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The effect of accent exposure on children's sociolinguistic evaluation of peers

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Abstract

Language and accent strongly influence the formation of social groups. By five years of age, children already show strong social preferences for peers who speak their native language with a familiar accent (Kinzler, Shutts, DeJesus, & Spelke, 2009). However, little is known about the factors that modulate the strength and direction of children's accent-based group preferences. In three experiments, we examine the development of accent-based friendship preferences in children growing up in Toronto, one of the world's most linguistically and culturally diverse cities. We hypothesized that the speaker's type of accent and the amount of accent exposure children experienced in their everyday lives would modulate their preferences in a friend selection task. Despite literature suggesting that exposure leads to greater acceptance (Allport, 1954), we find no evidence that routine exposure to different accents leads to greater acceptance of unfamiliarly accented speakers. Children still showed strong preferences for peers who spoke with the locally dominant accent, despite growing up in a linguistically diverse community. However, children's preference for Canadian-accented in-group members was stronger when they were paired with non-native (Korean-accented) speakers compared to when they were paired with regional (British-accented) speakers. We propose that children's ability to perceptually distinguish between accents may have contributed to this difference. Children showed stronger preferences for in-group members when the difference between accents was easier to perceive. Overall, our findings suggest that although the strength of accent-based social preferences can be modulated by the type of accent, these preferences still persist in the face of significant diversity in children's accent exposure.

Keywords: friendship preferences; social cognition; developmental sociolinguistics; linguistic diversity; accent-based social preferences; accent discrimination

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Language use is a salient cue to group identity (Fuertes, Gottdiener, Martin, Gilbert, & Giles, 2012). Upon hearing a single sentence spoken by a novel speaker both children and adults can identify speakers who 'talk like them,' that is, those who speak their native language with a native accent (Clopper & Pisoni, 2004; Girard, Floccia, & Goslin, 2008). Adults tend to perceive individuals who share a common linguistic background (termed 'in-group' members) as being more socially desirable, intelligent, and trustworthy than individuals who speak with a foreign accent (e.g., Bresnahan, Ohashi, Nebashi, Liu, & Morinaga Shearman, 2002; Cargile & Giles, 1997; Fuertes et al., 2012; Gluszek & Dovidio, 2010; Lindemann, 2003, 2005). Although these biases are well studied in adults, much less is known about the factors that affect these biases in early childhood.

Research has shown that children as young as five years of age prefer to be friends with peers who 'speak like them,' indicating that these sociolinguistic biases likely emerge early in development (Kinzler, Dupoux, & Spelke, 2007; Kinzler, Shutts, DeJesus, & Spelke, 2009). However, developmental studies examining sociolinguistic biases in children typically collapse across any individual variation in accent exposure. This not only leads to questions about the generalizability of these findings but also leaves many questions unexplored regarding how environmental factors might modulate children's friendship preferences (an area that has been studied much more extensively in the adult literature; see Pettigrew & Tropp, 2006 for a review). In the current study, we take a different approach to address these issues by examining the accent-based friendship preferences of children growing up in a linguistically diverse community.

The development of accent-based social preferences is thought to begin in early infancy. By five months of age, infants can perceptually distinguish their own regional accent from other

varieties of their native language (Butler, Floccia, Goslin, & Panneton, 2011; Nazzi, Jusczyk, & Johnson, 2000; see however Paquette-Smith & Johnson, 2015). By the time infants are six months of age, they will direct their attention towards linguistic in-group members who speak their native language with a familiar accent over out-group members who speak with an unfamiliar accent (Kinzler et al., 2007). These early attentional biases for in-group members appear to be driven by familiarity (Anzures et al., 2012, 2013; Bar-Haim, Ziv, Lamy, & Hodes, 2006; Kelly et al., 2008). For example, infants growing up in Australia who are regularly exposed to Australian and American English (through the media) show preferences for both Australian- and American-accented English (Kitamura, Panneton, & Best, 2013). Thus, infants who are exposed to multiple accents in their input may initially show preferences for accents that are familiar, though not dominant, in their region.

Although infants direct their attention towards people who speak their native language with a familiar accent, a listening preference does not necessarily indicate a social preference (see Haith, 1998 for a discussion). It is not until the preschool years that we see clear evidence of accent-based friendship preferences (Kinzler et al., 2007, 2009; Souza, Byers-Heinlein, & Poulin-Dubois, 2013). A number of studies have examined the friendship preferences of children with relatively homogeneous accent exposure (Kinzler & DeJesus, 2013; Kinzler et al., 2007, 2009). In the most common type of these studies, monolingual American-English speaking 5-year-olds are presented with two images of peers on a screen: one peer speaks English with a native (i.e., American) accent and the other peer speaks English with a non-native (e.g., French) accent. When asked who they would *like to be friends with'*, monolingual American-English speaking children reliably choose to be friends with other American-accented children over children who speak English with a foreign French accent (Kinzler et al., 2007, 2009). These

accent-based group preferences are so robust that accent can even take precedence over racial cues to group membership (i.e., children will choose to be friends with native-accented peers from a different racial group over non-native accented peers from the same racial group; Kinzler et al., 2009). Although there is strong evidence that children make social decisions based on accent information, the factors that drive the development of these preferences are not well understood. Why do American children prefer to be friends with other American-accented children over children who speak with a French accent? Is it because American children are less familiar with French accents? Or do they have greater difficulty understanding French-accented English? Or is it because the non-native-accented children are less fluent and native speakers are biased against this disfluency?

Much of what we know about the factors that influence group formation is based on work with adults. For example, variability in the amount of exposure that adults have to out-group members can impact the strength of their in-group biases (Pettigrew & Tropp, 2006). According to the Intergroup Contact Theory (Allport, 1954), adults who have greater contact with out-group members, such as individuals who belong to different racial, linguistic, or social groups, show less bias against members of those groups. These effects are so robust that simply facilitating friendships between individuals from different racial groups in a laboratory setting can lead participants to report a more positive view of racial out-group members (Page-Gould, Mendoza-Denton, & Tropp, 2008; also see Aboud, Mendelson, & Purdy, 2003; Crystal, Killen, & Ruck, 2008; Rutland, Cameron, Bennett, & Ferrell, 2005 for discussions of intergroup contact effects in children). However, it should be noted that the nature of the contact matters. The positive effects of contact are most often seen when the cross-group interaction is meaningful (e.g., in the context of a friendship) and sustained over a longer period of time. In fact, brief unstructured

cross-race interactions can actually have the opposite effect, leading to greater anxiety and physiological arousal (see MacInnis & Page-Gould, 2015 for a review).

Although the effect of intergroup contact has been tested quite extensively in adults (especially in relation to racial biases; Pettigrew, 1997; Pettigrew & Tropp, 2006) there is much less work examining the factors that amplify and attenuate accent-based group preferences in the childhood years. This is a particularly important issue to address from a developmental perspective because, like other biases, biases against accented out-group members are thought to develop early and become more entrenched and less malleable with age (Abrams & Killen, 2014).

Although it was not specifically designed to explain accent-based preferences, the Developmental Intergroup Theory (DIT) provides a useful framework to outline the factors that generally contribute to the development of biases (see Bigler & Liben, 2007 for a discussion). According to the model, children use input from their environment to establish which dimensions they can use to meaningfully group people, and then they categorize the individuals they encounter based on the salient dimensions they have identified. The categorization of others is thought to depend on both the child's ability to group others as well as their experience with individuals from those groups (i.e., the number and range of exemplars they have encountered).

Previous work has often controlled for children's prior experiences by randomly assigning them to novel social groups (e.g., blue shirts vs. yellow shirts). However, in the real world there can be substantial variability in the amount of everyday contact that children have with out-group members. One might predict that contact with linguistic out-group members, in particular, could have a substantial impact on the strength of children's accent-based group preferences. However, developmental studies of friendship preferences typically do not

capitalize on this naturally existing variation; rather, most studies have minimized the impact of this variation by examining the language-based friendship preferences of relatively homogenous populations of children (i.e., English-speaking Caucasian children from upper-middle-class backgrounds in the United States). However, in recent years there has been increased interest in examining how well these preferences generalize to populations with greater diversity in their exposure. In particular, there has been work examining how exposure to multiple languages (i.e., growing up in a bilingual environment) might influence children's language- and accent-based preferences (DeJesus, Hwang, Dautel, & Kinzler, 2017; Kinzler, Shutts, & Spelke, 2012; Souza et al., 2013). In these studies it was found that similar to monolingual children, children exposed to multiple languages show preferences for familiar over unfamiliar languages and for native-accented speakers over speakers who speak with non-native accents (DeJesus et al., 2017; Kinzler et al., 2012; Souza et al., 2013). Although these studies have allowed us to identify that children's language exposure affects their group preferences, being exposed to multiple languages is fundamentally different than being exposed to multiple accents of a single language. Indeed, these studies do not consider that there may be extensive variation in the amount of accented speech that bilingual children are exposed to, and that this may impact the strength and malleability of their group preferences.

