Preliminary Evidence that Infants and Children Use Accents to Inform Relational Expectations

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Abstract

Prior research suggests that infants and children prefer people who speak with the same accent as their parents. Here, we investigated whether 13- to 18-month-old monolingual, American English-learning infants (*N*=39) and 5- to 8-year-old children from diverse linguistic backgrounds (*N*=87) use accent to predict social interactions. Participants were familiarized to novel blob-like, English-speaking characters. The central protagonist and one side character shared an accent, while the other side character did not. We varied whether the central character had an American or Chinese accent. In Study 1, when the protagonist in distress had an American accent, but not when the protagonist had a Chinese accent, infants looked first toward the side character with the different accent. In Study 2, 5- to 8-year-old children with American- accented parents were more likely to say that a Chinese-accented character caused distress in an American-accented character. These preliminary findings suggest that infants and children may use accent as a social cue to make inferences about antisocial intent.

Keywords: accent; social cognition; intergroup relations

Introduction

The language a person speaks and the accent that they speak with can reveal important social information, such as where they are from and what groups they may belong to (Kinzler, 2021; Labov, 2006). Remarkably, preverbal infants show an early sensitivity to language and accent. By 5 months, they attend more to people speaking their language than those speaking a foreign one (Colomer et al., 2024). By 10 months, they are more likely to reach for objects offered by someone who speaks in their caregiver's language and accent (Kinzler et al., 2007). By 12 months, they even prefer food associated with someone who speaks their language (Shutts et al., 2009).

The underlying cause of infants' behavior in these studies has been debated. Some psychologists suggest that these behaviors reflect a drive to affiliate with familiar or ingroup members (Colomer et al., 2024; Kinzler & Liberman, 2017; Liberman et al., 2017), while others propose that infants are drawn to speakers they perceive as reliable sources of information (Begus, Gliga, & Southgate, 2016).

Infants do not only use language to guide their own preferences–they also use it to infer how others might behave. By 9 months, they expect individuals who speak the same language to socially engage with one another rather than disengage (Liberman et al., 2017). By 12 months, they anticipate vocal imitators to approach one another (Powell & Spelke, 2018) and to respond to each other's distress (Kudrnova et al., 2024), which may be driven by recognizing that the two individuals speak the same language. These findings suggest that infants use shared communicative signals, including imitation and language, as cues to predict affiliation and prosocial behavior between third parties.

Beyond language, children are also sensitive to accent, which may serve as an even finer-grained cue for social categorization. Accent often marks regional or cultural identity within a shared language, and children show strong preferences for speakers who share their accent. By age five, monolingual White children from English-speaking households prefer peers who speak their language with their accent. Moreover, when race is pitted against accent, they prioritize accent over race, favoring Black children with their same accent over White children with a foreign accent (Kinzler et al., 2009). Children are also more likely to trust and endorse information from speakers with their accent compared to foreign-accented ones, even when both are equally intelligible (Kinzler et al., 2011). Five-year-olds also judge American-accented speakers as "nicer," "living around here," and "American" (Kinzler & DeJesus, 2013). These early judgments mirror adult findings that associate foreign-accented speakers with lower trustworthiness and competence (Geiger et al., 2023). Despite this robust evidence of accent-based social preferences, less is known about whether and how children use accent to infer relationships between others, particularly in cases involving distress or conflict.

In the current study, we investigate whether and how children use accent to infer social relationships, including in contexts of distress. We tested two groups: 13- to 18-month-old monolingual, English-learning infants and 5- to 8-year-old children with varied linguistic exposure. Based on prior findings that infants expect same-language speakers to affiliate (Liberman et al., 2017) and anticipate imitators to respond to each other's distress (Kudrnova et al., 2024), we hypothesized that infants might expect individuals who share an accent to respond to one another's distress. For children, we explored whether they anticipate affiliative or antisocial behaviors based on accent sharing, and whether

In D. Barner, N.R. Bramley, A. Ruggeri and C.M. Walker (Eds.), *Proceedings of the 47th Annual Conference of the Cognitive Science Society*

these expectations are more flexible among children with diverse linguistic backgrounds.

