



Ontological confusions but not mentalizing abilities predict religious belief, paranormal belief, and belief in supernatural purpose



Marjaana Lindeman*, Annika M. Svedholm-Häkkinen, Jari Lipsanen

University of Helsinki, Division of Cognitive Psychology and Neuropsychology, Institute of Behavioural Sciences, P.O. Box 9, 00014 University of Helsinki, Finland

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ABSTRACT

The current research tested the hypothesis that the abilities for understanding other people's minds give rise to the cognitive biases that underlie supernatural beliefs. We used structural equation modeling ($N = 2789$) to determine the roles of various mentalizing tendencies, namely self-reported affective and cognitive empathy (i.e., mind reading), actual cognitive and affective empathic abilities, hyper-empathizing, and two cognitive biases (core ontological confusions and promiscuous teleology) in giving rise to supernatural beliefs. Support for a path from mentalizing abilities through cognitive biases to supernatural beliefs was weak. The relationships of mentalizing abilities with supernatural beliefs were also weak, and these relationships were not substantially mediated by cognitive biases. Core ontological confusions emerged as the best predictor, while promiscuous teleology predicted only a small proportion of variance. The results were similar for religious beliefs, paranormal beliefs, and for belief in supernatural purpose.

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1. Introduction

From previous studies we know that lay people consider religious individuals to be empathic and altruistic, whereas disbelievers are regarded as suspect individuals, whose trustworthiness is as low as that of rapists (Edgell, Gerteis, & Hartmann, 2006; Gervais, Shariff, & Norenzayan, 2011). Scientific theories, in contrast, have centered on supernatural believers' cognitive biases, not on their social or emotional abilities. Although rare, remarks about such abilities are not absent. In the literature on religious beliefs, especially the idea of mentalizing abilities giving rise to the cognitive biases that underlie religious beliefs is well-accepted, even though empirical studies are still in their infancy. In

prevailing theories on non-religious paranormal beliefs, the possibility that some abilities might characterize believers has not even been raised (reviews: Irwin, 2009; Vyse, 2014).

The present study was designed to determine the roles of various mentalizing abilities and cognitive biases in leading to religious and paranormal beliefs and to believe in supernatural purpose. Despite the fact that faith in the existence of a supernatural realm unites religious and other paranormal beliefs, religious and non-religious paranormal beliefs have seldom been simultaneously addressed in the research literature. Seeing purpose behind random life-events, in turn, has traditionally not been included in these studies at all. Recently, however, several scholars have brought up that these beliefs are also a type of supernatural belief (Bering, 2006, 2011; Svedholm, Lindeman, & Lipsanen, 2010; Willard & Norenzayan, 2013). By simultaneously studying different types of beliefs, abilities, biases, and the paths in between, we hope

* Corresponding author. Tel.: +358 50 4484162.

E-mail addresses: marjaana.lindeman@helsinki.fi (M. Lindeman), annika.svedholm@helsinki.fi (A.M. Svedholm-Häkkinen), jari.lipsanen@helsinki.fi (J. Lipsanen).

to increase our understanding of what it is that draws people to believe in the supernatural.

1.1. Mentalizing abilities and hyper-empathizing

Cognitive scientists of religion have suggested that religiosity is an evolutionary by-product of universal human cognitive abilities to understand the human mind and the world. For example, the ability to understand human agency is commonly argued to make people naturally receptive to religious concepts (e.g., Barrett, 2000). In addition, the capacity for empathy has been suggested to lay the ground for the moral intuitions that the gods know what we are up to or when we are generous and when offensive (Boyer, 2003). As a whole, drawing inferences about God is argued to require the same mindreading mechanisms that make it possible for us to discern what other people think and how they feel (Purzycki, 2013; Pyysiäinen & Hauser, 2010; Richert & Smith, 2010).