The aim of this study was to examine the formation of accent-based peer preferences in 5- and 6-year-old children growing up in a diverse multi-accent community in Southern Ontario. The Greater Toronto Area (where most of our subjects were recruited) is heralded as being one of the most culturally and linguistically diverse regions in the world. In Toronto more than half of the population was born outside of Canada and around 48% reported learning a language other than English as their first language (Statistics Canada, 2011, 2016). This means that many

individuals are speaking English with a non-local regional accent (e.g., Australian-accented English) or with a non-native accent (e.g., Chinese-accented English). Therefore, there is a huge variety of non-local English accents present in the environment. Thus, although the amount and type of accent exposure can vary greatly between children, on average children living in Southern Ontario routinely experience greater accent diversity than children visiting university labs in many other major North American cities. By testing children in Southern Ontario, who have greater average accent exposure, as well as by looking at how individual differences in accent exposure affect children's friendship preferences, we can begin to examine the impact that accent exposure has on the development of children's language-based peer preferences.

Based on previous work, it is difficult to make predictions about the precise impact that exposure might have on children's preferences, as accent exposure may simultaneously influence multiple aspects of group formation. According to the intergroup contact literature, having frequent, positive contact with out-group members might promote familiarity and increase social liking. However, frequent contact with out-group members may also refine children's ability to identify and categorize accents. Indeed, there is evidence that adults who have lived in three or more US states before the age of 19 are more skilled in identifying and categorizing American accents than adults who have lived in a single state their entire life (Clopper & Pisoni, 2004). Thus it is possible that exposure may fine-tune children's ability to identify and select members of their own group over members of another group who speak with a slightly different accent. Given these possible opposing influences, we may observe a weak (or non-existent) impact of exposure. In other words, in situations where exposure simultaneously refines categorization abilities (leading to greater bias) and makes children more socially accepting, we may observe no effect, if these two factors cancel each other out.

In the present study, we capitalized on real-world variation in everyday accent exposure to test the hypothesis that accent exposure modulates children's behavior in a friend selection task. In Experiments 1 and 2, children were asked to choose between familiar (Canadian) and unfamiliar British (Experiment 1) or Korean (Experiment 2) accented peers. Here we predicted that children's group preferences would be influenced by the amount of exposure they had to out-group members. That is, we predicted that children with greater diversity in their everyday accent exposure would behave differently in the friend selection task than children with less exposure to diversity. In Experiment 3, we explored the possibility that children's ability to discriminate (or tell apart) accents from their own variety of English may have influenced their performance in Experiments 1 and 2.

Experiment 1

The goal of Experiment 1 was twofold. First, using a friendship selection task, we examined whether accent-based group preferences generalize to children living in multi-accent communities. In other words, do children with everyday exposure to multiple accents demonstrate the strong accent-based in-group preferences seen in previous work? Or does exposure promote greater acceptance, and thus lead children to show weaker preferences for same-accented peers? Second, we examined the possibility that real world variation in exposure to accents might modulate the strength and direction of these preferences.

To test this, we asked 5-year-olds living in Southern Ontario to choose between British- and Canadian-accented peers to be friends with. Since children living in Southern Ontario vary greatly in their exposure to accent variability, participants were grouped based on the amount of exposure (Low, Medium, High) they had to other varieties of English (both non-native and

regional). If growing up in a linguistically and culturally diverse community dampens children's bias against other-accented peers, then we predicted we would see little or no preference for the Canadian- over the British English-speaking peers in our study. However, if growing up in this type of community increases children's sensitivity to linguistic differences, then we predicted we would see a stronger preference for Canadian speakers than is typically observed. In addition, if the amount of exposure children have to out-group members in everyday life influences the strength of their group preferences, then children with lower exposure should behave differently in this friendship selection task than children with higher levels of exposure.

Method

Participants. Sixty-four monolingual Canadian-English-speaking 5- and 6-year-olds (M_{age} = 69.00 months; range 60.20 - 77.00 months; 29 males, 35 females) from Southern Ontario participated. Participants were recruited from two databases of families who agreed to participate in infant and child studies at the University of Toronto and the University of Waterloo[1]. Families were recruited into each database through the university's websites as well as through community events and local children's organizations. In terms of their ethnicity, the participants we tested came from a wide variety of cultural backgrounds. In order to participate in this study, children had to be monolingual (i.e., when asked how often their child spoke/heard English, parents had to indicate that their child spoke/heard English at least 90% of the time). Participants also had no history of diagnosed hearing or language impairments.

A power analysis was performed to estimate sample size given the effect size seen in previous work (e.g., Kinzler et al., 2007; d = 1.47). A power calculation using G*Power 3.1

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[1] A second recruitment location in Southern Ontario was added to increase our power to detect differences (if they exist) between children with lower and higher levels of accent exposure. Only 5 children were tested in this second location, and 2 out of the 5 were classified as having low exposure.

indicated that to achieve 95% power we would need a sample size of 9 participants. We chose to collect a much larger sample because, in addition to comparing children's performance to chance, we planned to compare performance between children with Low, Medium and High exposure. We acknowledge that it is possible that our ability to detect differences between these three groups might be underpowered if the size of this effect is small or the number of participants that are classified into a particular group is small.

Upon completing the study, participants were classified into one of three groups based on the amount of exposure they had to other accents or varieties of English. All children were learning the local Canadian accent. According to parent report, 12 children (18.75%) had minimal exposure to other accents (i.e., the child did not interact with anyone who spoke with a non-local accent on a weekly basis) and were classified as 'Low Exposure'. Twenty-one children (32.81%) had substantial lifetime exposure to non-local accents on a daily basis (i.e., they lived with someone who spoke with a non-Canadian accent or had consistent 40-hour/week contact with an accented speaker for at least four years of their life) and were classified as having 'High Exposure'. Finally, 31 children (48.44%) had accent exposure that fell somewhere in-between the other two groups and were classified as having 'Medium Exposure'. These children were not exposed to accents in the home, but parents reported that they had some routine contact with accented members of the community (i.e., daycare providers, school teachers, family members, or friends).

Six additional children were excluded from the analysis, three because they had a strong side bias (i.e., they picked the child on the same side of the screen on all eight trials) and three because there was not enough information provided for us to confidently classify them into one of the three accent groups.

Stimuli. The voices of eight elementary school children between the ages of five and nine were recorded for use in this study. Four of the children (two males and two females) grew up in Southern Ontario and spoke English with the local Canadian accent (i.e., the same variety of English as the participants we tested). The other four children (two males and two females) grew up in the South of England, and spoke Southern British English. Each child was recorded reciting eight semantically neutral sentences that were ten syllables in length (e.g., "Hands have five fingers and feet have five toes"). The sentences were modeled after the phrases used in Kinzler et al., 2009 (see Appendix A for the complete set of stimuli). Children were instructed to repeat each sentence after their parent until they were able to say it in a single, fluent utterance. Using Praat (Boersma & Weenink, 2011), the sentences were combined into groups of two and background noise was equalized across the stimuli set. The durations of the Canadian (Mean duration = 6.35 s, SD = .80) and British-accented passages (Mean Duration = 6.25 s, SD = 1.03) were similar and did not differ statistically, $t(30) = 0.30$, $p = .765$.

The visual stimuli consisted of 16 images of Caucasian children. The images were matched based on gender and visual similarity. The image pairs were positioned side-by-side on a white background.

The auditory and visual stimuli were combined to create a total of 32 animated trials. In each trial, the image of one child was paired with the voice of a Canadian-accented speaker and the other image was paired with the voice of a British-accented speaker. At the beginning of each trial, the left image was highlighted by a green box and zoomed in and out while the participant heard a pair of sentences spoken by the first speaker. Once the passage finished, the right image was highlighted by a green box and zoomed in and out while the same pair of sentences was

spoken by the second speaker. Note that the images and voices were always matched in gender; thus in each trial there were either two male speakers/images, or two female speakers/images.