Study 1: Infants' Use of Accent to Predict Responses to Distress

In Study 1, we investigated whether infants use accent to form expectations about who will respond to another's distress. We also examined whether these expectations varied based on infants' familiarity with the shared accent. To test this, we first showed monolingual English-learning infants three characters: a central protagonist and two side characters. One side character spoke with the same accent as the protagonist, and the other spoke with a different accent. Then, building on prior work (Kudrnova et al., 2024; Thomas et al., 2022), we measured infants' anticipatory looking during a test event in which the central character expressed distress by frowning and crying.

Hypotheses, methods, exclusion criteria, and analyses were pre-registered on the Open Science Framework (OSF). The pre-registration and pilot data are available at: https://osf.io/fprxw/files/osfstorage?view_only=751ceb4f98c84ee5b51e1ad8aad5b624.

Methods

Participants Fifty 13- to 18-month-old infants (M_{age}= 15.3 months) were recruited through the Children Helping Science platform (Scott & Schulz, 2017), a lab database, and social media advertisements. Only monolingual English-learning infants who were exposed to English at least 80% of the time, as reported by their parents, were included in the study. Data from 11 infants were excluded due to poor video quality, fuzziness, or environmental distractions. These exclusion criteria were determined prior to data analysis. The final sample included 39 infants.

Procedure This study was conducted online using video chat software. We used a within-subjects design in which each infant was presented with two conditions. In each condition, infants viewed three animated blob-like characters: a central protagonist, one side character who shared the protagonist's accent, and one side character who spoke with a different accent (Figure 1A).

During the familiarization trials, each character spoke about the weather for 7 seconds (e.g., "Hi there! How is your day going? The weather is lovely today, isn't it?"). The accent and color of the side characters were counterbalanced across participants. In one condition, the shared accent was familiar to the infant (i.e., American), while the non-shared accent was unfamiliar (i.e., Chinese). In the second condition, this arrangement was reversed: the shared accent was Chinese and the non-shared accent was American (Figure 1A). The order of conditions was counterbalanced. Each familiarization trial was repeated twice.

Following familiarization, infants viewed a test event in which the protagonist expressed distress by frowning and shaking while a crying sound played for 7.4 seconds. During this scene, the side characters looked toward the distressed protagonist and remained still, making it salient that the central character was the one crying (Figure 1A). After the crying stopped, there was an 8-second pause during which we coded (1) which side character the infant looked at first and (2) the proportion of looking time toward each side character.

Coding and Data Analysis Manual video coding was done by researchers who were unaware of the conditions to track infants' anticipatory looking behavior. Coders recorded both (1) which side character the infant looked at first and (2) the proportion of time the infant spent looking at each side character during the 8-second pause following the distress scene.

To analyze infants' expectations, we conducted Bayesian binomial tests using *JASP* (JASP Team, 2024). We pre-registered one-sided binomial tests to examine whether infants were more likely to look first at the character who shared the protagonist's accent. Additionally, we pre-registered one-sided Bayesian t-tests to investigate whether infants look longer at the same-accent character. Finally, we planned to test condition effects on infants' looking behavior across both measures.

Results

Contrary to our hypotheses, infants did not look first or longer at the character who shared the protagonist's accent in either condition. In fact, in the condition where the central protagonist had an American accent, infants were more likely to look first at the differently-accented character (i.e., the Chinese-accented character). We report both the pre-registered one-sided binomial test and an additional one-sided binomial test in the opposite direction. However, the latter should be interpreted with caution, as it was neither hypothesized nor pre-registered.

To test the effect of condition on proportion of looking time, we transformed the data to a 0-1 scale and ran a beta mixed-effects model, with condition as a fixed effect and ID as a random effect. The outcome variable was the proportion of looking toward the same-accent character. We calculated a Bayes factor using the bayes_factor function to compare the model including condition to a model without it. The results provided inconclusive evidence that the model including condition was more likely than the model without it (BF_{10} = 1.41).

Per our pre-registered hypotheses, we first report the Bayes factor for the one-sided binomial test across both conditions. Infants did not look first at the same-accent character more often than expected by chance, with 30 of 76 trials showing a first look toward the same-accent character (BF_{01} = 19.48), indicating strong evidence for the null hypothesis. If anything, infants tended to look first at the differently-accented character. Similarly, the Bayesian t-test examining proportion of looking time yielded inconclusive evidence (BF_{01} = 1.53) with infants spending slightly more time looking at the differently-accented character ($M_{matching}$ = 0.40).

