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Effects of contextual support on preschoolers' accented speech comprehension



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ABSTRACT

Young children often hear speech in unfamiliar accents, but relatively little research characterizes their comprehension capacity. The current study tested preschoolers' comprehension of familiar-accented versus unfamiliar-accented speech with varying levels of contextual support from sentence frames (full sentences vs. isolated words) and from visual context (four salient pictured alternatives vs. the absence of salient visual referents). The familiar accent advantage was more robust when visual context was absent, suggesting that previous findings of good accent comprehension in infants and young children may result from ceiling effects in easier tasks (e.g., picture fixation, picture selection) relative to the more difficult tasks often used with older children and adults. In contrast to prior work on mispronunciations, where most errors were novel object responses, children in the current study did not select novel object referents above chance levels. This suggests that some property of accented speech may dissuade children from inferring that an unrecognized familiar-but-accented word has a novel referent. Finally, children showed detectable accent processing difficulty despite presumed incidental community exposure. Results suggest that preschoolers' accented speech comprehension is still developing, consistent with theories of protracted development of speech processing.

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Introduction

With increasing globalization, listeners often encounter speech in regional or foreign accents different from their own. These listeners include young children. Although there is a wealth of research on the effects of unfamiliar accents on speech comprehension in adults, much less is known about young children's accented speech comprehension, as observed by [Cristià et al. \(2012\)](#) in a recent review article. This is a significant gap in knowledge given that accented speech provides a challenge to young children's developing abilities in speech perception and word recognition ([Bent, 2014](#); [Nathan, Wells, & Donlan, 1998](#)). More important, as [Cristià et al. \(2012\)](#) also noted, it prevents the field from having a full developmental picture of accented speech comprehension from infancy through childhood through young and older adulthood. The current study is an attempt to decrease this gap.

Little research characterizes accented speech comprehension in young children (with, as discussed shortly, a few exceptions), and existing findings are spread across paradigms and do not always produce identical conclusions. Therefore, it is not clear how well children comprehend unfamiliar-accented speakers who they encounter in everyday environments or what situations create greater or lesser ease in comprehension. The current study sought to characterize accented speech processing in preschool-aged (3- to 5-year-old) children. In particular, we aimed to assess the role of different types of contextual support—sentential semantic context and visual scene context—and the possibility that children will misidentify accented familiar words as novel words.

Accented speech may be more challenging for children in that they are generally more susceptible than adults to adverse listening conditions in speech comprehension (e.g., [Fallon, Trehub, & Schneider, 2000, 2002](#)). Thus, perceptual difficulties introduced by speech in unfamiliar accents may be especially challenging for children. An additional reason why accented speech may be especially challenging for children is that, because preschool-aged children are rapidly acquiring vocabulary, they need to identify potentially novel word forms. This means that if children are overly sensitive to pronunciation deviations from familiar words, they may misidentify familiar but accented words (e.g., “peeg” /pig/ for pig /pɪg/) as novel words. On the other hand, if children accept large variations in pronunciation, they risk failure to distinguish similar words (e.g., pick /pɪk/ vs. peek /pik/). The next section reviews what is known about accented speech recognition in infants, young children, and adults.

Accented speech processing during development

Infants' and toddlers' accented speech processing

Although we do not have space for an exhaustive review, it should be noted that most developmental research on word or word form recognition in unfamiliar accents, or accent-like variability such as deliberate mispronunciations, has focused on children up to around 2 years of age (accents: [Best, Tyler, Gooding, Orlando, & Quann, 2009](#); [Mulak, Best, Tyler, Kitamura, & Irwin, 2013](#); [Schmale, Cristià, Seidl, & Johnson, 2010](#); [Schmale & Seidl, 2009](#); [van Heugten & Johnson, 2014, in press](#); [van Heugten, Krieger, & Johnson, 2015](#); mispronunciations: [Swingley, 2003](#); [Swingley & Aslin, 2000, 2002](#); [White & Aslin, 2011](#); [White & Morgan, 2008](#)), with much less research on older children (with the only exceptions being, to the best of our knowledge, the following: accents: [Bent, 2014](#); [Bent & Atagi, 2015](#); [Nathan et al., 1998](#); mispronunciations: [Creel, 2012](#); [Newton & Ridgway, in press](#)). [Cristià et al. \(2012\)](#), in reviewing accent processing studies in various age groups, noted that research on children's accent processing, compared with that of infants/toddlers and young adults, is “less well-documented” (p. 7). (Note that there is more research with older children on recognizing or responding to the presence of accents: [Flocchia, Butler, Girard, & Goslin, 2009](#); [Girard, Flocchia, & Goslin, 2008](#); [Kinzler & DeJesus, 2013](#); [Kinzler, Dupoux, & Spelke, 2007](#); [Kinzler, Shutts, DeJesus, & Spelke, 2009](#); [Wagner, Clopper, & Pate, 2014](#)).

Infants, by some accounts, show good word or word form recognition after 12 or 13 months of life. [Schmale et al. \(2010\)](#) and [Schmale and Seidl \(2009\)](#) tested infants' recognition of familiarized word forms and found that infants recognize words despite unfamiliar regional accents by 12 months ([Schmale et al., 2010](#)) and foreign accents by 13.5 months ([Schmale & Seidl, 2009](#)). These word form recognition studies fit with [Swingley and Aslin's \(2000, 2002\)](#) findings from a looking-while-listening paradigm that children aged 15 months and older show some degree of recognition of non-canonically

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