Design. The experimental design was modeled after the friendship selection task used in Kinzler et al. (2007, 2009). The study design and experimental methodology were approved by the University of Toronto Research Ethics Board (Protocol # 31283, "The development of social evaluation abilities in children"). Children were randomly assigned to participate in one of four counterbalanced orders of the experiment. Each order consisted of 8 trials and in each trial the child participant was asked to select which child they wanted to be friends with. Over the course of the experiment, each participant listened to all 8 voices (4 Canadian; 4 British) twice. However, each time a voice was heard it was accompanied by a different image and spoke different sentences. To eliminate any side biases, the British- and Canadian-accented children appeared an equal amount of times on the left and right sides of the screen. The order of the trials and the image that each speaker was paired with was counterbalanced across the 4 orders.

Procedure. Each child participant was presented with images of two peers on a screen (see Figure 1). One image in each pair spoke with a Canadian accent and the other with a British accent. To ensure that the experimenter or the parent could not bias the child's responses, all auditory stimuli were presented to the child via headphones connected to the computer. At the start of each trial the experimenter said, "Here are two kids – let's hear what they sound like." Then the participant heard the voice of the child on the left side of the screen, followed by the voice of the child on the right side of the screen. In one trial, both children were always heard saying the same pair of sentences. While the voices played, a green box highlighted the image of the child who was speaking. The child participant only heard each voice once. After both voices had played, the experimenter asked the child participant, "Which one do you want to be friends

with?" and the child was instructed to place a magnetic star above their choice. Once the child

had placed the star, the experimenter removed it and proceeded to the next trial. The entire

procedure was videotaped for offline coding of the participant's selections.

After the study, the experimenter completed a detailed language questionnaire with the

parent that asked about the child's exposure to different varieties of English. Based on this

information children were classified into one of three accent exposure groups (Low exposure,

Medium exposure or High exposure).

-Insert Figure 1 about here -

Results and Discussion

In each of the 8 trials, children selected between a Canadian- and a British-accented

speaker. Canadian selections were coded as 1 and British selections were coded as 0. An

intercept-only logistic mixed-effects model (i.e., with random intercepts for subjects and items)

was implemented using the lme4 package in R 3.5.1 (Bates et al., 2018; R Development Core

Team, 2018) to compare children's selections to chance (.5). In line with previous work, 5-year-

olds were more likely to choose to be friends with peers who spoke with the community accent

(i.e., Canadian English) over peers who spoke with a different accent (i.e., British-accented

English), $b = 0.38$, $SE = 0.12$, $z = 3.11$, $p = .002$[2]. This demonstrates that even children with

substantial variability in their accent exposure still show strong accent-based in-group

preferences. Moreover, these group preferences were observed even though out-group members

in this experiment spoke with a regional accent, as opposed to a non-native accent (see Kinzler &

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[2] For 26 out of a total of 512 trials the incorrect speaker was played, and in one trial there was a technical error in the playing of the stimuli. Although all the trials were still a decision between a Canadian and a British speaker, these trials were removed from the analysis. If these trials are included, the analysis looks the same, $b = 0.38$, $SE = 0.12$, $z = 3.21$, $p = 0.001$.

DeJesus, 2013 for evidence that not all 5- to 6-year-olds show preferences for their own regional accent).

To test our second prediction (i.e., that the strength of children's preferences are influenced by the amount of daily accent exposure), participants were divided into three groups (Low, Medium, High). Given that most of the sample was from the linguistically diverse GTA, very few children were classified as having 'Low Exposure' (12/64, 18.75%). As was expected, the majority of the children were classified as having 'Medium Exposure' (31/64; 48.44%) or 'High Exposure' (21/64, 32.81%). A logistic mixed-effects regression model with Daily Exposure as a fixed effect and random intercepts for subjects was implemented using the lme4 package in R. Following the Barr, Levy, Scheepers, & Tily (2013) paper on model selection, we included the maximal structure of random effects that allowed the model to converge. As accent group is an ordered categorical variable (i.e., Low to High), we used reverse Helmert coding to investigate whether children with higher levels of exposure showed less of a Canadian preference than those with lower levels of exposure. Surprisingly, there was no relationship between accent exposure and the strength of children's preference. Children with High exposure did not differ from those with Low and Medium exposure, $b = 0.18$, $SE = 0.27$, $z = 0.68$, $p = .497$, and children with Medium exposure did not differ from those with Low exposure, $b = 0.24$, $SE = 0.33$, $z = 0.72$, $p = .469$ (see Figure 2).

-Insert Figure 2 about here -

Since we did not find evidence that the amount of accent exposure predicted preferences, a second logistic model (with random intercepts for subjects and items) was used to examine whether exposure to the specific accent in the study (British English) influenced children's

preferences. About a quarter of the children (18/64, 28.13%) were reported to have at least occasional contact with someone who spoke with a British accent. Although many of the children had some exposure to British accents through television (e.g., popular children's TV shows such as Thomas the Tank Engine and Peppa Pig are voiced by British actors), for the purposes of this analysis we only included children who had exposure to British people in real life. Here, we found that children who had at least occasional contact with a British-accented speaker (for example, children who saw their British grandparents a couple times a year) ($M =$ .62, $SD =$ .23) were not less likely to select the Canadian speaker than children with no British exposure ($M =$ .58, $SD =$ .22), $b = 0.18$, $SE = 0.27$, $z = 0.66$, $p = .510$. Thus, we found no evidence that either the amount of general accent exposure within our sample or specific British exposure influenced children's preferences.

Even though Canadian children showed social preferences for Canadian- over British-accented children, the group preferences observed in this study were not as robust as the preferences seen in previous work. On average, Canadian children selected in-group members 58.84% of the time, whereas in Kinzler et al. (2009) American children selected American-accented peers almost 80% of the time. Similarly, if we compare effect sizes, our effect size is smaller ($d = .40$)[3] than the effect size reported in previous work (e.g., Kinzler et al., 2009, $d =$ 1.47).

Why might this be? Why was the preference we observed so much weaker than the preferences observed in earlier studies? There are at least two plausible explanations. First, it may be the case that having routine exposure to other accents or dialects of English led children living in the GTA to show weaker in-group preferences. In other words, although the amount of

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[3] In order to compare effect sizes to previous work, we also performed the analysis used in previous work, comparing children's mean performance to chance using a one sample t-test, M = .59, $t(63) = 3.21$, $p = .002$, $d = 0.40$.

exposure within the sample (relatively Low, Medium, High) did not predict acceptance of the non-local speaker, the results of the study as a whole may support the notion that simply living in a diverse, multi-accent community breeds greater acceptance. The second possibility is that the attenuated group preferences seen in Experiment 1 are driven by the fact that the out-group members in our study spoke with regional (British) accents, whereas the out-group members in previous work spoke with non-native (French) accents (Kinzler et al., 2009). There are a few reasons why children may evaluate regional and non-native-accented speakers differently. For example, foreign accents (e.g., French-accented English) tend to be easier to distinguish from the local accent compared to other regional accents (e.g., British or Australian; Floccia et al., 2009; Girard et al., 2008; Wagner, Clopper, & Pate, 2014), and there can be differences in the fluency and comprehensibility of non-native compared to regional-accented speech (Bent, 2014).

In Experiment 2, we begin to address these issues by examining whether children growing up in the linguistically-diverse Southern Ontario region show a stronger bias against other-accented peers when the other accent is a non-native (Korean) accent rather than a regional (British) accent.

Experiment 2

In Experiment 1 we demonstrated that accent-based in-group preferences generalize to populations of children with greater diversity in their accent exposure. That is, children growing up in Southern Ontario, a diverse multi-accent community, still showed reliable preferences for peers who spoke the locally dominant variety of English. Interestingly, however, the accent-based in-group preferences seen in our sample were not as strong as the preferences seen in previous work (i.e., Kinzler et al., 2007, 2009). Here we examined two possible explanations for

this. On the one hand, it may be that our sample showed weaker in-group preferences because the children we tested had more frequent exposure to accented speakers in everyday life (which fits with the predictions of the intergroup contact theory). On the other hand, it may be that the relatively greater acceptance of out-group members here is specific to regional accents, and that children evaluate speakers with non-native accents differently (e.g., due to potential differences in the salience of the accent, the fluency of the speaker, and/or the social stigma associated with the accent). In Experiment 2, we began to tease apart these two alternative explanations by testing children's preferences for Canadian- versus non-native (Korean-accented) peers. If having greater exposure to accented speakers led children to be more accepting then, as in Experiment 1, children should show weak in-group preferences for the Canadian-accented over the Korean-accented out-group members. However, if children evaluate native (British English) and non-native (Korean English) accents differently, then we should replicate the strong in-group preferences seen in previous work (i.e., Kinzler et al., 2009).

