

SEMANTIC FEATURES AND THEIR DEVELOPMENTAL TENDENCY.

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ELSEVIER



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Abstract: This article is devoted to semantic features and their developmental tendency and knowledge through language versus knowledge through perception and language as a means of abstraction. So far it is described some of the surprising richness of language as a guide to semantic knowledge. Linguistic input is surprisingly informative about space, time, relational knowledge, and conveys a surprising amount of what people ordinarily think of as basic perceptual information. The ability to derive –from ungrounded strings of symbols alone – that goldfish are pet fish and that breakfasts come before dinners is, of course, only possible because language is produced by people with grounded experiences and there are limits to perceptual knowledge that language tends to encode. Indeed, it may be the most evident perceptual facts may be missing from the language signal precisely because they are perceptually evident. Understanding these limits is an important future direction.

Keywords: meaning-holding components, lexical relation, semantic feature, explicit word meaning.

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Semantic features are theoretical units of meaning-holding components which are used for representing word meaning. These features play a vital role in determining the kind of lexical relation which exists between words in a language. Although such model of meaning representation has numerous applications in various fields, the manual derivation of semantic features is a cumbersome and time consuming task. We aim to elevate this process by developing an automated semantic feature extraction system based on ontological models. Such an approach will provide explicit word meaning representation, and enable the computation of lexical relations such as synonym and antonymy. Considering semantic features of negation in English, wh-question is used to negate something even when it is not in negative form. For example: You are Asian, how could you fail Maths? The question in italic implies there is no way you fails Math. It shows the asker's emotion and does not expect any response. The question is to serve the purpose of communication. It does not contain any form of negative but connotes the negation itself. To identify a proper semantic development definition in the case of machines, scholars have to start from a different element. Imagine a hypothetical learner whose only input were naturally occurring language. What kinds of knowledge would be difficult or impossible to learn from this input? What kinds of knowledge would be relatively easy to learn? What kinds of knowledge might we be learning only by virtue of using language? I will not fully answer these questions here but we highlight below some potentially useful directions for

making some progress. One may suppose that the hypothetical learner whose input is purely linguistic would learn nothing about what things look like, feel like, or sound like. Nevertheless, language captures a surprising amount of perceptual knowledge and this is why someone who is congenitally blind knows quite a bit about perceptual qualities like color. However, it is not a coincidence that the examples most frequently used to highlight the semantic savvy of models like the structures are of the man:woman :: king:queen variety. In our informal analysis, the model's performance on analogies like ball:round :: banana: is dismal. None of the top thirty of the model's responses even pertain to shape. Although the model "knows" that apple, red, banana, yellow, the colors blue, purple, and pink are in close competitors to yellow while green is not. Investigating perceptual qualities like taste and feel, likewise reveals large gaps. Although Similarity - pillow, soft > Similarity like pillow, hard, the top thirty semantic neighbors of "pillow" do not include "soft" which is one of the most frequent human-produced associations. Similarly, the models learn that "Firestone" is a kind of tire, but judge tires to be more similar to squares than circles. A general hypothesis then is that language input is especially useful for generating abstract and relational knowledge and poorer at generating concrete perceptual knowledge.

In retrospect, this article paper analyzed supporting evidence for the potential of language to structure knowledge comes from distributional semantics models that demonstrate the impressive amount of information that language conveys about space, time, relations, and even some basic perceptual facts.

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