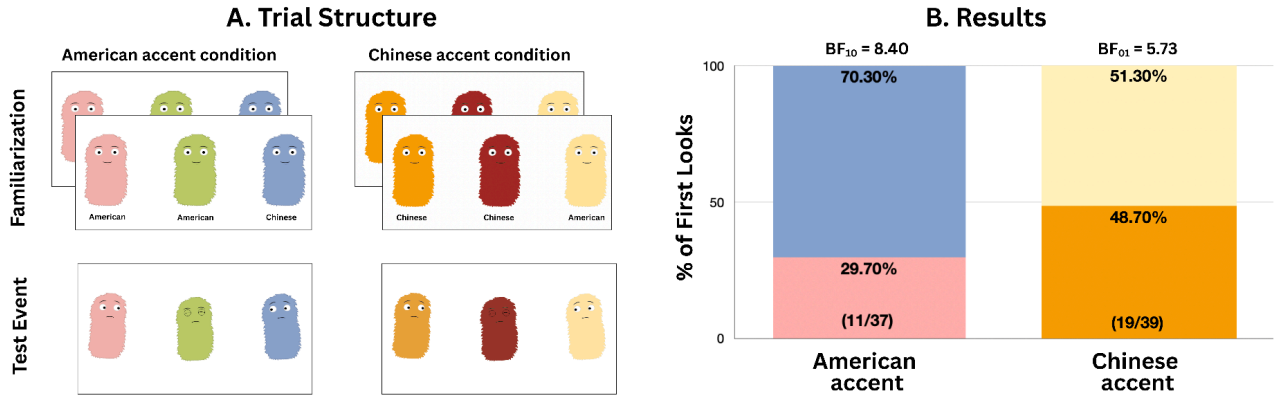

Figure 1: Schematic of stimuli shown to infants during familiarization and test trials (A). Stacked bar plots showing the percentage of infants' first looks to each side character when the protagonist is crying, across conditions (B). Colors represent the corresponding side character in Panel A and are included for visualization purposes only; they do not reflect the actual colors shown to participants.

Given weak evidence that condition influenced infants' first looks, we conducted exploratory binomial and t-tests separately to examine the effects for each condition. In the American-accent condition, infants looked first more often at the differently-accented character (BF_{10} = 8.40; 70.30% , 26/37; Figure 1B). Looking time results in this condition were inconclusive (BF_{01} = 1.83; M = 0.56). In the Chinese-accent condition, results support the null hypothesis: infants did not look first at the same-accent character more often than chance (BF_{01} = 5.73; 48.70%, 19/39; Figure 1B). Moreover, we found strong evidence that infants did not look longer at the same-accent character (BF_{01} = 7.89; M = 0.48).

Study 2: Children's Social Inferences Based on Accent Sharing

In Study 1, we unexpectedly found that infants looked first at the differently-accented character during the distress event–but only when the central protagonist spoke with an American accent. We hypothesized that this behavior might reflect infants attributing the cause of distress to the outgroup member. Notably, this pattern emerged only when the protagonist had an American accent (i.e., the infants' likely ingroup), which rules out several alternative explanations. For example, if infants were matching the unfamiliar accent to the sound of crying, or were more interested in or wary of the unfamiliar accent, we would expect them to show this pattern across both conditions. However, we did not observe this.

Motivated by these unexpected results, we conducted an exploratory follow-up study with 5- to 8-year-old children to examine the types of social interactions they expect between characters based on accent sharing. Prior work shows that children in this age group prefer peers who speak their language with their accent (Kinzler et al., 2009). We reasoned that such preferences might extend to expectations about social affiliation, closeness, and conflict. This exploratory study consisted of four pilot studies that varied slightly in structure, including the number of questions asked and whether the design was within- or between-subjects.

Method

Participants Ninety 5-to-8-year-old children (M_{age}=6.3 years) were recruited through the Children Helping Science platform (Scott & Schulz, 2017), a lab database, and social media advertisements. Data from three participants were excluded due to technical difficulties or inattentiveness, resulting in a final sample of 87 children included in the analysis. In contrast to Study 1, we did not restrict participation based on English exposure. This allowed us to include children from a range of linguistic backgrounds, including those regularly exposed to multiple accents.

Procedure This study was conducted online using video chat software. Children were introduced to novel groups of characters, such as the ones used in Study 1. Each group consisted of three characters, with the protagonist sharing an accent with one of the side characters. During familiarization, each character spoke about the weather for seven seconds (e.g., "Hi there! How is your day going? The weather is lovely today, isn't it?"). In one condition, the shared accent was American and the different accent was Chinese. In the other condition, this arrangement was reversed: the shared accent was Chinese, and the different accent was American (Figure 2A).