Method

Participants. In order to match the sample size in Experiment 1, in Experiment 2 we tested a group of 64 Canadian English-speaking 5- and 6-year-olds (M_{age} = 69.89 months; range 60.70 – 83.60 months; 32 males, 32 females) from Southern Ontario. The children who participated were ethnically diverse but were monolingual English-speaking (i.e., they spoke/heard English at least 90% of the time). Participants had no history of diagnosed hearing or language impairments[4]. As in Experiment 1, children were divided into three groups (i.e., Low, Medium, High) based on the amount of exposure they had to other (non-local Canadian)

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[4] As in Experiment 1, a second recruitment location in Southern Ontario was added in order to test more children with lower levels of accent exposure. Eight out of the 11 children tested at this location were classified as having Low exposure.

accents in everyday life. In this sample, 12/64 (18.75%) children were classified as having 'Low Exposure', 31/64 (48.43%) were classified as having 'Medium Exposure' and 21/64 (32.81%) were classified as having 'High Exposure'. Three additional children were excluded from the analysis, two because they failed to follow instructions, and one because there was not enough information provided for us to confidently classify them into one of the three exposure groups.

Stimuli, Design and Procedure. The stimuli, design and procedure were identical to Experiment 1 except that the voices of the British-accented children were replaced with Korean-accented children (2 males and 2 females) between the ages of 5 and 9.[5] All four Korean-accented children were born and raised in Korea and began learning English either in school or preschool. As in Experiment 1, the Korean-accented children were instructed to repeat each sentence after their parent until they were able to say the sentence in a single, fluent utterance. The parents were fluent enough to comfortably read in English and persisted until the sentences were produced with no obvious pauses, restarts, or hesitations. Overall, the Korean-accented children tended to have a slower speaking rate than the Canadian and British children, as was to be expected. The mean duration of Korean-accented passages (Mean = 10.14 s, SD = 1.67) was significantly longer than both the Canadian passages (Mean = 6.35s, SD = 0.80), $t(21.47) = 8.14$, $p < .001$, and the British passages used in Experiment 1 (Mean = 6.25 s, SD = 1.03), $t(30) = 7.88$, $p < .001$.

Results and Discussion

As in Experiment 1, a logistic mixed-effects regression model (LMER) with random intercepts for subjects and items was used to compare children's selections to chance (.5). Here children strongly chose to be friends with the Canadian- over the Korean-accented peers, $b =$

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[5] At the end of the experiment, children were asked to indicate what other language they thought the out-group members spoke. The majority of children (46/61, 75.41%) said they did not know or they thought that the out-group members spoke French.

2.13, $SE = 0.23$, $z = 9.18$, $p < .001$. Importantly, children's preference for Canadian-accented in-group members in Experiment 2 was much stronger than it was in Experiment 1, $b = 1.58$, $SE = 0.22$, $z = 7.17$, $p < .001$[6] (see Figure 3). That is, children showed a stronger preference for the Canadian-accented in-group members when the out-group member was Korean-accented compared to when the out-group member was British-accented.

-Insert Figure 3 about here -

As in Experiment 1, a logistic mixed-effects regression model was conducted to examine the impact of daily accent exposure (Low, Medium, High) on children's preferences (see Figure 4). As in Experiment 1, we included the maximal random effects structure that achieved convergence (Barr et al., 2013). The model included random intercepts for subjects and items. Our results suggest that children with High exposure were just as likely to select the Canadian-accented in-group members as children who had Low and Medium exposure, $b = -0.41$, $SE = 0.42$, $z = -0.97$, $p = .333$. There were also no differences between children with Medium and Low exposure, $b = 0.24$, $SE = 0.53$, $z = 0.45$, $p = .655$. Thus, similar to Experiment 1, we found no evidence that increased exposure alters children's bias against accented speakers.

In Experiment 1, we examined whether children with specific exposure to British accents showed stronger in-group preferences. Ideally, we would have carried out an analogous analysis in the current experiment – asking whether specific exposure to Korean-accented speakers changed children's peer selection behavior. However, in our sample, only four children had exposure to Korean-accented English in real life. Given the small sample, we could not analyze

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[6] Selections in Experiments 1 and 2 were compared using a logistic mixed-effects regression model. Experiment (1 vs. 2) was simple coded and entered as a fixed effect. We also included random intercepts for subjects and items.

whether there were differences in the social preferences of those who had specific Korean-accent exposure and those who did not.

-Insert Figure 4 about here -

As a group, despite having greater exposure to other accents or varieties of English, the children in this experiment still showed strong preferences for the Canadian- over the Korean-accented peers. The effect size in this experiment was quite large ($d = 2.07$)[7], even larger than the effect sizes seen in previous work (Kinzler et al., 2009, $d = 1.47$). Thus, the more plausible explanation for the small effect size seen in Experiment 1 is that out-group members spoke with a regional instead of a non-native accent.

But why did children find the non-native accented speakers less desirable than the regional-accented speakers? It is possible that children were sensitive to differences in the fluency and intelligibility of the speakers. Both factors are known to influence adults' judgments of accented speakers (Bresnahan et al., 2002; Kang, Rubin, & Pickering, 2010). Indeed, we found that the Korean speakers took longer on average to produce the passages than the British speakers in Experiment 1, which could suggest that they were less fluent. Evidence from an adult intelligibility task also suggests that the Korean speakers were more difficult to comprehend. We presented the stimuli from Experiments 1 and 2, embedded in speech-shaped noise, to a group of adult native English-speaking participants (N = 16). They had greater difficulty understanding (i.e., transcribing) the Korean-accented sentences (used in Experiment 2) compared to the British-accented sentences (used in Experiment 1), $t(15) = -4.08$, p < .001. Adults correctly transcribed 81.39% (SD = 15.96) of words in the British-accented stimuli set but only 61.41 %

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[7] In order to compare our findings to previous work, a t-test was conducted comparing the group mean to chance, $M = 0.85$, $t(63) = 16.59$, $p < .001$, $d = 2.07$.

(*SD* = 15.36) of words spoken in the Korean stimuli set. Thus, it is possible that both fluency and intelligibility could be driving the differences we see in the social treatment of regional and non-native accented peers. It is also possible that, given the close connection between Canada and the UK (e.g., new immigrants to Canada are still asked to pledge allegiance to the British Queen), children living in Southern Ontario may have perceived the regional British accents (in particular) as being more socially prestigious than the non-native Korean accents. Or, maybe, children simply had greater difficulty distinguishing the regional accents from their own variety of English (see Floccia et al., 2009; Girard et al., 2008 for evidence that children have difficulty telling apart regional accents). In our third and final experiment we explored this last possibility by investigating whether there were differences in the discriminability of the specific accent stimuli used in Experiments 1 and 2.

Although it is possible to have a subtle non-native accent that is much less noticeable than a strong regional accent, distinct non-native accents (e.g., French-accented English spoken by a late learner of English or relatively novice child learner) are thought to be easier to identify than regional accents, for both adults and children (e.g., British or Australian) (Floccia et al., 2009; Girard et al., 2008; Wagner et al., 2014). In Experiment 3, we examined whether there were differences in children's ability to categorize the regional and non-native-accented stimuli used in Experiments 1 and 2, in order to better understand the factors that contribute to accent-based preferences.

Experiment 3

Taken together, Experiments 1 and 2 present clear evidence that Canadian English-speaking children from Southern Ontario evaluated the non-native Korean-accented speakers in Experiment 2 differently than the regional British-accented speakers in Experiment 1. There are

many reasons why children could have evaluated regional (British) and non-native (Korean) accented speakers differently. In Experiment 3, we explored the possibility that these differences may be at least partially driven by differences in the perceptual discriminability of the accents. To do this, we tested Canadian children's ability to distinguish between the British-, Canadian- and Korean-accented stimuli used in the first two experiments. We predicted that, as in previous work, children would be better able to identify their own (Canadian) variety of English when it was paired with a non-native (Korean) accent compared to when it was paired with a regional (British) accent. Additionally, we predicted that children with greater daily exposure to accents might be more skilled at telling apart accents than children with less variation in their input.

