Implicit bias and perception of accent

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This study explores our underlying, unconscious attitudes towards foreign accents. Italian and Mandarin accents were compared in order to determine whether there is a common preference amongst Western Canadian participants. Implicit bias was measured using an Implicit Association Test, in which participants associated each accent with positive words as quickly as possible and reaction times were recorded. A survey was also taken to examine participants' conscious attitudes towards the accents and compare them with their implicit biases. The survey results showed no preference for one accent or the other, with overall averages of 2.63 for Mandarin accents and 2.65 for Italian accents. The results of the IAT revealed that implicitly, Italian accents were preferred, having an average reaction time of 1528.68ms while Mandarin accents had an average reaction time of 1657.02ms. Implicitly, 16 participants preferred Italian accents, while only 4 participants preferred Mandarin accents. The results of this study suggest an underlying preference for Italian accents over Mandarin accents in Western Canadian society.
Keywords: Implicit bias; sociophonetics; nonnative accents; Mandarin; Italian

1 Introduction

In every human interaction that we have, we are constantly making judgements and assumptions about the other person (Drager, 2010). The implicit biases that are formed can contribute to societal discrimination, including racial and gender stereotyping, by individuals who would not intentionally or overtly discriminate against such minorities (Staats, 2016). Being made aware of these implicit biases can shed light on the unintentional discrimination that occurs in our society today. This paper seeks to deepen our understanding of implicit biases when it comes to Canadians' judgements of foreign accents. Italian and Mandarin accents were compared in order to identify whether these accents have a significant effect on the way that speakers are perceived as individuals.

2 Background

2.1 Implicit bias

Implicit bias refers to the unconscious attitudes and stereotypes that can affect an individual's actions without triggering their conscious awareness (Brownstein & Saul, 2015). Previous research has found that an individual's implicit bias does not necessarily correlate with their explicit or conscious attitudes (Karpinski & Hilton, 2001). Identifying the underlying implicit biases that exist in our society is a highly important area of research, as bringing awareness to a person's unconscious biases can allow them to actively align their actions with their beliefs (Staats, 2016). Illuminating the underlying stereotypes that are prevalent in our society is the first step towards eliminating the discrimination that those stereotypes bring about. Greenwald et al. (1998) developed a method for measuring implicit bias called the Implicit Association Test (IAT). In this study, they found that the IAT was able to tap into participants' unconscious racial biases by asking participants to associate white and black faces with pleasant words. The reaction times recorded in this task revealed how naturally participants associated each race with pleasant words, with shorter reaction times indicating a stronger association. Since this publication, the IAT has become a popular method for operationalizing implicit biases. This work has been primarily focused on visual stimuli, highlighting social issues including racism, sexism, and ageism. With regard to these topics, IAT scores have been found to be significantly more valid in predicting behaviour compared to self-reports (Greenwald et al., 2009). Implicit bias has been found to be a better predictor of non-verbal behaviour, while self-reports were better predictors of verbal behaviour (Dovidio et al., 2002).

3 Sociophonetics

In conversation, speakers are constantly and unconsciously picking up on subtle phonetic cues within spoken language (Drager, 2010). These cues allow us to make assumptions about important non-linguistic information, such as the speaker's personality, intent, and emotional state. Although these judgements are not always accurate, previous research has found that assumptions are often consistent across participants, regardless of the accuracy of their judgements (Drager, 2010). A study conducted by McAleer et al. (2014) asked participants to listen to audio recordings of the word 'hello' and answer questions about the speakers based on traits such as trust, likeability, and dominance. The study found that the voices were rated consistently between participants based on only a single word (McAleer et al., 2014). This study shows that judgements about personality happen almost immediately, while also supporting previous work by highlighting the consistency of personality judgements. This research provides a basis for using spoken language, as opposed to visual stimuli, to study implicit biases. Since sociophonetic information is processed after as little as one word, the unconscious

assumptions being made about the speaker are happening within that same time frame.

