

In support of *in* and *on*

It has been noted that speakers' qualitative understanding of the physics of a scene can influence their choice of a spatial term to describe the scene (e.g., (Bowerman & Choi, 2001; Feist & Gentner, 2003). In particular, support of the Figure by the Ground is argued to be an important part of the meaning of English *on* and related terms (e.g., Herskovits, 1986; Vandeloise, 1991). However, although this is believed to be the case, the influence of support on speakers' choice of spatial terms has yet to be empirically shown.

Looking at canonical examples of *in* and *on*, one is struck by the intuition that the Ground must be supporting the Figure against gravity. For example, the sentence in (1) typically describes a situation in which a book is located at the upper surface of a shelf, which supports the book against gravity. Similarly, (2) is understood to describe a situation in which a pear is located at the interior of a bowl, which in turn keeps the pear from falling (i.e. supports it) or rolling away.

(1) The book is on the shelf.

(2) The pear is in the bowl.

Is support part of the meaning of *in* and *on*, or is it merely canonically encountered in situations thus described? What is the role of support in non-canonical uses of spatial terms? To test this, I asked English speakers to describe pictures depicting non-canonical states of affairs: Figures near, but not in contact with Grounds (e.g., an apple piled on other objects in a basket); and Figures in contact with Grounds in a non-canonical manner (e.g., an apple rolled in a rug). Each class of pictures further included a subclass in which the Ground supported the Figure against gravity and one in which support was absent.

Analysis of the rate at which *in* or *on* was produced to describe the pictures revealed a significant effect of support (with support $M = .71$; without support $M = .04$, $t(19) = -9.20$, $p < .0001$). Thus, support influences use of *in* and *on*, even in non-canonical usage situations.

This result demonstrates that support plays an independent role in the meanings of *in* and *on*, separate from its occurrence in situations canonically described by these prepositions.

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