Method

     Participants. Twenty Canadian English speaking 5- and 6-year-olds (M_{age} = 69.34 months; range 61.40 – 72.1 months; 13 males, 7 females) from Southern Ontario participated in this experiment. All children were monolingual (i.e., they spoke/heard English 90% of the time) and had no history of diagnosed hearing or language impairments. Two additional children were excluded from this analysis due to a failure to follow instructions. The effect sizes seen in previous work have varied widely depending on the design (between subjects or within subjects) the accents selected, the task and the age of the children tested (see Floccia et al., 2009; Girard et al., 2008; Wagner et al., 2014 for examples). For the purposes of this study sample size was determined using a stop rule (i.e., 20 children).

     Stimuli. The Canadian-, British- and Korean-accented stimuli from Experiments 1 & 2 were used as the auditory stimuli in Experiment 3. The visual stimuli consisted of two identical male or female silhouettes positioned side-by-side on a white background. When the participant

touched an image they heard a child's voice. While the passage was playing, the image was highlighted with a green box. Similar to Experiments 1 & 2, the two voices were always matched in gender; thus in each trial there were either two male speakers/images or two female speakers/images.

Design. Each child was randomly assigned to participate in one of two counterbalanced orders of the experiment. Each order consisted of twelve trials. On each trial the child selected between a Canadian- and a Korean-accented child, a Canadian- and a British-accented child, or a British- and a Korean-accented child (4 trials of each). The two orders counterbalanced which passages were heard and the pairing of the speakers. For example, if in Condition 1, British Boy 1 was paired with Canadian Boy 1 and British Boy 2 paired with Canadian Boy 2, in Condition 2, participants would hear British Boy 1 paired with Canadian Boy 2 and British Boy 2 paired with Canadian Boy 1. Within one order of the experiment, the British-, Canadian- and Korean-accented children appeared an equal amount of times on the left and right sides of the screen.

Procedure. The experiment was run using a touch-screen monitor in order to make the task more engaging. In each trial, the child was presented with two silhouettes (see Figure 5). They were instructed to tap the left image to hear the first voice. After the passage had completed, they were instructed to tap the right image to hear the second voice. The child could only listen to each voice once. All auditory stimuli were presented to the child via headphones, to ensure that the experimenter and the parent present in the room could not bias the child's responses. After both voices had played, the experimenter asked the child "Who talks like you? Like they grew up here?" The child was instructed to drag their selection into the green box in the center of the screen and click next to continue. At the end of the study, the experimenter completed a detailed language questionnaire with the parent.

-Insert Figure 5 about here -

Results and Discussion

For each of the 12 trials, children's responses were scored as 1 (correct) or 0 (incorrect). In the 'Canadian vs. British' and 'Canadian vs. Korean' accent pairings, selecting the Canadian speaker was scored as a correct response. In the 'British vs. Korean' accent pair, although neither speaker truly "talks like them," selecting the British speaker was denoted as a correct response based on the assumption that a regional accent would be perceived as more similar to Canadian English than a non-native accent. For each of the three comparisons a logistic mixed-effects regression model with random intercepts for subjects and items was used to compare children's ability to identify who sounded most like them to chance (.5). Overall, children were quite skilled in this task, demonstrating above chance performance for all three comparisons, all ps <.009 (see Figure 6). Children correctly selected the Canadian-accented speakers 85.00% ($SD =$ 22.06) of the time when paired with the Korean speakers, $b = 2.18$, $SE = 0.60$, $z = 3.61$, $p =$ <.001, and the British-accented speakers 81.25% ($SD = 19.66$) of the time when they were paired with the Korean-accented speakers, $b = 1.48$, $SE = 0.32$, $z = 4.64$, $p =$ <.001. The most difficult comparison was the Canadian- vs. the British-accented speakers. Although children's performance was still above chance, they only identified that the Canadian speakers sounded more like them 66.25% (SD = 26.00) of the time, $b = 0.71$, $SE = 0.27$, $z = 2.60$, $p = .009$.

A logistic mixed-effects regression model was used to investigate the impact of Trial Type (i.e., Canadian vs. British, Canadian vs. Korean and British vs. Korean) on children's categorization abilities. Trial Type was simple coded to compare children's performance on the Canadian vs. Korean and British vs. Korean conditions to the Canadian vs. British condition (treated as the Baseline) and random intercepts were included for subjects and items. As

predicted, there was a significant effect of Trial Type, with children performing better on the British vs. Korean trials compared to the Canadian vs. British trials, $b = 0.91$, SE= 0.40, $z = 2.30$, $p = .022$, and the Canadian vs. Korean trials compared to the Canadian vs. British trials, $b = 1.21$, SE = 0.42, $z = 2.90$, $p = .004$.[8] Given previous work suggesting that specific exposure improves categorization abilities in adults (see Clopper & Pisoni, 2004), we also examined whether children who had at least occasional British exposure (e.g., children who saw their British grandparents a couple times a year) were more skilled in distinguishing the more difficult Canadian vs. British pairing. In this sample, the 7/20 children who had at least occasional live contact with someone who spoke with a British accent showed a trend towards performing better on the Canadian vs. British trials than children with no British exposure, $b = 0.92$, SE = 0.56, $z =$ 1.65, $p = 0.0996$. Although based on a fairly small sample, these findings are in line with the idea that exposure may improve children's categorization abilities.[9]

-Insert Figure 6 about here -

Taken together, the results of Experiment 3 suggest that the perceptual salience of an accent may play a role in children's evaluation of accented speakers. Children had greater difficulty distinguishing British-accented English from their own Canadian variety of English than distinguishing Korean-accented English from their own variety. This suggests that the strong social preferences for native over non-native speakers in Experiment 2 may be at least in

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[8] We also explored whether the amount of daily accent exposure (Low, Medium, High) impacted performance. As in Experiments 1 and 2, Accent Exposure was reverse Helmert coded. The maximal structure of random effects was implemented including random intercepts for subjects. In this model, there was no effect of Accent Exposure (all $z < 0.61$, $p > .542$). However, the sample size in each of the groups was relatively small, which makes it difficult to draw firm conclusions about the effects of exposure.

[9] Similar to Experiment 2, very few (n = 1) children had exposure to Korean accents in real life. Thus we were unable to examine whether Korean-accent exposure improved categorization abilities.

part driven by the perceptual distinctiveness of Canadian- and Korean-accented English (see Floccia et al., 2009; Girard et al., 2008; Wagner et al., 2014 for evidence that children are better at distinguishing their local accent from a non-native accent compared to a regional accent). However, it is possible that other factors, like fluency and intelligibility, also contributed to children's preferences.

Although we did not see an effect of the amount of accent exposure (Low, Medium, High) on children's ability to tell apart accents (see footnote 8), our findings are still compatible with the possibility that having everyday exposure to accents might have generally improved children's performance on this task. Indeed, the 5- to 6-year-olds in our sample (75% of whom had either Medium or High exposure), seemed to perform better than the 5- to 6-year-olds tested in previous studies (Wagner, Clopper, & Pate, 2014). Although it is difficult to compare directly as Wagner et al., (2014) used a different discrimination task, the 5- to 6-year-olds in their study (who as a group were reported to have minimal accent exposure) were unable to tell apart their own variety of English (American) from British English. They were also unable to tell apart British English and Indian English). In contrast, the children in our study performed above chance in both of these accent comparisons. Although it is difficult to ascertain how much of the group's performance was driven by the subset of children who had occasional British exposure, one could speculate that children with greater diversity in terms of their accent input may demonstrate generally greater accent categorization abilities than children growing up in less diverse language environments. One way to test this hypothesis would be to directly compare the categorization abilities of children living in linguistically diverse regions (like Toronto) to the categorization abilities of children living in less diverse regions.

General Discussion

Previous work has suggested that children (like adults) show social preferences for speakers who share a common linguistic background. In the current study, we examined the impact of accent type and children's relative accent exposure on the strength and direction of these preferences. We found that, as a group, even children with greater diversity in their accent exposure showed social preferences for peers who spoke with the locally dominant accent. The strength of children's preferences was modulated by the accent of the speaker (regional vs. non-native) but not children's individual exposure to accented out-group members in everyday life.