3.1 Attitudes towards Foreign Accents

Research on implicit biases has highlighted underlying stereotypes that exist towards various minorities, especially highlighting issues of race and gender (Melamed et al., 2019; Pritlove et al., 2019). Foreign accents are another topic that has often been the target of discrimination (Gluszek & Dovidio, 2010; Roessel et al., 2018; Roessel et al., 2020). Because of this prevalent stigmatization, nonnative accents are an important topic to study through the lens of implicit biases. Increasing individuals' awareness of their own biases toward foreign accents could lead to necessary change in their actions. Previous research has found that implicitly, nonnative accents in general are found to have a negative stigma, no matter which foreign accent is being judged (Roessel et al., 2018). In the present study I am interested in examining attitudes towards Mandarin and Italian accents of English, and comparing the two. These accents have not been studied in the context of implicit attitudes, but there is some research that has examined listeners' conscious opinions using surveys. In a study examining conscious attitudes towards a variety of foreign accents, Mandarin accents were rated less favourably than French, German, Russian, and Hindi accents (Dragojevic & Goatley-Sloan, 2020). Similar studies have associated Italian accents with incompetence, low attractiveness, and high sociability when compared to other Western European accents (Ball, 1983).

Previous research that has studied implicit biases towards accents has found significant results. Pantos and Perkins (2013) measured listeners' implicit and explicit biases of American and Korean accents. They used surveys to tap into explicit bias, and the IAT to tap into implicit bias. Upon comparing their results, they found that, explicitly, participants favoured the Korean English accent, while implicitly, the American accents were preferred (Pantos & Perkins, 2012). Another study conducted by McKenzie (2015) examined British students' implicit and explicit biases of six different accents of English. This study found similar results. The UK English accent was implicitly favoured, while the explicit tests did not show this clear bias (McKenzie, 2015). Each of these studies found that implicitly, native accents were preferred to foreign accents. These results were likely influenced by in-group bias, meaning that the results of these studies could be attributed to a preference to one's own accent, rather than having anything to do with the foreign accents themselves. In my experiment, I am interested in comparing two separate nonnative accents, rather than using any native accents. I am interested in comparing perceptions of Mandarin and Italian accents in order to answer the question: Is there a significant difference in participants' implicit judgements of Mandarin and Italian accents? Based on previous research done on the stereotypes associated with these accents, I predict that the Italian accents will be preferred to the Mandarin accents. While Italian accents were determined to be one of the least preferred among Western European accents, Mandarin accents

were rated below all of the European accents that it was compared to (Ball, 1983; Dragojevic & Goatley-Sloan, 2020). A second research question that will be answered by this study is: Do participants' explicit judgements correlate with their implicit biases? Based on the findings of previous research (McKenzie, 2015; Pantos & Perkins, 2012) I predict that there will be a difference, and that the implicit bias results will be more strongly in favour of the Italian accents, while the explicit bias results will not show such a strong preference.

4 Methods

4.1 Participants

The listeners in this study consisted of 20 native English speakers who are currently living in Western Canada. Participants needed to have English as their first language in order to ensure that the accents that they are judging are, in fact, foreign to them. It is important to take into account the area in which participants are living, because each society has different underlying stereotypes and prejudices, and for the purposes of this study I am interested in the biases of Western Canadians specifically. The participants included 17 individuals currently living in BC, and 3 individuals living in Alberta. Participants ranged from 17 to 79 years old (m=29.11). Participants were 15% men and 85% women.

4.2 Stimuli

The stimuli presented to participants was extracted from the Speech Accent Archive Corpus (Weinberger, 2015). Two speakers of each accent were selected, one male and one female. The audio files selected had similar audio quality in order to avoid skewed results based on clarity. The same speakers were used throughout the experiment, to retain consistency across the different tasks. The second task also involved visual stimuli, which consisted of individual words presented in the middle of the screen (Appendix A). Further discussion of the presentation of stimuli for each task is included below.

4.3 Experimental Procedure

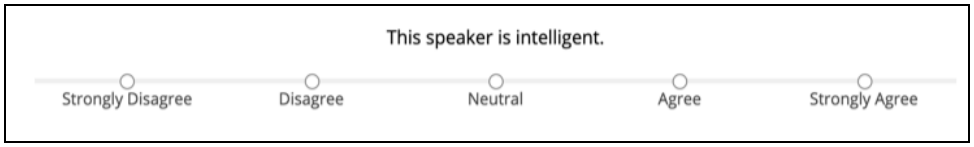
The experiment was administered online and was coded using JsPsych (de Leeuw, 2015). Participants were sent an informed consent form ahead of time and were required to give their consent in order to access the rest of the experiment. There were two parts to the study, with separate tasks to measure explicit and implicit biases. The experimental procedure of each task is outlined below. After completing the experiment, participants were asked a series of demographic questions, including gender, age, city of birth, city of residence, and previous language experience and/or exposure.