To ensure children could identify which voice belonged to which character, we conducted an attention check after the first familiarization trial. An image of the first pair of side characters was shown, and the experimenter played a voice clip from one side character, asking, "Which character sounds like this?" This was repeated for the second side

character. If children failed to identify the character whose voice matched the audio, the familiarization was played up to two additional times.

Across conditions, participants answered four questions about social interactions between the characters. Two questions involved prosocial or intimate intent: (1) "Who do you think the protagonist would want to give a high five to?" and (2) "If the protagonist felt really sad, who do you think they would want a hug from?" (Woo et al., 2024). The other two questions involved antisocial or harmful intent. In one scenario, children were told that one of the side characters knocked over the protagonist's block tower by kicking it (Rhodes, 2012; Rhodes & Chalik, 2013), and were asked, "Who do you think knocked the tower over?" Finally, to assess harm expectations, children were told that one of the side characters made the protagonist cry, and were asked, "Who do you think made the protagonist cry?"

Analysis To assess children's expectations about affiliation and conflict based on accent sharing, we conducted exploratory Bayesian binomial tests using JASP (JASP Team, 2024). Analyses were conducted separately for each condition. Additionally, we subset the data to explore whether children with more diverse linguistic exposure showed more flexible expectations about social interactions based on accent sharing.

Results

Children did not show consistent expectations about friendship or social closeness based on accent sharing in either condition. However, consistent with the results from Study 1, we found weak evidence that children whose parents speak with an American accent were more likely to choose the differently-accented character (i.e., Chinese-accented) as the one who made the protagonist cry in the American condition (BF_{10}=4.90; 72.70%, 16/22; Figure 2B). Similarly, children whose parents speak with a non-American accent showed a trend toward choosing the differently-accented character (i.e., American-accented) when asked who knocked over the protagonist's block tower in the Chinese condition (BF_{10} = 1.21; 66.70%, 14/21; Figure 2C).

These exploratory findings suggest that children's attributions of harm may be influenced by the accent to which they are most frequently exposed, underscoring the potential role of accent in shaping social expectations. However, given the small sample sizes and post hoc nature of these analyses, these results should be interpreted with caution.

General Discussion

The present studies investigated whether young children use shared accent to infer social relationships. In Study 1, we investigated whether 13- to 18-month-old monolingual English-learning infants expect characters with the same accent to respond to one another's distress. We also explored whether these expectations are shaped by the infant's familiarity with the accent. Contrary to our predictions, infants did not seem to expect same-accent characters to respond to each other's distress. However, when the distressed character spoke with an American accent (familiar to participants), infants looked first toward the differently-accented (Chinese-accented) character. One possible interpretation is that infants may have perceived the differently accented character as the source of the protagonist's distress.

Several alternative explanations can be ruled out. For example, if infants were simply more interested in the novelty of the Chinese-accented character, we would expect an increased proportion of looking time toward the Chinese-accented characters in both conditions–not just when the distressed protagonist spoke with an American