We first discuss the role of accent type in children's preferences. Although children had a preference for Canadian-accented speakers in both Experiments 1 and 2, this preference was significantly stronger when the comparison accent was Korean (as opposed to British). A series of follow up experiments and analyses revealed three possible contributors to this difference. First, the Korean-accented stimuli were significantly slower than the other two types of stimuli, suggesting that they were less fluently produced. Second, adult listeners rated them as less intelligible. And third, children found it easier to distinguish the Korean-accented stimuli from the Canadian-accented stimuli than they did the British-accented stimuli. Both fluency and intelligibility have been shown to contribute to adults' perceptual and social judgments of accented speakers (Bresnahan et al., 2002; Kang, Rubin, Pickering, 2010). These perceptual factors may have influenced children's judgments directly, or may have highlighted for children the Korean speakers' accented status, increasing children's preference for in-group members in this comparison. Future research should attempt to determine the relative strength and relationship of these factors in driving social preferences.

The other goal of this study was to examine whether everyday accent exposure would make children more accepting of accented peers. We found that even children with higher

amounts of exposure showed accent-based preferences. This supports the notion that children may prioritize accent information over other types of social information (Kinzler et al., 2007; Kinzler, Shutts, & Correll, 2010; Kinzler et al., 2009). It seems that regardless of the input that children are getting from their environment, they still rely heavily on accent information to make social decisions. However, our findings could also indicate that the relationship between exposure and acceptance is complex. It may not simply be the case that exposure leads to liking (or disliking); rather, exposure could have a multi-directional effect on preferences. Greater exposure might reduce biases against accented speakers, but may also refine children's ability to distinguish accents from their own variety of English (as seen in the contrast between Experiment 3 and previous work).

Although we did not test the DIT model directly, our findings are consistent with the DIT's account of bias formation. Similar to the model, our work suggests that multiple factors, including perceptual salience and categorization abilities, may be contributing to the development of bias. However, given the design of our study we cannot ascertain the extent to which variation in children's preferences is driven by each of these factors, or whether children's reliance on these factors changes over time. The DIT model also posits that children's implicit and explicit beliefs about out-group members may contribute to the formation of bias. Although it was not assessed in this study, previous research indicates that certain accent-based attributions (e.g., inferences about the niceness or smartness of the speaker) are not apparent until around nine years of age (Kinzler & DeJesus, 2013; see however, Weatherhead, White, & Friedman, 2016 for evidence that young children do make inferences about geographic location based on accents). In future work it may be valuable to assess whether children's knowledge of specific accent-based stereotypes also influences their group preferences.

Considering that we did not see an effect of daily accent exposure on children's preferences in this study, it may be beneficial to take a more nuanced approach to quantify accent exposure. Our study may be limited by the fact that we divided participants into three accent groups (i.e., Low, Medium, High) based on parental reports of their exposure. It is difficult to ascertain how accurate parental reports of exposure are, given that in many cases parents must make judgments about peers and teachers whom their child interacts with when they are not present. We also acknowledge that there was a fair bit of variation in the amount of exposure that children within each accent group had, the types of relationships they had with those speakers (e.g., family, peer, teacher), and the types of accents they were being exposed to (i.e., regional vs. non-native). We know from research with adults that contact is more likely to lead to acceptance in situations in which partners share common goals and high quality cross-group friendships are forged (MacInnis & Page-Gould, 2015; Pettigrew & Tropp, 2006). It may be the case that it is only in situations where children have high quality, meaningful relationships with accented out-group members that exposure leads them to be more accepting.

Although contact *quality* is far more difficult to assess, it may be important in future research to differentiate between children who have relatively superficial contact with out-group members compared to children who have formed close bonds with accented speakers. Not only might the *quality* of the interaction with out-group members matter, but so might the types of experiences they have had with those out-group members. For example, having exposure to Hindi-accented grandparents might be less influential in shaping children's preferences for Korean-accented peers than being friends with a Korean-accented child at school.

This is the first study to take a closer look at how individual variation in the child's accent input influences the development of group preferences. Although preferences seem to

generalize to populations with greater accent variation in their input, there is certainly room for more nuanced tests of exposure effects. In addition, our results suggest that many other factors affect children's friendship preferences, including the perceptual properties and intelligibility of a speaker's accent. In future work, it is important that we begin to take into account the complex and multi-faceted relationships between these factors in models of social preferences.