4.3.1 Task 1: Initial assumptions

The first portion of the study was a survey designed to measure participants' explicit biases. The stimuli consisted of an audio file of the following phrase spoken in either a Mandarin or an Italian accent: "Please call Stella. Ask her to bring these things with her from the store: Six spoons of fresh snow peas, five thick slabs of blue cheese, and maybe a snack for her brother Bob." After listening to the audio file, participants were asked to rate the voices on a series of 5-point Likert scales. Figure 1 shows an example of one of the Likert scales. Participants were asked to rate the voices on five scales, based on the conditions of: Likeability, Intelligence, Trustworthiness, Competence, and Friendliness. These attributes have been used in the literature to analyze the different aspects of a person's personality (Roessel et al., 2018). This procedure was repeated for each speaker, for a total of four trials, which were presented in a randomized order.

Figure 1

Survey Scale Used by Participants to Rate Speakers' Intelligence



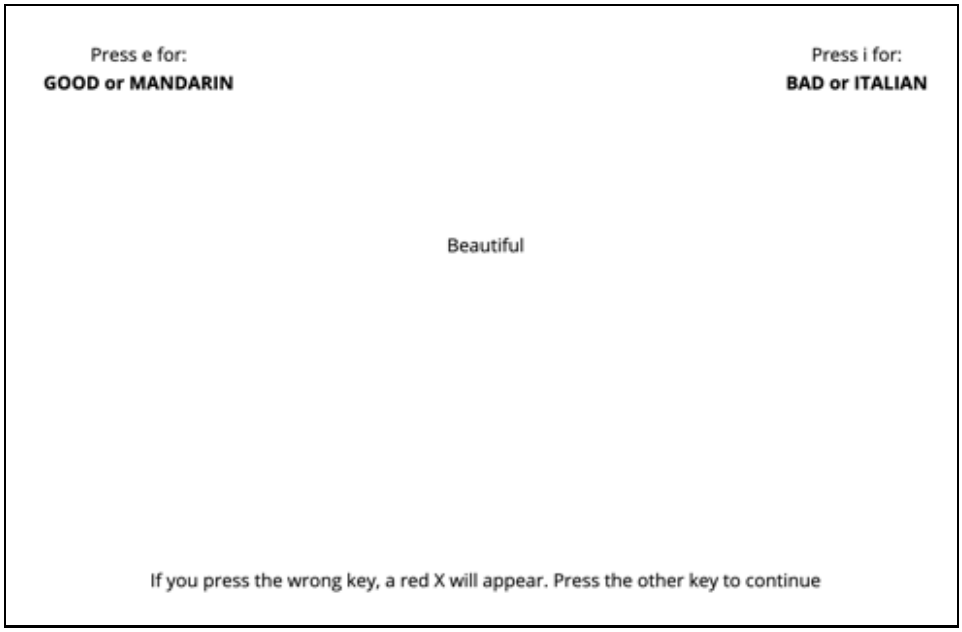
4.3.2 Task 2: Implicit association test

Implicit bias was measured using an IAT. Participants were asked to categorize stimuli as quickly as possible. The stimuli used included the same audio clips from Task 1, cropped into shorter segments using Praat (Boersma & Weenink, 2019). The stimuli also included synonyms of 'good' and 'bad' that were presented visually in the middle of the screen. Each stimulus and the category to which it belongs is given in Appendix A. The stimuli were randomly presented one at a time, and participants were instructed to press the 'E' key if the presented stimulus matched the condition shown in the upper left corner and press the 'I' key if the stimulus matched the condition shown in the upper right corner of the screen. Figure 2 shows an example of the screen that participants were shown during the IAT. In this example, the stimulus *Beautiful* is presented in the middle of the screen, and the participant has to press the 'E' key to put the stimulus in the category *Good* shown on the upper left side of the screen. If a participant responds incorrectly, a red X appears on the screen, and the participant then has to press the other key in order to continue to the next stimulus. There were seven trials of the IAT, three training sessions and four measurement sessions. Each trial involved a different combination of categories, which are outlined in Appendix B. Each training session was used to allow participants to become accustomed to the relevant categories being on each side. Training sessions 1 and 2 allowed

participants to get used to *Mandarin* and *Good* being on the left and *Italian* and *Bad* being on the right, while only having to think about one category at a time. The measurement sessions combined the audio and visual stimuli in order to quantify the associations between the two. Training session 5 allowed participants to get used to *Italian* now being on the left, associated with *Good*, and *Mandarin* now being on the right, associated with *Bad*. This block ordering, along with the words used for the *Good* and *Bad* categories, is standard amongst IAT studies (Pantos & Perkins, 2013).

