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Groups in space: Stereotypes and the spatial agency bias

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ABSTRACT

We propose that spatial imagery is systematically linked to stereotypic beliefs, such that more agentic groups are envisaged to the left of less agentic groups. This spatial agency bias was tested in three studies. In Study 1, a content analysis of over 200 images of male–female pairs (including artwork, photographs, and cartoons) showed that males were over-proportionally presented to the left of females, but only for couples in which the male was perceived as more agentic. Study 2 ($N = 40$) showed that people tend to draw males to the left of females, but only if they hold stereotypic beliefs that associate males with greater agency. Study 3 ($N = 61$) investigated whether scanning habits due to writing direction are responsible for the spatial agency bias. We found a tendency for Italian-speakers to position agentic groups (men and young people) to the left of less agentic groups (females and old people), but a reversal in Arabic-speakers who tended to position the more agentic groups to the right. Together, our results suggest a subtle spatial bias in the representation of social groups that seems to be linked to culturally determined writing/reading habits.

Events, including social events, evolve in time and space. The same holds for mental images that generally have a temporal and a spatial component. Regardless of whether we imagine armies going to war or children playing, we envisage their actions embedded in space. Whereas space is an essential topic in other fields of psychology, including cognitive psychology, neuro-psychology, and psychology of the arts, social psychologists have generally dedicated little attention to spatial aspects of social cognition, with the possible exception of recent theorizing on embodied cognition (e.g., Barsalou, 1999; Richardson, Spivey, Barsalou, & McRae, 2003; for a review see Smith, 2005) and on the face-ism effect that focuses on the social implications of showing proportionally more face than body in a person's visual representation (e.g., Archer, Iritani, Kimes, & Barrios, 1983; Kolbe & Albanese, 1996; Schwarz & Kurz, 1989).

Although generally ignored by social psychologists, spatial biases may have interesting consequences for social cognition. In fact, spatial arrangements may represent a subtle way to communicate differences between groups, thereby contributing to the maintenance of the status quo of the existing social structure.

In this article, we will focus on the horizontal dimension and ask which groups will occupy the left vs. right position in our mental images. We will argue that people think of individuals and groups as located in space and that the imagined spatial relations between them are by no means arbitrary, but reflect stereotypic beliefs related to agency. We will first briefly review relevant findings on horizontal spatial asymmetries reported in the cognitive literature, followed by a discussion of theoretical explanations. We will then introduce the spatial agency bias (SAB) according to which stereotypically agentic groups are preferentially located to the left of less agentic groups (see Chatterjee, 2002) and report three studies testing this hypothesis.

Spatial biases in the processing of physical stimuli

A very robust and pervasive finding, emerging from different research paradigms in cognitive and neuro-psychology, is the tendency to imagine events preferentially as evolving from left to right, at least in Western cultures. For example, when asking people to draw scenes corresponding to minimal subject–verb–object phrases (e.g., *Fabio feeds the dog*), a vast majority of respondents will position the sentence subject (Fabio) to the left and the sentence object (dog) to the right (Chatterjee, Southwood, & Basilico, 1999). In a similar vein, inhibition of return, that is the tendency to orient attention to novel locations rather than to return to previously attended locations, is stronger when the sequence of stimuli have a left-to-right (LR) trajectory (Spalek & Hammad, 2004). Similar asymmetries emerge for the representational momentum phenomenon, namely the tendency to memorize the final position of a moving object as slightly further along the implied path (Freyd & Finke, 1984; Hubbart, 2005). Again, this systematic error is stronger for LR motion (Halpern & Kelly, 1993). Also, research on the imaginary number line (with small numbers envisaged to the left, large numbers to the right, see SNARC effect, Dehaene, Bossini, & Giraux, 1993) suggests a LR tra-

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jectory prominence. The same is true for studies on the perception of time showing that, in LR writing cultures, time is envisaged as flowing from LR (Boroditsky, 2001; Gevers, Reynvoet, & Fias, 2004; Santiago, Pérez, Lupiáñez, & Funes, 2007; Tversky, Kugelmass, & Winter, 1991). Interestingly, research on art appreciation shows a very similar pattern, with observers focussing initially on the left side of their visual field and subsequently shifting attention from L to R (Elkind & Weiss, 1967; Heron, 1957).

Together, these and other findings suggest that observers explore space with a LR trajectory and process physical stimuli easier when they follow a LR (rather than RL) vector, at least in cultures in which language is read/written from LR. Why should this be the case?

Theoretical explanations of spatial asymmetries

In many of these different areas of research, hemispheric specialization was initially considered a strong candidate for explaining the obtained results (e.g., Chatterjee, 2001; Chatterjee et al., 1999; Jackendoff, 1996). However, cross-cultural research has often found total, or at least partial, reversals in cultures where languages are written from right to left (RL), such as Arabic, Hebrew, or Urdu, suggesting that language-related scanning habits play an important role in such spatial asymmetries. Indeed, reversals have been reported in many different areas of psychology and on different tasks, including inhibition of return (Spalek & Hammad, 2004), representational momentum (McBeath, Morikawa, & Kaiser, 1992), imaginary number line (Dehaene et al., 1993), visual imaging of subject–verb–object sentences (Maass & Russo, 2003), and drawing, exploration of art, and esthetic preferences (e.g., Chokron & De Agostini, 2000; Nachshon, 1985; Nachshon, Argaman, & Luria, 1999; Tversky et al., 1991). Some studies also suggest that culture-specific asymmetries in space perception and directional tendencies only occur after learning to read and to write, as in the case of Fagard and Dahamen's (2003) study comparing French and Tunisian children, suggesting that writing/reading habits are implicated in spatial bias.