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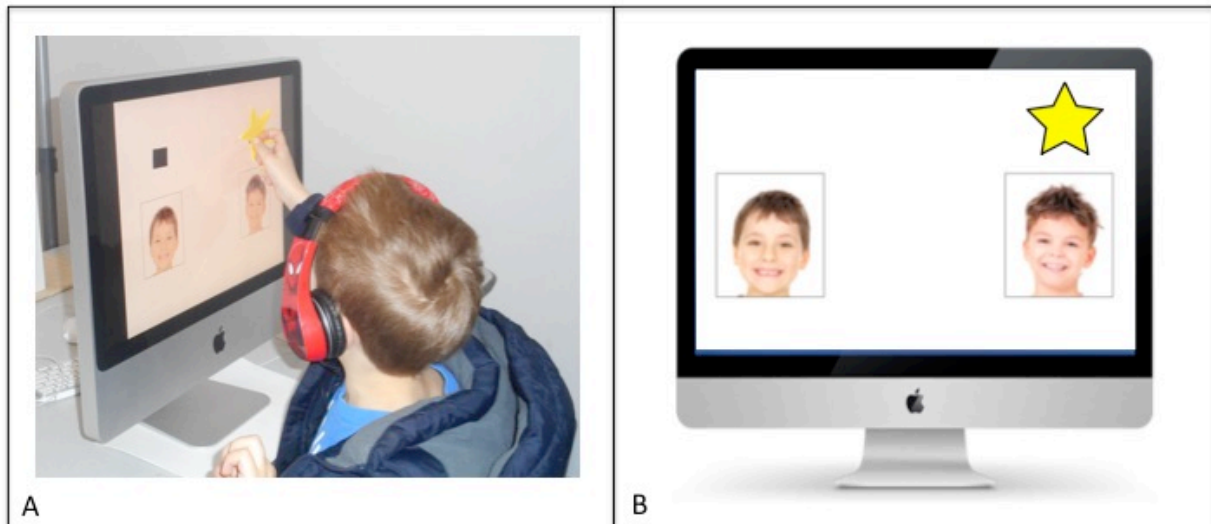
Figure 1. Child participating in Experiment 1. In each of the 8 trials, children were presented with a Canadian- and a British-accented speaker. After both speakers finished speaking, the participant was asked to place a star above the image of the child they would like to be friends with. After they selected, the star was removed and the experimenter proceeded to the next trial. The authors received signed consent for the child's likeness to be published in this article.
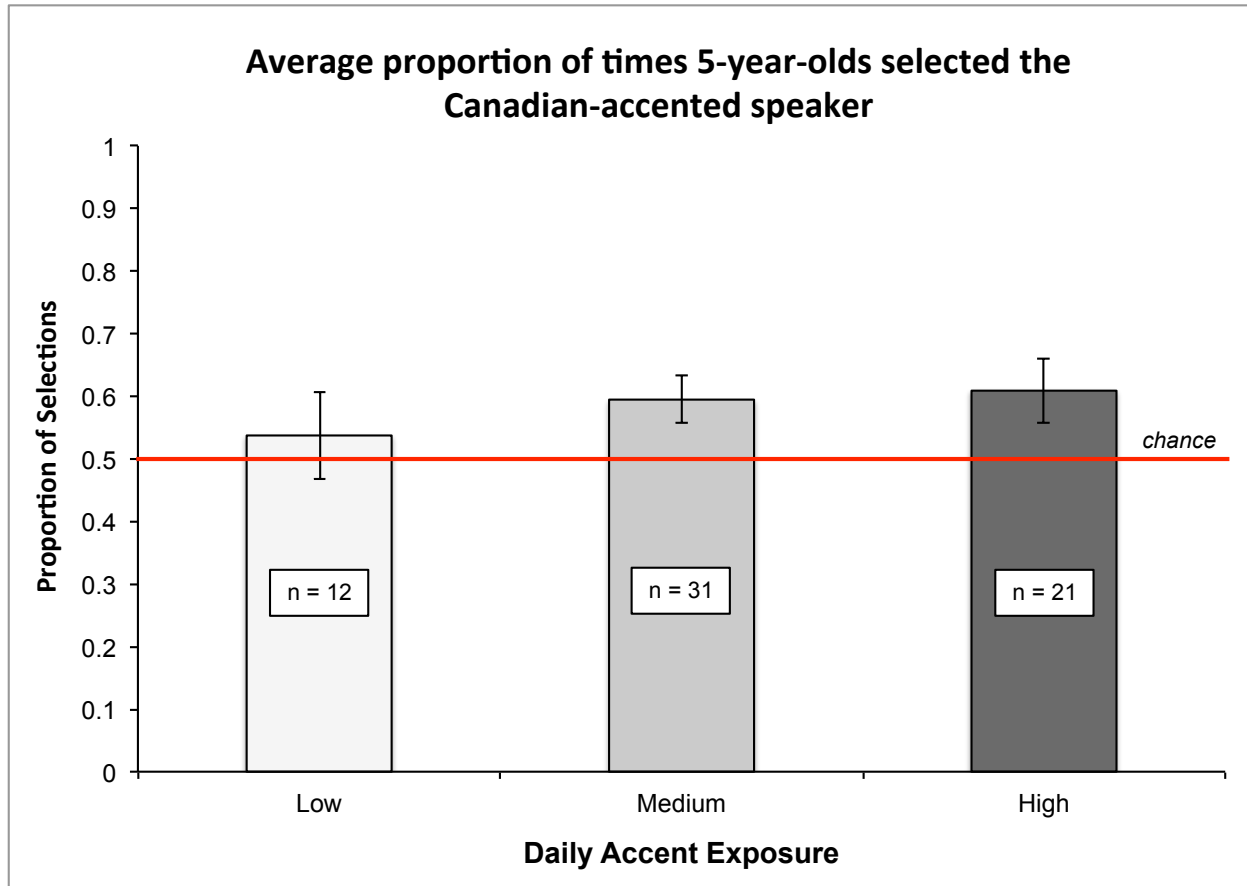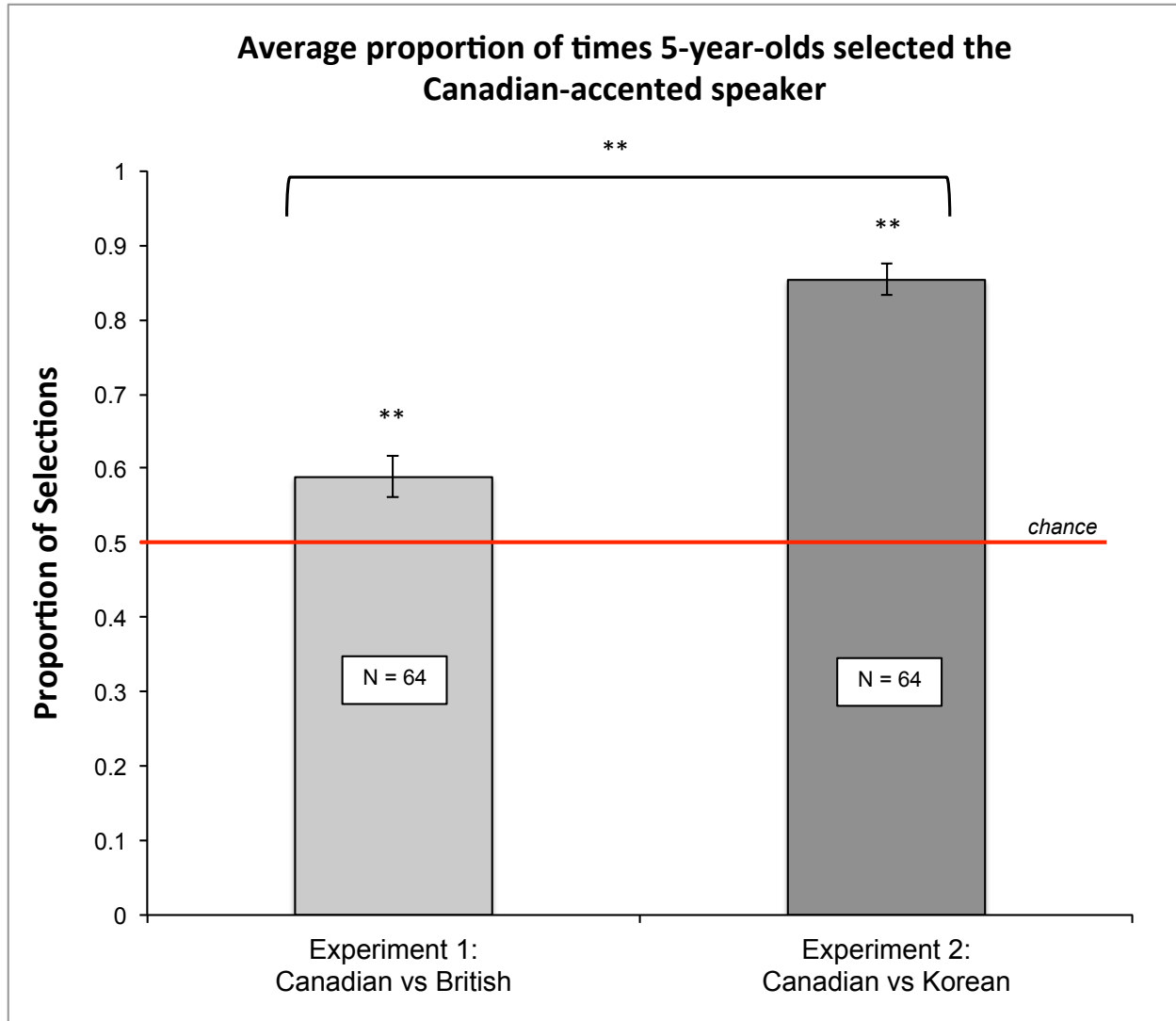
Figure 2. The average proportion of times 5-year-old Canadian-English speaking children

selected the Canadian-accented speaker over the British-accented speaker in Experiment 1 by

accent exposure (N = 64). Given the diversity in the population in Toronto and the surrounding

areas, very few children (n = 12) were classified as having low exposure. Most of the sample had

either medium (n = 31) or high (n = 21) exposure. Selections did not differ among the three

exposure groups.

Figure 3. The average proportion of times 5-year-old Canadian-English speaking children

selected the Canadian-accented speaker over the British-accented speaker (in Experiment 1) and

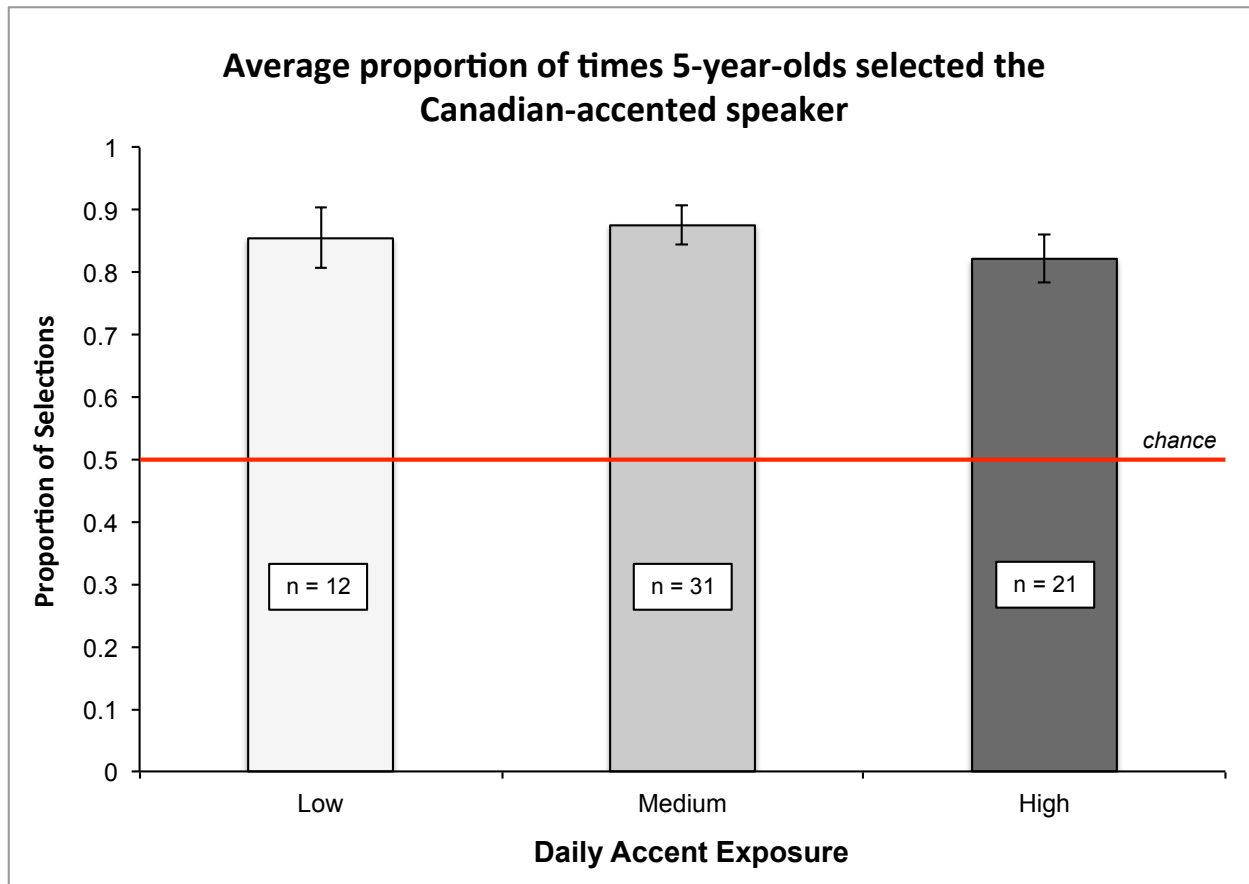the Canadian-accented speaker over the Korean-accented speaker (in Experiment 2).