Figure 2

Screenshot of IAT Trial Screen



3.4 Data Analysis

The data from the surveys was coded and compiled, with each response on the Likert scales having a corresponding numerical value. The responses were coded using integers between 0 and 4, with 0 meaning strongly disagree and 4 meaning strongly agree. The mean responses of all participants were recorded for each condition and compared across accents. For the IAT, reaction times were measured for the correct responses, and the results of each accent were compared. Reaction times for Mandarin accents were taken from blocks 3 and 4, when participants associated 'Mandarin' and "Good", and reaction times for Italian accents were taken from blocks 6 and 7, when associating 'Italian' and 'Good' (Appendix B). Reaction times were excluded if they were over 10,000ms, assuming the participant was not focused on the task, or if more than 10% of the reaction times

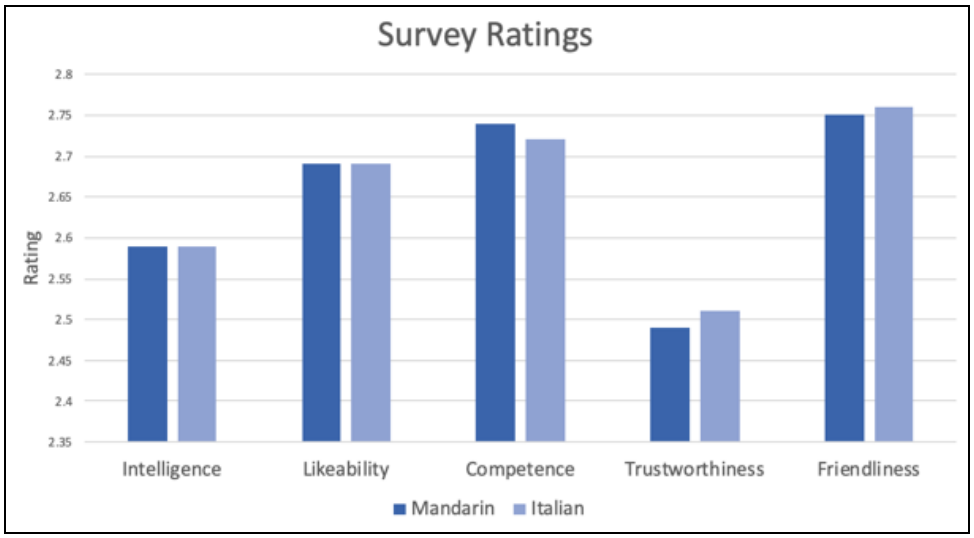
in a trial were under 300ms, assuming that the participant was pressing the keys at random, as is standard practice among IAT research (Pantos & Perkins, 2012). The difference in averages of each accent for each task were calculated within participants and compared to observe their explicit and implicit preferences.

5 Results

The results of the survey show no preference for one accent or the other. The overall average ratings across all conditions were 2.63 for the Mandarin accents and 2.65 for the Italian accents. These values indicate that both accents were overall rated just higher than neutral. Figure 3 shows the ratings for each condition. There was little variance between conditions. The highest rated condition for both Mandarin and Italian accents was Friendliness, with mean ratings of 2.75 and 2.76, respectively. The lowest rated condition was Trustworthiness, which averaged at 2.49 for Mandarin accents and 2.51 for Italian accents. Trustworthiness appears to be rated quite a bit lower in the figure, but the difference between 2.5 and 2.75 is not noteworthy, as all of the conditions were rated between 'neutral' and 'agree'. As we can see in the figure, the Mandarin and Italian accents were rated very similarly in each category. In two of the conditions, Intelligence and Likeability, the averages of the two accents were exactly the same, and the largest difference between the accents was a difference of 0.02, which occurred in the conditions of Competence and Trustworthiness.

