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Who can communicate with whom? Language experience affects infants' evaluation of others as monolingual or multilingual

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ABSTRACT

Adults recognize that people can understand more than one language. However, it is unclear whether infants assume other people understand one or multiple languages. We examined whether monolingual and bilingual 20-month-olds expect an unfamiliar person to understand one or more than one language. Two speakers told a listener the location of a hidden object using either the same or two different languages. When different languages were spoken, monolinguals looked longer when the listener searched correctly, bilinguals did not; when the same language was spoken, both groups looked longer for incorrect searches. Infants rely on their prior language experience when evaluating the language abilities of a novel individual. Monolingual infants assume others can understand only one language, although not necessarily the infants' own; bilinguals do not. Infants' assumptions about which community of conventions people belong to may allow them to recognize effective communicative partners and thus opportunities to acquire language, knowledge, and culture.

1. Introduction

As adults, we recognize not only that language is communicative, but also that people have the capacity to understand more than one language. Globally, more people are multilingual than monolingual (Tucker, 1999). How does the understanding that unfamiliar individuals might understand more than one language develop?

Like adults, infants are aware of the communicative function of speech: by 12 months, infants recognize that speech can transfer information from one person to another (Martin, Onishi, & Vouloumanos, 2012; Vouloumanos, Martin, & Onishi, 2014; Vouloumanos, Onishi, & Pogue, 2012). But each language has its own conventions; speakers of the same language generally use the same word to convey the same meaning (Clark, 1996). For example, an English speaker would expect a chair to be labeled "chair," but a French speaker would not. Adults recognize that monolinguals understand only one conventional system, whereas multilinguals understand more than one, and also recognize that individuals who understand the same conventional system are more likely to be able to communicate with each other successfully. Monolingual infants show an understanding of the conventional nature of language, for example, that object labels are shared between individuals, while preferences for particular objects are not (Buresh & Woodward, 2007; Graham, Stock, & Henderson, 2006; Henderson & Graham, 2005; Henderson & Woodward, 2012). However, it is unclear whether infants understand

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that people may be multilingual and therefore understand more than one system of conventions.

For infants to understand that different languages follow different conventions, they must be able to distinguish between different languages. Rhythm is one salient linguistic cue that differentiates between languages. From birth, infants can distinguish between languages based on their rhythmic properties. For example, French newborns discriminated between Japanese and English, but did not respond differently to languages within the same rhythmic class (Nazzi, Bertoncini, & Mehler, 1998). Infants' sensitivity to differences between languages increases with age. By 4 months, infants distinguish between languages within their native rhythmic class: Catalan and Spanish monolinguals discriminated between the two rhythmically similar languages (Bosch & Sebastián-Gallés, 1997). Very young infants use various linguistic cues including rhythm to distinguish between different languages.

Children treat people differently based on the language the person speaks. For example, language is used to identify members of social groups; monolingual infants as young as 6 months looked longer at speakers of their native language than at speakers of a foreign language, while 10-month-olds preferentially accepted toys from native-language speakers (Kinzler, Dupoux, & Spelke, 2007). Young children also use language as a cue to other people's information states. For example, 3-year-olds expected a bilingual observer to have access to different information than a monolingual observer (i.e., to understand a label used for a novel object; Diesendruck, 2005). Children can also update their own understanding of–and modify their response to–a particular social partner based on the partner's language use. With no initial information about an unfamiliar interlocutor's language, 2-year-old bilingual children made rapid adjustments to the stranger's language proficiency, increasing their use of the language spoken by the stranger (Genesee, Boivin, & Nicoladis, 1996). While young children can use an unfamiliar person's language to gather information and make inferences about them, previous research has not investigated whether infants have assumptions about whether people can understand only one, or more than one, language.

To examine whether 20-month-old infants expect an unfamiliar person to understand one or more than one language, we tested infants in a third-party scenario. Infants saw an actor (the Listener), alone, playing with a ball. Next, a second actor (Speaker 1) was introduced, alone, and hid the ball in one of two locations. Then, with the two actors present, Speaker 1 told the Listener the location of the ball in one of two languages. The Listener then reached for the correct location, establishing that she understood this first language. In the next scene, the Listener, again alone, played with the ball. Next, a third actor (Speaker 2) was introduced, alone, and hid the ball in one of two new locations. Then, with Speaker 2 and the Listener present, Speaker 2 told the Listener the location of the ball, using the same language as or a different language from Speaker 1. The different language was rhythmically distinct from the first language. The Listener then reached correctly or incorrectly. We examined infants' looking time to the Listener's reach. If infants recognize that Speakers 1 and 2 used the same language, they should look longer when the Listener responds incorrectly to Speaker 2. In contrast, if infants recognize that two different languages have been used, and assume an unfamiliar person can understand only one language, they would not look longer when the Listener responds incorrectly to Speaker 2. If infants assume the Listener understands the specific language used by Speaker 2, they would look longer when the Listener responds incorrectly. However, if infants assume the Listener understands more than one language, but are unsure of which ones, they would have no prediction about the Listener's ability to understand Speaker 2, and thus look equally whether the Listener responds correctly or incorrectly.

Infants' assumptions about others' language comprehension abilities may be influenced by their own language experience. In order to examine this possibility, we tested two groups of infants: monolinguals and bilinguals, two groups with different linguistic experiences who may have different expectations about how other people use language (Diesendruck, 2005; Genesee et al., 1996; Petitto et al., 2001). We predicted that monolingual and bilingual infants would differ in whether they expect an unfamiliar person to understand more than one language.

2. Method

2.1. Participants

Data from 64 infants were included. Thirty-two full term monolingual infants (M_{age} = 19 months, 22 days; range 18,28 to 20,22; 20 females) and 32 full term bilingual infants (M_{age} = 19 months, 18 days; range 18,20 to 20,24; 13 females) participated. Half the infants from each Language Background group (Monolingual, Bilingual) were assigned to the Same and half to the Different Language conditions.

Monolingual infants were exposed to at least 90% English. Monolinguals were randomly assigned to the Same or Different Language conditions, and within language condition were randomly assigned to hear English or Spanish (Same Language condition) or English first or English second (Different Language condition). Thus half the monolinguals heard a familiar and half heard an unfamiliar language during the Language Evaluation test trial. Bilingual infants were exposed to at least 30% of two languages from two different rhythmic classes. Of these, 11 had dominant exposure to a stress-timed language with a syllable-timed nondominant language (8 English–French, 2 English–Spanish, 1 Arabic–French); 14 had dominant exposure to a syllable-timed language with a stress-timed nondominant language (13 French–English, 1 French–Arabic); and 7 had equal exposure to a stress-timed and a syllable-timed language (4 English–French, 2 English–Spanish, and 1 Arabic–French). English-French bilinguals were randomly assigned to the Same or Different language conditions, and within language condition were assigned randomly to hear English or French (Same Language condition) or English first or English second (Different Language condition). The remaining bilinguals heard either