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Spatial demonstratives and perceptual space: Describing and remembering object location

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ABSTRACT

Spatial demonstratives – terms including *this* and *that* – are among the most common words across all languages. Yet, there are considerable differences between languages in how demonstratives carve up space and the object characteristics they can refer to, challenging the idea that the mapping between spatial demonstratives and the vision and action systems is universal. In seven experiments we show direct parallels between spatial demonstrative usage in English and (non-linguistic) memory for object location, indicating close connections between the language of space and non-linguistic spatial representation. Spatial demonstrative choice in English and immediate memory for object location are affected by a range of parameters – distance, ownership, visibility and familiarity – that are lexicalized in the demonstrative systems of some other languages. The results support a common set of constraints on language used to talk about space and on (non-linguistic) spatial representation itself. Differences in demonstrative systems across languages may emerge from basic distinctions in the representation and memory for object location. In turn, these distinctions offer a building block from which non-spatial uses of demonstratives can develop.

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1. Introduction

The mapping between language and space has garnered much interest in the cognitive sciences. Space is regarded by many as a fundamental building block of language and cognition, and as a structuring tool for domains such as time and emotion (see for example Casasanto & Boroditsky, 2008; Lakoff, 1987; Lakoff & Johnson, 1980). Given its importance, one might expect to find considerable regularity across languages in how space is represented in language. Yet it has long been recognized that languages vary quite considerably in how they carve up space. For example, some languages have more words to describe containment and support relations than in English (e.g. Dutch), while others have less (e.g. Spanish, Indonesian; see Bowerman, 1996; Feist, 2008 for discussion). Some languages use cardinal directions to specify relations in table top space (e.g. Tzeltal), while others, English among them, prefer to use the viewpoint of the speaker or the relative positions of objects (Levinson, 2003). These (and other) differences are intriguing, and lead directly to two key questions regarding the mapping between language and space. First, do these language differences jeopardize a systematic mapping between language and the vision and action systems across speakers of languages (for different views on this, see for example Crawford, Regier, & Huttenlocher, 2000; Munnich, Landau, & Dosher, 2001)? Second, do speakers of different languages process the spatial world in different ways as a result of the language they speak (see for example Deutscher, 2010; Li, Abarbanell, Gleitman, & Papafragou, 2011)?

The main goal we have in this paper is to consider the mapping between language and space for arguably the most important spatial terms in all languages – spatial demonstratives (e.g. *this* and *that*). These terms occur in all languages, are high frequency terms within a language, and philologically emerge as the earliest traceable words in languages (Deutscher, 2005; Diessel, 1999, 2006). They are among the first words all children acquire (Clark, 1978, 2003) and are more closely associated with deictic gestures than many other linguistic items (Clark, 1996; Diessel, 2006). Yet they have been neglected from an empirical point of view. The main aim of this paper is to understand the conditions under which these essential terms are used, and how their use maps onto non-linguistic spatial representation and memory for object location. To do so, we present seven experiments demonstrating systematic overlaps between demonstrative choice and (non-linguistic) memory for object location.

The second goal we have is to consider the status of language differences across spatial demonstrative systems. The (often tacit) assumption in cross-linguistic research is that the lexicalized or overt distinctions a language makes are predictive of the distinctions speakers of that language employ when using that language. This assumption has led directly to a research industry looking at the consequences of these language differences for the mapping between language and non-linguistic systems on the one hand, and claims and tests of various forms of 'linguistic relativity' on the other (see Wolff & Holmes, 2010 for a recent overview). Our conclusion will be that more careful consideration regarding the nature of such language differences – in tandem with empirical investigation of spatial language choice and non-linguistic spatial representation together – reveals more commonality across speakers and languages than lexical distinctions might suggest.

The third goal is to consider constraints on the perceptual and mnemonic representations of space itself. The mapping between language and space is usually considered from the perspective of taking what is known about the vision and action systems and mapping that onto language. Here we also consider the reverse mapping: can distinctions in language provide clues to the nature of the mnemonic representation of space? We will conclude that distinctions in language can lead to a richer understanding of the nature of (non-linguistic) perception of space generally, and memory for object location specifically.

1.1. Spatial demonstratives across languages and perceptual space

Demonstratives occur across a range of linguistic contexts. A distinction is often made between *exophoric* use of demonstratives – where objects in the surrounding situation are referred to (Diessel, 1999; Halliday & Hassan, 1976) – and *endophoric* use, which includes demonstratives used in discourse reference, anaphoric reference and temporal reference. It is generally accepted that exophoric