Why should writing direction affect spatial processing in tasks that have little or nothing to do with writing? From an embodiment perspective, the very mechanism of writing and the visual scanning while reading lead to a generalized habit of exploring space in a specific direction (either LR or RL, depending on the language). Starting from elementary school age, people in developed countries spend a remarkable amount of their time reading and writing.[1] In this way, scanning habits become so pervasive that they create a general spatial scheme that then generalizes across tasks.

Besides the mechanical aspects of writing and the visual aspects while reading, there is an additional, linguistic factor that may contribute to a generalized spatial schema for action, namely the order in which agent and recipient are mentioned in standard active sentences (for a discussion of agency see Duranti, 2004). In Indo-European languages, the agent typically occurs in the subject (or nominative) position, at least in active sentences, whereas the patient occurs in the object (or accusative) position (e.g., *Nausicaa teases her father)*. Obviously, there are numerous exceptions to this general rule (e.g., passive voices, intransitive verb phrases or strategical ordering of the words). However, as a general rule, in the majority of active phrases describing interpersonal actions, the agent is likely to occur in the subject position and the patient in the object position.

This has direct implications both for the time and the space dimension, considering that the sentence subject precedes the sentence object in most languages. With the exception of few languages spoken by relatively small language communities (Fijian, Malagasy, Xavante, Hixkaryana, Dyrbal), in the majority of known languages the subject precedes the object in standard active sentences, regardless of whether the verb is placed between subject or object (e.g, English, French, Chinese), whether it follows the object (e.g., Japanese, Turkish) or whether it precedes both subject and object (e.g., Hawaian). In terms of spoken language, this implies that the agent is mentioned before the patient, whereas spatially, this implies that in LR languages, the agent is likely to appear to the left of the patient, with the action flowing from LR. In line with this idea, simple (orally presented) subject–verb–object phrases are imagined and drawn in a way that the agent is positioned to the L of the patient (Chatterjee et al., 1999). In languages like Arabic, Hebrew, Urdu or Farsi, the same temporal ordering of subject and object will lead to an opposite spatial arrangement, so that the action is likely to flow from R (agent) to L (patient). Indeed, in such languages the subject of subject–verb–object phrases is generally envisaged to the right of the object (Maass & Russo, 2003). Thus, scanning habit and the standard ordering of subject (agent) and object (recipient/patient) may jointly contribute to the culture-specific spatial biases reviewed above.

Extrapolating to the social domain: the spatial agency hypothesis

Extrapolating from this general rule, we hypothesize that school children and adults raised in LR languages will form mental images that mirror the thematic role assignment of their language, thus envisaging more agentic individuals or groups to the left of less agentic ones. Chatterjee (2002), focusing on spatial orientation in portraits, was probably the first to propose a systematic link between stereotypes and spatial imaging. He hypothesized that, if there is a general LR scheme for action, then stereotypically more agentic targets should be portrayed facing R, less agentic targets facing L (as seen from the perspective of the observer). His account was able to explain why men are less likely to be portrayed facing left than are women who are overwhelmingly portrayed in that direction (Chatterjee, 2002; Gordon, 1974; Grüsser, Selke, & Zynca, 1988; Humphrey & McManus, 1973; Suitner & Maass, 2007; ten Cate, 2002). According to Chatterjee this bias is the combined effect of stereotypes associating men with greater agency and a diffuse LR scheme for action.

Although Chatterjee's (2002) prediction was mainly concerned with head rotation in portraits, his argument can, in principle, be extended to any mental representation involving social groups that differ in agency. Decades of research on stereotype content demonstrates that most groups can be classified along two basic dimensions, namely competence, instrumentality, masculinity or agency on one side and warmth, expressiveness, femininity or communality on the other (Fiske, Cuddy, Click, & Xu, 2002; Fiske, Xu, Cuddy, & Click, 1999; Judd, James-Hawkins, Yzerbyt, & Kashima, 2005). Emblematic is research on gender stereotyping (including self-stereotyping), showing that males are generally associated with higher levels of agency and activity than females (Abele, 2003; Bakan, 1966; Conway, Pizzamiglio, & Mount, 1996; Else-Quest, Hyde, Goldsmith, & Van Hulle, 2006; Spence & Helmreich, 1978; Spence, Helmreich, & Stapp, 1974, for an overview). If males are perceived as more active than women, then it would not surprise if, in our mental images but also in representations such as art work, films etc, males occurred more often in the more

[1] For instance, focussing exclusively on books that are only a small portion of printed material, British citizens spend approximately 5.5 h per week reading, with women (6.7 h) reading more than men (4.2 h). Reading statistics for European countries can be found in the following website: http://www.readingeurope.org/observatory.nsf/.