



Monolingual and bilingual children's resolution of referential conflicts: Effects of bilingualism and relative language proficiency



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ABSTRACT

Monolingual children follow pointing over labeling when these are in conflict in object selection tasks. Specifically, when a speaker labels one object, but points at another object, monolinguals select the object pointed at. Here, we ask whether (i) bilingual children show the same behavior as monolinguals and (ii) relative language proficiency affects bilinguals' conflict resolution. 35 monolingual and 32 bilingual two- to four-year-olds performed an experiment involving a conflict between pointing and labeling. The bilinguals were tested in Dutch and in English. The bilinguals had a stronger preference for pointing over labeling and selected both objects less often than the monolinguals. Point following was stronger in the bilinguals' weaker language than in their stronger language. These results support earlier findings on bilinguals' increased sensitivity to socio-pragmatic cues and weaker reliance on mutual exclusivity, and show that previously acquired language knowledge affects how children weigh socio-pragmatic and lexical cues.

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1. Introduction

Young children learn new words from very early on in life. Previous research has shown that both lexical principles and socio-pragmatic principles guide word learning, but studies differ regarding the importance they attach to either of these principles. One line of research focuses on lexical principles such as mutual exclusivity (Golinkoff, Hirsh-Pasek, Bailey, & Wenger, 1992; Hansen & Markman, 2009; Markman & Wachtel, 1988; Markman, Wasow, & Hansen, 2003), showing, for example, that children tend to avoid having two labels referring to the same object. In another line of research, socio-pragmatic principles such as joint attention, eye gaze and pointing are considered the key determinants of early word learning (Baldwin, 1991; Baldwin, 1993; Baldwin et al., 1996; Bannard & Tomasello, 2012). Baldwin et al. (1996) found, for example, that 18- to 20-month-old children were able to learn a novel label for a novel object when they saw a speaker attending to this object, but not when they only heard the speaker's voice, suggesting that socio-pragmatic cues are necessary for word

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learning (cf. Bannard & Tomasello, 2012). Hirotani, Stets, and Friederici (2009) found in an ERP study that joint attention was needed to enable word learning over mere associative learning in 18- to 21-month-olds.

These latter studies show that socio-pragmatic cues are important for word learning. Likewise, studies looking at children's reference resolution have found that children rely on socio-pragmatic information when resolving a conflict between socio-pragmatic and lexical referential cues (Ateş, 2016; Grassmann & Tomasello, 2010). Specifically, in these studies, children's task was to disambiguate the reference of a speaker using conflicting referential cues, namely, labeling one of two objects on the table while pointing or gazing at the other one. Children could resolve this conflict by following either the lexical (labeling) or socio-pragmatic (pointing/gazing) cue. The results of these studies indicated that children relied on both cues, with the relative strength of these cues being dependent, amongst others, on whether pointing occurred in an ostensive manner. In the current study, we investigate children's resolution of conflicts between labeling and pointing to find out (i) whether bilingual children rely on pointing versus labeling to the same extent as monolingual children, and (ii) whether bilingual children's reliance on pointing versus labeling is affected by whether the referential conflict is presented in their weaker or stronger language.

Jaswal and Hansen (2006) were the first to investigate how children weigh pointing and the mutual exclusivity principle when resolving a referential conflict. These authors administered a disambiguation task in which three- and four-year-old children were shown a novel and a familiar object. The experimenter then asked for the novel object ("Can you give me the blicket?"), while she pointed or looked at the familiar object. This study showed that English monolingual three- and four-year-old children overwhelmingly followed labeling over pointing and eye gaze when these cues were in conflict. The authors concluded that children expect words to be mutually exclusive even in the presence of a conflicting socio-pragmatic cue (cf. Graham, Nilsen, Collins, & Olineck, 2010).

