status interaction” where accented participants were rated best fit for lowest status positions (Kalin, Rayko & Love, 1980). This was run with several accents; results showed that the European German accent was perceived as more suitable for higher status jobs but still fell below native English speakers. This bias establishes an outsider position where “a non-native accent might be perceived to be lazy, incompetent, and

uneducated” (Kozlowski, 2015, p.14).

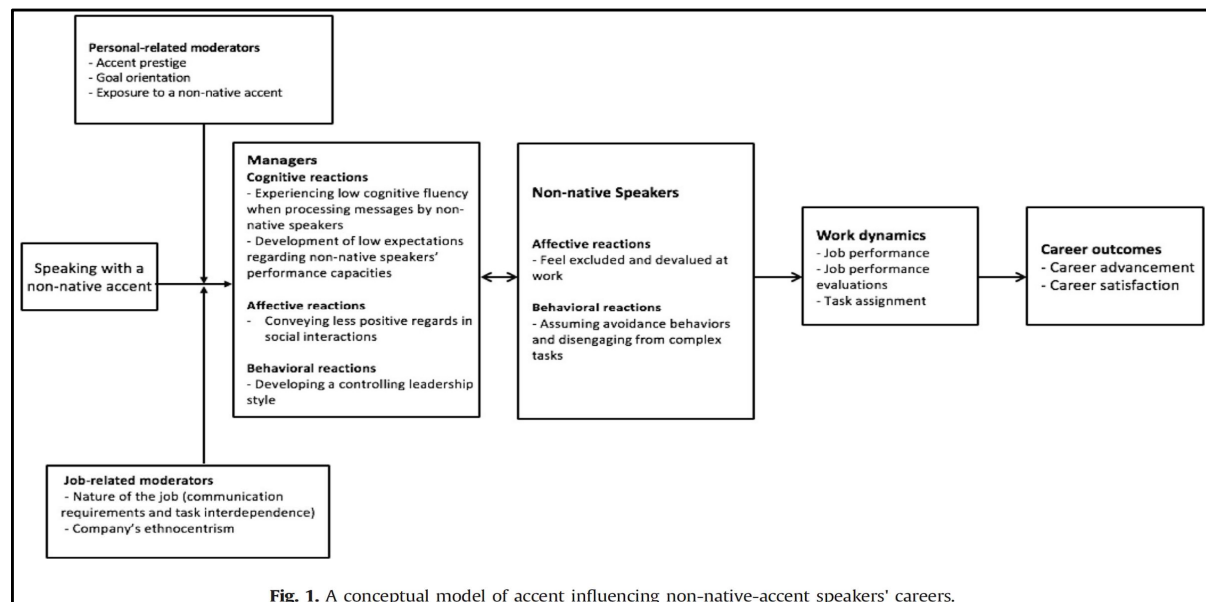


Figure 9. This is a flow chart showing how accents influence the careers of nonnative speakers (Russo, 2016, p.2).

Discrimination is clearly presented toward foreign-accented people in the workforce and is perpetuated through powerful stereotypes that are felt in different magnitudes by different cultures.

The impact of foreign accents in the workplace was explored in a “conceptual model examining the influence of non-native accents on work and career outcomes” that utilized perspectives from the speaker’s point of view and the impact of the listener (Russo, 2016, p.2). Figure 9 conveys the ways in which having an accent is perceived and navigated in a workspace. By following the flowchart, common scenarios can be played out and explained to demonstrate the depth of discrimination that occurs due to speech and accents.

Following each arrow in the flow chart shows both how the listener responds to the foreign-accented speaker and the response of the speaker. This demonstrates the stress that can impact the speaker to behave differently in a negative manner as a direct consequence of the

responses of listeners in a work-type setting, creating short and long term issues with communication and career development.

It is also important to look at the impact of regional accents in a career setting. A study on Southern accents concluded that the regional speech was perceived negatively and found that counselors with this accent were more likely to be labeled incompetent (Bass, 55). This study involved 155 psychologists who valued multiculturalism. The experiment recorded the speakers as vignettes in six recordings, three Southern-accented and three not, but all had the same dialogue. The participants were to listen to one of the six recordings. After listening to their vignettes, the participants were required to answer a few questions about the competency of the speaker as well as questions about themselves. There are strong notions from this paper that reveal that all accents face judgment and can allow for stereotypes and bias in the daily lives of many individuals. Even though all the participants are all professionals and claim that multiculturalism is vital in their jobs and daily lives, there are still implicit biases that surface in their judgment. Regardless of the values held by the individual, stereotypes are ingrained and maintained in an individual. This kind of information can be extended to other parts of daily life. One way to further this research is by looking at the way regional accents influence children's choices in friendships, much like the previous research discussed above. Exploring avenues of all accents, including regional accents, should be kept in mind for combatting all disadvantages presented by perception.

The results gathered here illustrate some of the ways perception of foreign accents presents challenges in the routine life of someone with a foreign accent in ways that are harmful that native speakers do not face. For example, “speakers' intelligence, professional competencies, and political skills” are negatively perceived and devalued by society when the speaker has a

non-native accent (Russo, 2016, p.3). This information should be explored further alongside programs that can target implicit bias and indirect discrimination. Not only do these individuals face disadvantages from preconceptions and biases, but society also misses an opportunity to develop a multicultural community to further ideas and progress toward improvement. Because these biases are learned behaviors and form at an early age, classrooms should focus on educating students on these perceptions. In targeting schools for change, there is a possibility to reach a large audience with a strong impact within the perception of accented speakers.

Conclusion

Accented speakers are heavily influenced by daily factors that are impacted by auditory and visual stimuli, perception, and even subtitles on a television. Due to certain implicit biases, many participants assumed that speakers with foreign accents were less capable than their in-group counterparts. Specifically, foreign accents are believed to be less credible by listeners, even if the speakers are of the same social status. This trend also appears consistent between

different languages as experiments that tested different accents such as Korean and English accents returned evidence of perceived lower credibility. Even more broadly, the perception of an accent can affect how people experience different cultures and societies. Foreign accents can affect how people react to situations based on their cultural backgrounds. In addition, accents can play a role in smaller aspects of life such as subtitles on the television. Subtitles specifically tuned to be well synchronized to the audio and speed can affect the watcher's retention and rate of learning. In this case, even foreign subtitles can help the watcher learn and read in languages that were previously unknown to the watcher. Using the correct speed and orientation of the subtitles can be beneficial in learning new languages in different types of media.

It becomes clear that foreign-accented people experience a different day-to-day life than native-accented individuals in the discrimination shown in many ways through social acceptance to credibility all of which impact a wide range of vital functions such as job interviews to context comprehensibility on televisions. Mostly, the effects are negative in many environments, whether it be the workplace or even in close social interactions. While it may seem unnecessary to look at these specific ideas, the research shows this has a significant effect in a world where more than 50% of the world speaks more than one language (Grosjean). When people can speak more than one language, foreign accents are inevitable, which leads to the negative issues of discrimination. Through this literature review, it is revealed how pertinent it is to go forward with novel ways to integrate and battle against preconceived, harmful biases in order to continue building human connection and advancements in societies around the globe. This kind of information can be extremely useful in understanding the physiological responses to human biases and how to minimize their impact in different environments. This knowledge can help reduce the handicap foreign speakers face in the workplace or in academia. The evidence found in experiments such

as the one studying friendships can even help determine which kind of bias is more influential, comparing racial biases and accent biases. All of these varied applications can all lead to breaking down the walls between different populations and reduce the impact of natural human biases.

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