Figure 4. The average proportion of times 5-year-old Canadian-English speaking children

selected the Canadian-accented speaker over the Korean-accented speaker in Experiment 2 by

accent exposure. Selections did not differ among the three accent exposure groups.
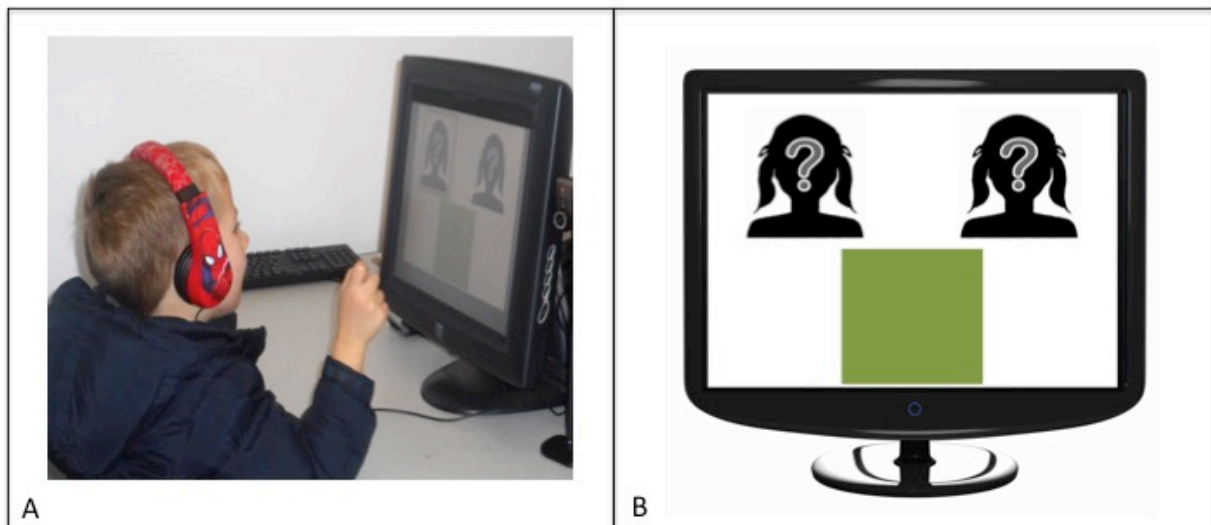
Figure 5. Child participating in Experiment 3. In each of the 12 trials, the child listened to pairs of speakers from Experiments 1 and 2 (i.e., the Canadian-accented, British-accented and Korean-accented speakers). After listening to both speakers, the child was asked to drag the silhouette that talks like them into the green box in the center of the screen. After the child selected a silhouette, the next trial was presented. The authors received signed consent for the child's likeness to be published in this article.
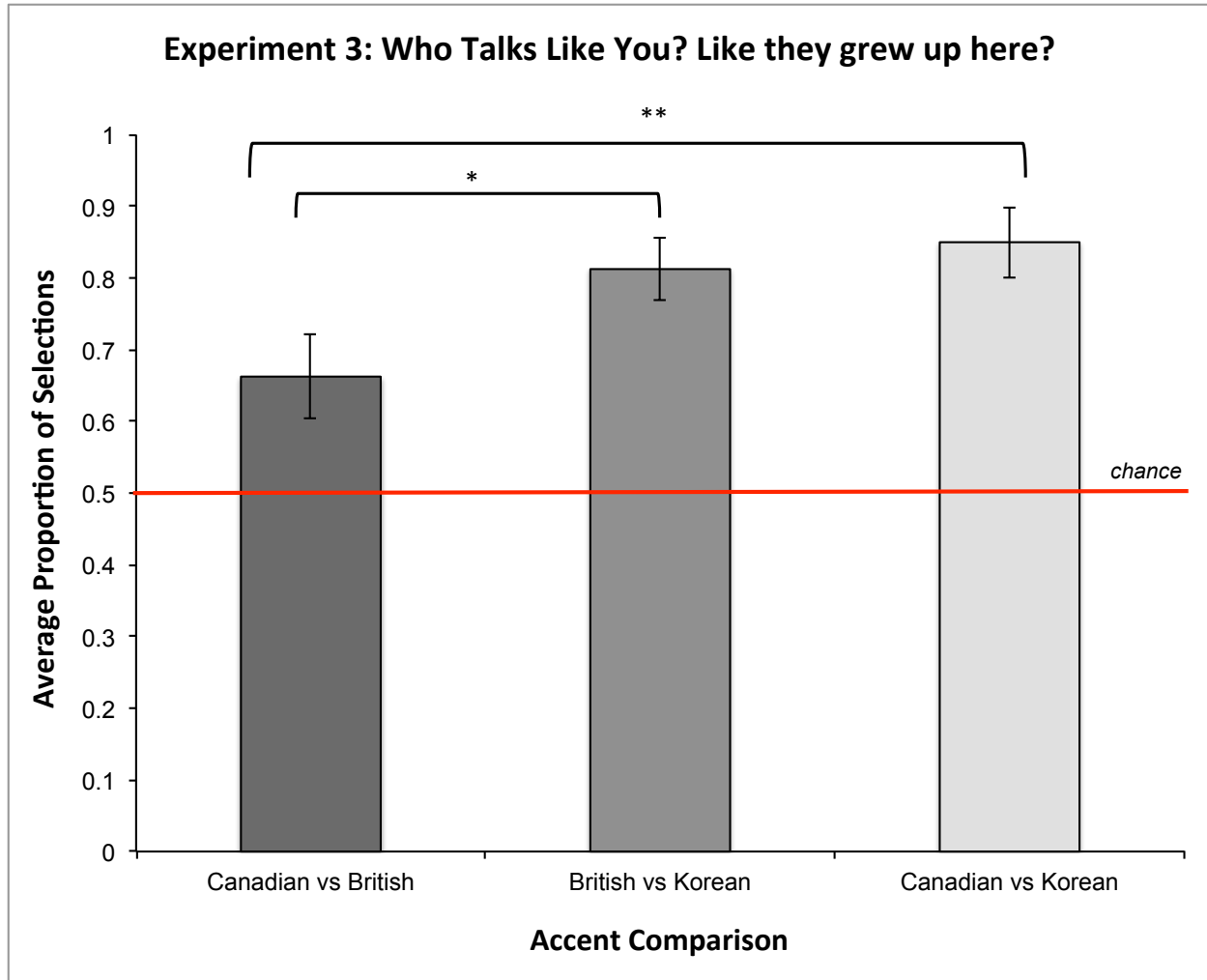
Figure 6. The average proportion of times Canadian children selected the Canadian-accented speakers as sounding 'more like them' than the British-accented speakers, the British-accented speakers as sounding 'more like them' than the Korean-accented speakers and the Canadian-accented speakers as sounding 'more like them' than the Korean-accented speakers in Experiment 3.

Appendix A: Sentences

There are lots of animals at the zoo.

There are three meals: breakfast, lunch and dinner.

There are lots of big sailboats on the lake.

Hands have five fingers and feet have five toes.

You can see the moon and stars after dark.

There are seven colours in the rainbow.

The trees in the park are tall and leafy.

Planes fly in the sky high above the clouds.