More recently, Grassmann and Tomasello (2010) repeated Jaswal and Hansen's study with German monolingual two- and four-year-olds. However, these authors used ostensive pointing, that is, pointing combined with gaze alternation between the child and the object pointed at. In Jaswal and Hansen (2006), the pointing gesture was directed unambiguously at the object, while gazing was directed toward the child. Ostensive pointing, as used by Grassmann and Tomasello, may be considered a more natural, ecologically valid way of pointing, which expresses more clearly the communicative intention that the object pointed (and looked) at is *for you* (Grassmann & Tomasello 2010, p. 253). Grassmann and Tomasello found that children followed ostensive pointing over labeling, but not non-ostensive pointing as used by Jaswal and Hansen (2006). Grassmann and Tomasello also found that children's preference for pointing was weaker when the experimenter used a familiar label (e.g., 'car') than when the experimenter used a novel label (e.g., *modi*). Subsequent studies have replicated these findings for Turkish-learning two- and four-year-olds (Ateş, 2016) and German-learning four-year-olds (Grassmann, Magister, & Tomasello, 2011).

To date, studies on children's resolution of a conflict between pointing and labeling have exclusively looked at monolingual children. Worldwide, however, the number of children acquiring more than one language outnumbers the number of monolingual children (Associated Press, 2016; Grosjean, 2010; Tucker, 1998) and, in many parts of the world, the number of bilinguals is still increasing (e.g., Eurobarometer, 2012; Shin & Kominski, 2010). There are two main differences between bilingual and monolingual children that make it worthwhile to investigate bilingual children's resolution of a conflict between socio-pragmatic and lexical principles. First, bilingual children are known to rely less on lexical principles such as mutual exclusivity than their monolingual peers, most likely because they are used to knowing two labels for the same object, from their two languages (Byers-Heinlein & Werker, 2009; Davidson, Jergovic, Imami, & Theodos, 1997; Houston-Price, Caloghiris, & Raviglione, 2010). Second, bilingual children have been found to rely more strongly on non-verbal referential cues, such as gaze direction, than monolingual children (Brojde, Ahmed, & Colunga, 2012; Yow & Markman, 2011; Yow, 2014). This has been attributed to the fact that children growing up in a bilingual environment need to constantly monitor what language a speaker is using and how to respond appropriately to avoid communication breakdowns, which would enhance their attentional sensitivity to the socio-pragmatic contexts surrounding verbal communication (Hung, Patrycia, & Yow, 2015; Yow & Markman, 2011). Also, the fact that bilingual children often have comparably smaller lexicons in each of their languages makes it more likely for them to encounter unknown words, which may be related to their enhanced attention to non-verbal information to extract linguistic meaning when they are uncertain (Siegal, Iozzi, & Surian, 2009; Yow, 2010).

In the current paper, we investigate whether bilingual children weigh lexical and socio-pragmatic referential cues differently than monolingual children during the resolution of a conflict between the two types of cues. We also investigate if bilingual children's previously acquired language knowledge affects their reliance on lexical versus socio-pragmatic cues such that they resolve referential conflicts differently depending on whether they are tested in their weaker or stronger language. Equal language proficiency levels are rare, even in bilinguals exposed who are exposed to two languages from birth (Paradis, 2007) and a variety of measures have been used to assess language proficiencies in bilinguals' two languages, including spontaneous speech measures and standardized vocabulary tests (Bedore et al., 2012).

To investigate effects of bilingualism and relative language proficiency on children's resolution of referential conflicts, we replicate the ostensive pointing experiment reported in Grassmann and Tomasello (2010) with monolingual and bilingual two- to four-year-olds. This age group is very similar to the age groups studied in earlier work, which also looked at preschoolers (Grassman & Tomasello, 2010; Jaswal & Hansen, 2006). Our aim is twofold. First, we investigate if bilingual children – due to their weaker reliance on mutual exclusivity (Byers-Heinlein & Werker, 2009; Davidson et al., 1997) and/or stronger sensitivity to socio-pragmatic cues (Brojde et al., 2012; Yow & Markman, 2011) – show an even stronger preference for pointing over labeling than monolingual peers. Second, we examine effects of previously acquired language knowledge

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