



Accent modulates access to word meaning: Evidence for a speaker-model account of spoken word recognition



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ABSTRACT

Speech carries accent information relevant to determining the speaker's linguistic and social background. A series of web-based experiments demonstrate that accent cues can modulate access to word meaning. In Experiments 1–3, British participants were more likely to retrieve the American dominant meaning (e.g., *hat* meaning of “bonnet”) in a word association task if they heard the words in an American than a British accent. In addition, results from a speeded semantic decision task (Experiment 4) and sentence comprehension task (Experiment 5) confirm that accent modulates on-line meaning retrieval such that comprehension of ambiguous words is easier when the relevant word meaning is dominant in the speaker's dialect. Critically, neutral-accent speech items, created by morphing British- and American-accented recordings, were interpreted in a similar way to accented words when embedded in a context of accented words (Experiment 2). This finding indicates that listeners do not use accent to guide meaning retrieval on a word-by-word basis; instead they use accent information to determine the dialectic identity of a speaker and then use their experience of that dialect to guide meaning access for all words spoken by that person. These results motivate a speaker-model account of spoken word recognition in which comprehenders determine key characteristics of their interlocutor and use this knowledge to guide word meaning access.

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1. Introduction

Successful language comprehension requires that listeners rapidly and accurately retrieve the meanings that speakers intend to convey in their speech. While meaning retrieval can be quite straightforward when the listener and the speaker have a single or preferred meaning for a word, the process of retrieving the speaker-intended meaning is made more challenging when the listener and the speaker have different preferred meanings for the word, as in the case of words which have different preferred or dominant meanings in different varieties of a language (e.g., “bonnet” typically refers to a car part in British English but a type of hat in American English). In this case, one useful cue for the listener is the accent of the speaker, which can be used to infer the speaker's dialectic background and in turn the likely intended meaning of cross-dialectically

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ambiguous words. The study assesses whether listeners make use of speaker accent in accessing word meanings, and if so, what the mechanism is that supports such accent-based meaning inference.

To quote George Bernard Shaw: “*England and America are two nations divided by a common language*”.¹ Despite being (mostly) mutually intelligible, British and American English differ systematically in the accent in which words are pronounced. Furthermore, the meanings of common everyday words often differ between the two dialects (we use the term dialect to refer to a variety of a language, e.g., British English, and the term accent to refer more specifically to the manner of speech in a dialect; in addition, we use *British accent* and *American accent* respectively as an umbrella term for the set of different regional accents within the United Kingdom and the United States). While an American would say they live in an “apartment”, a British person would call their single-story residence a “flat”, a word that could also mean a deflated tire or the shape of a pancake. Comparable differences of accent and word meaning arise between many pairs of geologically-separate language communities (e.g., South American and European Spanish or Portuguese) and sometimes even between different dialects of the same language community (e.g., the north-south distinction between the use of “tea” and “dinner” to refer to the evening meal in England). Exposure to these variations in speaker accent and meaning is increasingly the norm rather than the exception in daily communication as a result of immigration and long-distance communication across different dialectic isoglosses (e.g., between the United Kingdom and the United States) and exposure to international media (e.g., TV programmes). Successful communication between individuals from different language communities may require that listeners use many available cues, speaker accent for instance, to determine what words and meanings any given speaker is likely to convey.

Speaker accent does not lead to random variation in the speech sounds but arises due to systematic variation in the phonetic realisations of words among different dialects. Several studies have shown that listeners experience difficulty in identifying words that are spoken in an accent different from their own (e.g., Floccia, Goslin, Girard, & Konopczynski, 2006). However, it is currently unclear whether the accent in which words are spoken also impacts meaning access. The paucity of such research probably reflects an assumption that accent variations change the surface form of speech but not the underlying words or meanings conveyed. The word “tree” has the same meaning regardless whether it is spoken by a British or American English speaker (i.e. heard in a British or American accent). Such an assumption, however, is unjustified due to dialect-induced changes in the meanings typically conveyed by different words. For instance, the word “bonnet” more often means a car part than a hat in British English, but the reverse is true in American English (American English speakers use the word “hood” for the equivalent car part).

Words with different meanings in different dialects provide an ideal case for testing whether accent information can directly influence meaning access (by which we mean the on-line retrieval of a stored lexical semantic representation for a word). When listeners who are sufficiently familiar with both British and American English hear the word “bonnet”, they are likely to activate to some extent both *car-part* and *hat* meanings (e.g., Swinney, 1979). One of the meanings will then be quickly selected based on evidence derived from various sources (e.g., meaning frequency and prior context; Duffy, Morris, & Rayner, 1988). If speaker accent modulates meaning access, the hat meaning of “bonnet” should then be selected with a greater likelihood if the word is spoken in an American than British accent. The present study thus investigates whether, and how, listeners use speaker accent in retrieving the speaker’s intended meaning, using cross-dialectically ambiguous words like “bonnet”.

In motivating the experiments presented in this paper, we begin by reviewing the literature on semantic ambiguity resolution before discussing existing evidence that surface features of speech can influence meaning access for words and sentences. We then discuss and contrast two possible mechanisms via which surface speech forms can affect meaning access. We first show, in a web-based experiment, that listeners use accent cues to guide retrieval of dialect-specific dominant meanings of ambiguous words (e.g., changing the likelihood of retrieving the *hat* or *car-part* meaning of “bonnet” when heard in an American or British accent). We then report two follow-up experiments to further determine the underlying processing mechanism by which accent modulates access to word meanings. Finally, two experiments using speeded tasks (semantic relatedness judgement and sentence interpretation) both show that speaker accent modulates on-line processes underlying rapid meaning access and sentence comprehension. The results of these five experiments suggest that current accounts of spoken word recognition and meaning access need to be extended to explain how listeners use accent cues to infer the likely meanings of spoken words. We finish the paper by describing a speaker-model account of spoken word recognition and meaning retrieval that can accommodate these findings.

1.1. Lexical ambiguity resolution in language comprehension

Research on lexical ambiguity resolution has shown that comprehenders are extremely sensitive to contextual and distributional factors when selecting a meaning for a semantically ambiguous word such as “bark” (Cai & Vigliocco, in press; Twilley & Dixon, 2000; Vitello & Rodd, 2015). The semantic cues present in preceding words play a key role in the disambiguation of ambiguous words within sentences. Comprehenders are also sensitive to the relative frequency with which different word meanings are used in the language. This is apparent in the greater ease with which more frequent (dominant) meanings are accessed compared to lower-frequency (subordinate) meanings. For example, when an ambiguous word such

¹ There is in fact no direct attribution of this quote to Shaw, though the 1951 Treasury of Humorous Quotations (Esar & Bentley) quoted him saying “England and America are two countries separated by the same language” but did not give the source.

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