CROSS-LINGUISTIC DIFFERENCES IN SPATIAL LANGUAGE IN ENGLISH AND UZBEK AS MODULATORS OF SPATIAL THOUGHT

Nizomova Nargizakhon Alievna
Sotvaldiyeva Xilola Musinovna

Abstract: *Spatial language is a domain that focuses on spatial descriptions of objects and their relations in a given environment. A prominent focus of work in this area has been on describing the end-products of apprehension, including what people understand an utterance to mean or what utterance they choose to produce. The goal of the current article is to review the work that articulates the role of attention in spatial language.*

Key words: *spatial language, spatial thought, special cognition, cross-language feature, special representation.*

Spatial language is generally assumed to rest on nonlinguistic representations of space, which are presumably universal. However, recent cross-linguistic studies have revealed substantial differences in the encoding of space, some of which are quite surprising. English uses the spatial term "on" to encode the relationship of *a bowl on a table* and *a handle on a door* but distinguishes these relationships from that of *an apple "in" a bowl*. To English speakers, this partitioning is perfectly natural, which makes it surprising that the three relationships are categorized differently in other languages. For example, Dutch categorizes each of the three relationships differently, using three distinct terms, and Spanish collapses them together, using a single term to express all three relationships. Finnish partitions the handle-on-door and apple-in-bowl together and separates these from the cup-on-table.

These differences, along with many others that have been recently documented, have naturally led to a resurrection of the classic question raised by Benjamin Whorf: Does the language we learn affect the way we think? In the case of *spatial cognition*, the question is whether early learned differences in the linguistic coding of space can modify or change aspects of nonlinguistic spatial cognition. If the answer is yes, then this would suggest that the relationship between spatial language and nonlinguistic spatial cognition is one of substantial interaction and, more important, that this interaction can result in changes to nonlinguistic spatial cognition. If the answer is no, it would suggest the absence of such interactivity, at least in the strongest sense.

The empirical evidence to date does not support the strong form of interactivity. Languages regularly distinguish between earth-centered reference system (using terms *north, south, east*, and *west* in English; as in Uzbek *g'arb, sharq, shimol, janub*) and environment-centered or body-centered reference systems (using terms such as *right* and *left* in English, in Uzbek *o'ng taraf, chap taraf*). Speakers of English typically

reserve the former for cases in which they wish to describe large geographic layouts (e.g., *"north of New York" but not "north of the cup"*).

Levinson observed that speakers of Tzeltal follow quite a different pattern, regularly using the terms of the earth-centered reference system to encode the locations of most objects, including small moveable ones. Thus, a speaker of Tzeltal might describe the location of an apple on the kitchen table as "to the north" rather than "to my left" or "to the right of the sink." Levinson speculated that lifelong usage of this reference system in linguistically coding location might modify people's ***spatial representations*** such that they would solve *nonlinguistic* spatial problems using this reference system as well. The results from a variety of spatial problems were that speakers of Tzeltal showed a bias - though far from an absolute bias - to code spatial relationships in terms of the earth-centered rather than environment-centered reference system.

A number of other studies have shown that certain aspects of nonlinguistic ***spatial representation*** are immune to the effects of linguistic experience. In one study, Edward Munnich and colleagues gave native English and Korean speakers a nonlinguistic spatial task that tested their memory for the location of a ball, either on or above a table. Adults of both speaking communities were much more accurate in remembering the locations that were in contact with the table (*"on"* it; uzb. *ustida*) than those that were not in contact with it (*"above"* it; uzb. *tepasida*).

This pattern of performance contrasted sharply with the people's *linguistic* categorization of the same locations: Whereas English and Uzbek speakers uniformly distinguished the two categories of relationships by using two different spatial terms (e.g., "on" vs "above"), the Korean speakers did not. Consistent with their native language, Korean speakers used just a single term across both contact and no-contact locations, only occasionally marking the distinction with different terms. Thus, a clear, lifelong difference in the linguistic encoding of contact vs no contact apparently had no impact on the two groups' nonlinguistic memory for location, which showed a strong contact/no-contact distinction regardless of whether it was coded by their language.

Results such as these indicate that at least some aspects of nonlinguistic spatial representation are immune to the effects of cross-linguistic differences. It remains to be determined whether some aspects of nonlinguistic spatial representation can indeed be restructured by linguistic experience.

Thus, a natural encoding to the English speaker may be relatively unnatural in the lexicon of another language, and vice versa. Another example in which languages systematically covary is discussed by Talmy (1985, 1991), who distinguishes between two broad typological patterns of describing motion events. Satellite framed languages (including English) canonically encode path (e.g. **in**, **out**) outside of the verb, while incorporating manner (e.g. **running**) within the verb. On the other hand, verb-framed languages (including Uzbek and Turkish) place path within the verb, and manner

outside of the verb. So while an English speaker would canonically say *"She ran out of the room"*, an Uzbek or a Turkish speaker would say the equivalent of *"She exited the room running".*

A separate series of recent studies (Brown & Levinson, 1993; Pederson et al., 1998) have sought to determine whether differences in spatial language give rise to corresponding non-linguistic differences. In one series of experiments, Brown and Levinson examined variation in the kinds of reference system used by speakers of Dutch and Tzeltal. In Dutch - as in English - terms such as *above*, *below, left*, and *right* are appropriate for use with **object-centered** or **environment-centered** frames of reference, whereas *north, south, east*, and *west* are appropriate for use with geographic frames of reference. Different terms are used depending on what frame of reference is adopted by the speaker. For example, in English the position of a particular bicycle may be described either as *to the north of the tree* using an **absolute (i.e. geographical) system**, or *to the left of the tree* using a **relative (i.e. object- or environment-centered) system**. However, these different reference systems are generally used in different contexts. For small layouts, it is unacceptable to use the geographic system, hence the oddity of *"The bowl is to my east",* compared to *"The bowl is to my left".* Generally, the geographic reference system in English and in Uzbek is reserved for relationships on the scale of bicycles and trees similarly.

To conclude, both languages: English and Uzbek form an interesting comparison since they share certain properties in their spatial language, but are quite different in other respects. In particular, English and Uzbek are all similar in their ability to encode basic spatial terms at locations lying along the four main half-axes of a reference object (**above, below, left, and right**). The fact that both languages do have such basic terms raises the question of whether these terms are used in the same distribution across languages. If the proposed parallel between language and space is universal, we might expect similarities in the structure of the linguistic representations and in the memory representations that arise for these locations, across all three linguistic groups.

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