Figure 3

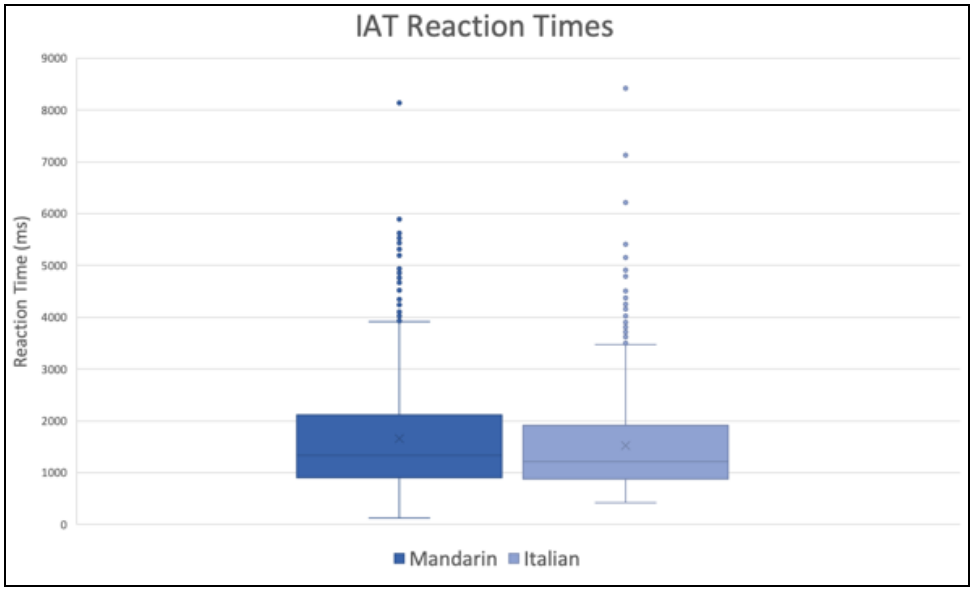
Survey ratings of Mandarin and Italian accents in each condition



There was a considerable amount of overlap amongst the reaction times of Mandarin and Italian accents in the IAT. Despite this overlap, there is a slight preference for the Italian accents. Figure 4 shows all of the reaction times for the correct responses when associating *Mandarin* with *Good* shown in dark blue, and when associating *Italian* with *Good*, shown in light blue. The overall mean reaction times were 1657.02ms for the Mandarin stimuli and 1528.68ms for the Italian stimuli.

Figure 4

IAT Reaction Times when Associating Mandarin and Italian Accents with Positive Words



Note. The reaction times include responses to all of the stimuli in all of the categories, the difference being which categories are grouped together during the respective trials.

Given the variability in both survey responses and IAT reaction times between participants, accent preferences were also compared within participants. Table 1 shows the distribution of participants based on which accent they rated higher in the survey task, and which accent they associated more quickly with positive words in the IAT. Out of the 20 participants, 8 rated Italian accents higher in the survey, 7 rated Mandarin accents higher, and 5 participants rated the accents exactly equally in the survey. This is an incredibly balanced distribution across the two accents. We do not see the same pattern in the IAT results. In this task, 16 out of the 20 participants made the association between *Italian* and *Good* more quickly than the association between *Mandarin* and *Good,* while 4 participants associated *Mandarin* with *Good* more quickly.

