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God: Do I have your attention?

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ABSTRACT

Religion is commonly defined as a set of rules, developed as part of a culture. Here we provide evidence that practice in following these rules systematically changes the way people attend to visual stimuli, as indicated by the individual sizes of the global precedence effect (better performance to global than to local features). We show that this effect is significantly reduced in Calvinism, a religion emphasizing individual responsibility, and increased in Catholicism and Judaism, religions emphasizing social solidarity. We also show that this effect is long-lasting (still affecting baptized atheists) and that its size systematically varies as a function of the amount and strictness of religious practices. These findings suggest that religious practice induces particular cognitive-control styles that induce chronic, directional biases in the control of visual attention.

1. Introduction

One way or another, religion plays an important role in our lives—be it as active believers, as targets or victims of religiously motivated actions, or as interested observers of conflicts nurtured by differing religious convictions. Here we provide evidence that this impact may be more fundamental than commonly assumed, namely, that religious practice may affect basic perceptual processes in such a way that followers of different religions literally see the same things differently.

Religion is commonly defined as a set of (implicit and/or explicit) rules, developed as part of a culture, which gives followers the experience that their life is meaningful. It can be considered a sort of framework that shapes a follower's life and thoughts, and determines the way he or she creates and formulates beliefs, and experiences rules and feelings (Lindbeck, 1984). That cultural experience in a broader sense might affect our perception and attention has been suggested by studies on cultural differences. For instance, Masuda and Nisbett (2001) observed that people growing up in Asian cultures exhibit a more holistic perceptual style (i.e., are more responsive to the global than to local features of visual objects or scenes) than people growing up in the North-American culture. Westerners seem to focus on salient objects while East Asians attend more to the relationships between objects and background elements or context (Nisbett & Masuda, 2003; Nisbett & Miyamoto, 2005). This fits with the observation that East Asians allocate their attention more broadly than Americans do (Boduroglu, Shah, & Nisbett, 2009) and

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provides converging evidence for the claim of Witkin and colleagues (1954) that social interdependence is associated with a more holistic processing style.

Researchers attribute these differences to culturally guided learning experience. The idea is that Western cultures often emphasize the individual and individual goals and needs, whereas Eastern Asian cultures emphasize the importance of the group and the social embedding (Nisbett & Miyamoto, 2005). These different foci are likely to be transmitted to new members of the culture through cultural learning, that is, by providing selective reward for responses and actions that reflect culturally important values. This view is consistent with evidence that holistic and analytic perceptual styles can be experimentally induced by having people perform tasks that draw attention to either personal interdependence (by letting the participants marking relational pronouns as "our" and "we") or independence (by having them to circle pronouns referring to the self as "my" and "I") (Kühnen & Oyserman, 2002). Electrophysiological findings suggest that a bias to attend to the global context versus local details affects the processing of visual features rather early in the processing stream. In particular, after marking independent pronouns, participants produced an enlarged P1 amplitude to local than global targets in a global–local task (where they had to react to large shapes made of small shapes: see Navon, 1977) at lateral occipital electrodes (i.e., in the visual cortex), whereas marking interdependent pronouns had the opposite effect (Lin, Lin, & Han, 2008).

Even though culture is certainly an important determinant of interindividual differences, cultural context is very hard to capture and to define, which makes investigations that go beyond the available, rather coarse comparisons between Eastern and Western cultures extremely difficult. For instance, many inter-cultural comparisons of what are considered "Western" and "Eastern-Asian" cultures have evaluated US Americans in relation to Japanese. US Americans are composed of various cultural and national backgrounds, ranging from countries with particularly individualistic cultures, like the United Kingdom and the Netherlands, to countries with a particularly strong emphasis on collectivism, such as Greece and Mexico (cf., Hofstede, 2001). Japan, in contrast, is one of the Asian countries with the most individualistic culture. Thus it seems difficult to capture the essence of a culture by studying citizens of a particular country (which often live and represent different cultures) and to generalize from one country to its regional neighbors (e.g., to China, which is considered much more collectivistic than Japan; cf., Hofstede, 2001; Oyserman, Coon & Kemmelmeier, 2002). In the absence of an unequivocal and straightforward definition of what a culture is and what it implies, it is difficult to derive clear-cut predictions of how culture might affect human cognition.

Social systems that seem to be better suited for that purpose are religious systems or, for short, religions. Religions are typically rather well pre- and described in (often sacred) writings (notwithstanding important exceptions, as Buddhism) and relived in specific, widely shared practices and rituals; even different streams and subgroups can often be straightforwardly identified and defined relative to each other. Very recently, McCullough and Willoughby (2009) argued that, because religious people have considerable practice in learning and following rules, they are less likely to commit crimes in general. That is, the fact that individuals receive training in following rules may generalize beyond the particular rules being practiced. Along the same lines, Hommel and Colzato (in press) have speculated that religious training may induce particular cognitive-control strategies and establish default control parameters that generalize to situations that have no bearing for religious beliefs. For instance, continuously focusing on the individual rather than the social context might induce a chronic attentional-control bias towards local, and away from global features of people's behavior, events, and objects.

Preliminary evidence suggesting that religion affects attention and perception of their followers has been provided by Colzato, van den Wildenberg, and Hommel (2008). This study compared Dutch neo-Calvinists (followers) and atheists (non followers) brought up and living in the same country (the Netherlands, where the dominant culture is influenced by Calvinism) with respect to their attentional biases. Colzato et al. employed the same global–local task (Navon, 1977) that was used in many cultural studies and presented participants with a large rectangle or square made of either smaller rectangles or squares. Participants were to react to either the global or the local shape in different blocks of trials. Both neo-Calvinists and atheists recognized the global shape faster than the local shapes, thus producing the well-known global precedence effect (i.e., people see the forest before the trees: Navon, 1977). However, Calvinists showed a significantly less pronounced global precedence effect than atheists.

As Colzato et al. pointed out, Dutch neo-Calvinism is based on the concept of *sphere sovereignty* propagated by the former Dutch Prime Minister Abraham Kuyper (Bratt, 1998). This concept emphasizes that each sphere or sector of life has its own responsibilities and authority, and stands equal to other spheres. Other sectors than one's own are not to be judged or considered, but basically to be left alone. The widespread application of this concept has led to a profound segregation ("pillarization") of Dutch society and established the idea that, in a nutshell, everyone should "mind his or her own business". Among other things, this idea of segregation as strength has led to a rather liberal policy regarding drug use, abortion, or euthanasia, but it also provided the theoretical basis for Apartheid ideology in South Africa (Boesak, 1984). To teach children and other new members of the neo-Calvinist tradition the "rules of the game", so Colzato et al. (2008) speculated, selective reward must have provided for behavior that reflects appropriate application of those rules. This, among other things may have led neo-Calvinists to chronically bias local attention, compared to the atheists.

The observations of Colzato et al. (2008) provide preliminary evidence that following a set of religious rules might indeed systematically change the way people attend to and process visual events. At the same time, they fail to demonstrate that this bias really is chronic, strictly tied to rule-following practice, and really reflecting the particular