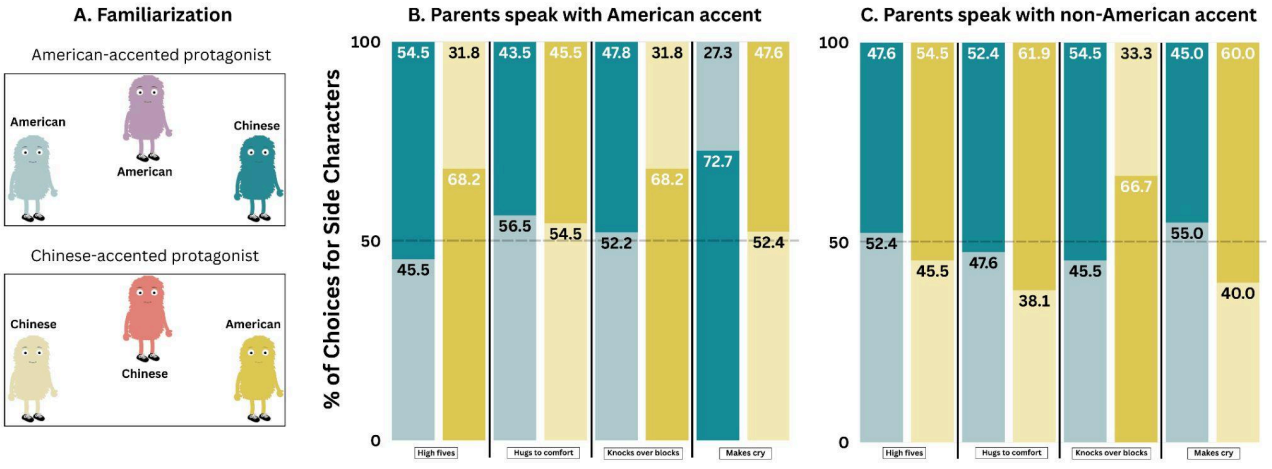

Figure 2: Example stimuli shown to children during familiarization trials (A). Stacked bar plots showing the percentage of trials in which children chose each side character (B, C). Colors correspond to the side characters in Panel A and are included for visualization purposes only; they do not reflect the actual colors used in the experiment.

accent. Still, it is possible that infants were simultaneously interested in the novelty of the accent and in the character being different from the others. These competing sources of interests may have canceled each other out in the condition where the distressed character had a Chinese accent. Future studies could test infants' looking behavior in the absence of a distress event to help distinguish between interest-driven and attribution-driven responses.

To further explore the idea that infants were attributing the cause of distress to the different-accent character, Study 2 explored the types of social interactions 5- to 8-year-olds expect between similarly- and differently-accented characters, and whether diverse linguistic exposure influenced these expectations. Supporting our interpretation of the infant data, children whose parents reported speaking with an American accent were more likely to attribute an American-accented protagonist's distress to the differently-accented (Chinese-accented) character. This pattern did not emerge when the protagonist had a Chinese accent. Interestingly, children whose parents reported speaking with non-American accents showed the reverse pattern: they were more likely to select the American-accented character as the one who knocked over the Chinese-accented character's block tower.

These findings align with prior work suggesting that children use group membership to reason about social actions. For instance, children as young as 3 years of age expect people to help both ingroup and outgroup members, but are more likely to anticipate harm between members of different groups (Rhodes, 2012, Rhodes & Chalik, 2013). Our results also echo findings from Liberman et al. (2017), which show that 7- to 11-year-olds were more likely to attribute moral transgressions to members of unfamiliar linguistic groups. Similarly, in our study, children used accent to make inferences about who was more likely to cause harm, suggesting that accent may serve as a salient social marker in early moral reasoning. Preliminary trends in our data also suggest that children with more linguistically diverse social networks may have more flexible social expectations, as reflected in the more variable responses of children with non-American-accented parents. This pattern is consistent with findings by Immel and Liberman (2024), who showed that infants with greater exposure to linguistic diversity exhibit less rigid social group boundaries. Still, given the limited sample sizes in our study, future research should collect larger and more diverse samples to determine whether linguistic diversity constantly buffers against accent-based bias.

Together, our findings suggest that young children, including toddlers, may use accent as a social cue to make inferences about social relationships, and potentially antisocial actions. Nonetheless, several limitations should be noted. First, participants in Study 1 were monolingual, English-learning infants, so it remains unclear whether infants with regular exposure to non-American accents (e.g., Chinese monolingual infants) would show similar or different patterns. Future research should examine whether accent familiarity moderates infants' expectations. Second, in Study 2, when results were analyzed separately by condition and accent exposure, the subset samples were small. Replication with larger and more diverse samples is necessary to better understand individual differences in children's reasoning about accent. We plan to explore whether children's exposure to accents—and the social roles of those who speak them (e.g., caregivers versus acquaintances)—influences their expectations about affiliation and harm.

In sum, these preliminary findings contribute to the growing body of research on how young children reason about social groups and accent. While further research is needed to clarify and extend these results, our data suggest that accent is a salient cue that may shape young children's expectations about others' relationships and intentions from early development.

Acknowledgments

We thank the families who participated in these studies; *Children Helping Science* (Scott & Schulz, 2017) for recruitment support; Juliet Leyva, Maya Hernandez, and Megan Richardson for helping with data collection; Emma Yu for research support, members of the Thomas Lab for their valuable feedback and discussions, and CogSci reviewers for their insightful comments, which improved the clarity of this work.

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