Table 1

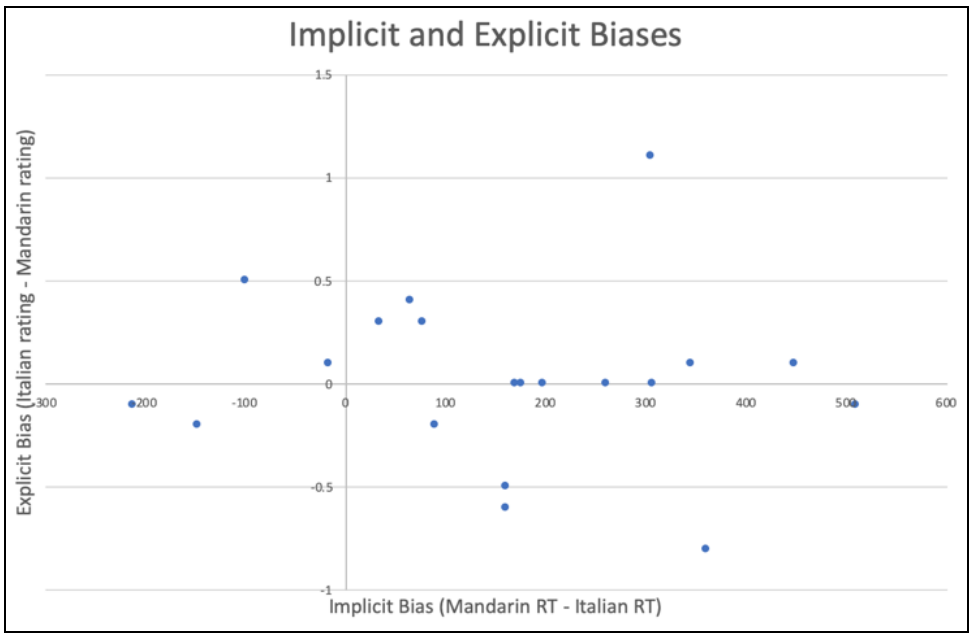
Distribution of Participants' Accent Preference in Each Task

	Italian	Equal	Mandarin
Explicit (Survey)	8	5	7
Implicit (IAT)	16	0	4

Figure 5 illustrates the degree to which participants preferred one accent or the other. Each point on the graph represents one participant, and how much preference they gave to one accent, both implicitly and explicitly. The x-axis represents participants' implicit biases. Each participant's average reaction time in blocks 6 and 7 (associating *Italian* with *Good*) were subtracted from their average reaction time in blocks 3 and 4 (associating *Mandarin* with *Good*). Participants that fall in the positive range implicitly preferred Italian accents, while participants whose x-value falls in the negative range implicitly preferred Mandarin accents. The difference between each participant's average survey rating of Mandarin accents and their average rating of Italian accents is represented on the y-axis. Higher positive values represent a greater preference for Italian accents, and negative y-values represent a preference for Mandarin accents. The values of reaction time differences ranged from -211.15ms to 509.76ms, while the differences in average survey ratings range from -0.8 to 1.1. We can see from this figure that the degree to which each accent is preferred follows the same trend as the distribution discussed in Table 1. The degree to which each accent is explicitly preferred is fairly balanced, which is similar to the number of participants who preferred each accent. Implicitly, the degree to which Italian accents are preferred exceeds the degree to which Mandarin accents are preferred by almost 200ms. This correlates to the uneven distribution in the number of participants that implicitly prefer each accent.

Figure 5

Distribution of Participants' Accent Preferences in Each Task



6 Discussion

In regard to the research questions and predictions outlined in section 2.3, the results of this study followed the trends that have been identified in previous research. The first prediction made was that implicitly, Italian accents would be preferred to Mandarin accents. This prediction was confirmed in the data. While there was no previous research found that studied implicit biases toward Italian or Mandarin accents specifically, we could assume based on previous findings examining attitudes towards foreign accents that Mandarin accents would be interpreted less favourably than Italian accents. Specifically, Dragojevic and Goatley-Sloan (2020) found that Mandarin was perceived to be inferior to German and French accents. While this study did not examine Italian accents, we could assume that these findings would extend to other Indo-European languages. This assumption was reinforced by the results of this study.

There was no distinct prediction made in regard to which accent would be explicitly preferred, as there was no comparison previously made between the two accents in the literature. It was predicted, however, that we would not see the same clear preference as in the IAT data. This prediction was made on the assumption that participants would not be entirely aware of their own attitudes or prejudices, and that consciously, they would not consider Italian accents to be in any way superior to Mandarin accents. This prediction also played out in the data. The

results of the survey data were even more evenly distributed between the accents than expected. The fact that, after 20 participants rating two different voices in each accent, the results were exactly equal in two of the conditions is surprisingly balanced.

The results of this study lead to another important question: To what can this apparent implicit bias be attributed? Previous research would suggest that it is an effect of the stereotypes that exist within our society (Brownstein & Saul, 2015). One case from the present study that is of interest is that of a Chinese participant who grew up speaking both Mandarin and Cantonese at home, along with English. Based on these facts, one would expect that her results would differ from those of Caucasian participants who have had little exposure to both Mandarin and Italian accents. Her results, however, showed that while this participant rated Mandarin accents higher in the survey, her IAT results indicated a preference for Italian accents. This data could suggest that societal stereotypes, rather than individual ethnicity, was a more influential factor in determining implicit bias, as this participant was born and raised in BC.

Another important effect to consider when analyzing the results of this study is the influence of the COVID-19 pandemic. The data in this study was collected in March 2021, a year after Canada first went into lockdown as a result of the pandemic. Studies have found that since the beginning of the pandemic, anti-Asian attitudes and xenophobia have increased in correlation with a fear of contracting the virus (Reny & Barreto, 2020). Consideration needs to be taken in whether the results that we see can be fully attributed to a general underlying prejudice in Canada, or whether the COVID-19 pandemic has had a substantial influence on our current attitudes towards Mandarin accents. It would have been interesting to be able to compare the results of this study with data recorded before the pandemic, or with data taken years down the road, in order to disambiguate the results from the influence of COVID-19.

7 Conclusions

Overall, the results of this study suggest that there is an underlying preference for Italian accents over Mandarin accents in Western Canadian society. It is tempting to generalize these findings to European and Eastern Asian accents overall, but having only looked at one accent from each region, the findings of this study can only apply to Italian and Mandarin accents specifically. Further research looking at a variety of European accents and comparing them with a variety of Eastern Asian accents would be helpful, in order to see if the present findings hold true. The present analysis is only a pilot study, with only 20 participants. In order to increase the validity of the results, further research would need to be done with a larger sample size.

If the present results were to hold true with a larger number of participants, these findings could have implications within a variety of areas. Implicit biases have been found to have a substantial impact in many fields, including law, medicine, and mental health services (Chapman et al., 2013; Jolls & Sunstein,

2006; Peris et al., 2008). It is important to consider how our unconscious attitudes towards accents as a society may be affecting the treatment of individuals who have those accents. A number of suggested interventions have been claimed to be successful in increasing personal awareness and reducing implicit biases (Brownstein & Saul, 2015; Devine et al., 2012). There are control-based interventions, which focus on increasing awareness of one's biases and actively preventing them from having an effect on one's actions, and alternatively there are change-based interventions, which focus on changing the unconscious biases themselves (Brownstein & Saul, 2015). The long-term effectiveness of both of these strategies is debated, but further research into how they could apply to implicit bias as it relates to accentism could have a crucial effect on the discrimination that takes place based on accents.

Another important implication to consider is the level of accountability that is associated with implicit bias compared to explicit bias. A study by Daumeyer et al. (2019) found that participants were less likely to hold individuals who were guilty of discrimination accountable if their actions were attributed to implicit bias. Even if their actions were the exact same, they were perceived as more acceptable if they were caused by implicit rather than explicit bias. These findings are highly important, because they highlight the possibility of implicit bias being used to justify discrimination. As our understanding of implicit bias grows, it is crucial that we continue to take responsibility and be held accountable for our implicit biases on a societal level as well as at an individual level.

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Appendix A

Implicit Association Test Stimuli

Condition	**Type of stimuli**	**Stimuli**
Mandarin	Audio	"Please call Stella"; "Ask her to bring these things with her from the store"; "Six spoons of fresh snow peas"; "Five thick slabs of blue cheese"; "We will go meet her Wednesday at the train station"
Italian	Audio	"Please call Stella"; "Ask her to bring these things with her from the store"; "Six spoons of fresh snow peas"; "Five thick slabs of blue cheese"; "We will go meet her Wednesday at the train station"
Good	Visual	Beautiful; Lovely; Joy; Happy; Smile; Wonderful
Bad	Visual	Horrible; Painful; Awful; Disgust; Humiliate; Terrible

Appendix B

Implicit Association Test Trials

Trial #	**Condition presented on the LEFT**	**Condition presented on the RIGHT**
Trial 1 (training)	GOOD	BAD
Trail 2 (training)	MANDARIN	ITALIAN
Trial 3 (measurement)	GOOD or MANDARIN	BAD or ITALIAN
Trial 4 (measurement)	GOOD or MANDARIN	BAD or ITALIAN
Trial 5 (training)	ITALIAN	MANDARIN
Trial 6 (measurement)	GOOD or ITALIAN	BAD or MANDARIN
Trial 7 (measurement)	GOOD or ITALIAN	BAD or MANDARIN