Besides linking mentalizing capacities directly to religiosity, the capacities have been taken to predispose people to general mentalizing biases, which also help to explain the prevalence of religions. It has been argued, for example, that as a consequence of the ability to understand the minds of others and interpret behavior, people have begun to project humanlike and person-like features onto nonhuman or nonperson-like aspects of the environment (Boyer & Bergstrom, 2008), and to reason about random events as intentionally planned and to see purpose in life (Bering, 2011). Similarly, our ability to detect agents has been suggested to be highly sensitive, even hyperactive, and to have led to a general tendency to detect human-like agents even where there are none, inciting perception of faces in the clouds, voices in the wind, and emotions among interacting dots on a computer screen (Atran, 2002; Barrett, 2000; Guthrie, 1993). In short, the capacity to understand human minds is assumed to have resulted in tendencies to attribute human characteristics to anything nonhuman (anthropomorphism) and to perceive human-like purposefulness and intentionality that does not exist (promiscuous teleological reasoning).

In line with the above arguments, several scholars have suggested that individual mentalizing abilities, that is, the abilities to read the mental states of others, may be related to mentalizing biases (e.g., Norenzayan & Gervais, 2013; Waytz, Gray, Epley, & Wegner, 2010). For example, Willard and Norenzayan (2013), who conducted a study similar to the present one, used path analyses to test whether mentalizing abilities predict religious beliefs, paranormal beliefs, belief that things happen for a purpose, and the cognitive biases (promiscuous teleology and anthropomorphism) that may predispose people towards these beliefs. Depending on the sample used, the paths from mentalizing to the biases and beliefs were either weak or non-significant.

The reasons for the weak results in Willard and Norenzayan's (2013) study may be methodological. First, only one index of mentalizing abilities, a score on the Empathy Quotient scale (Baron-Cohen & Wheelwright, 2004), which assesses affective and cognitive empathy, was included in the study. Although mentalizing abilities

are often operationalized as empathy (e.g., Banerjee & Bloom, 2014; Norenzayan, Gervais, & Trzesniewski, 2012; see also Gervais, 2013), the Empathy Quotient scale has psychometric problems (Muncer & Ling, 2006), and as Willard and Norenzayan (2013) brought up, it relies on self-report. Because of these limitations, more studies are needed.

Another point of view to understanding the possible relationship between abilities and biases in explaining supernatural beliefs is offered by the empathizing–systemizing (E–S) theory (Baron-Cohen, 2002; Baron-Cohen, Knickmeyer, & Belmonte, 2005) and the genomic conflict (GC) theory (Badcock, 2004; Crespi & Badcock, 2008a, 2008b). Both theories propose that humans have two fundamental domain-specific cognitive systems: mentalistic cognition, for mind-reading and interaction with people, and mechanistic cognition, for interaction with the physical environment. Mentalistic cognition, or empathizing, refers to abilities and interests to identify other people's mental states (cognitive empathy) and to respond to these with an appropriate emotion (affective empathy). Mechanistic cognition, or systemizing, in turn, refers to interests and abilities which are related to inanimate and non-agentive phenomena, for example navigation, calculation, engineering, and tool-using.

These theories also suggest that both mentalistic and mechanistic cognition come in degrees in the general population and that people's cognitive profiles can range from strong mentalizing and poorly developed systemizing (hyper-empathizing) through balanced cognition to exaggerated systemizing and poorly developed understanding of other people's minds (hyper-systemizing, found in autism spectrum disorder). To date, the role that hyper-empathizing plays in supernatural beliefs has not been examined. E–S theory has not been concerned with the relationship of empathizing and supernatural beliefs, or the underlying biases. However, the GC theory posits that the specific combination of strong mentalizing coupled with poor understanding of the physical world results in religious, magical and superstitious beliefs, and in severe cases, even in delusions of intentions, conspiracy and being spied upon (Badcock, 2004; Crespi & Badcock, 2008a, 2008b).

In the present study, we compared two models. In one model, we tested the effect of mentalizing by itself on cognitive biases and supernatural beliefs. To assess mentalizing more accurately than in previous studies, this model included performance measures of both cognitive and affective empathic abilities, and a psychometrically more sound version of the EQ scale. For the sake of clarity, we will hereafter refer to this construct as empathizing. The second model tested the effect of hyper-empathizing, that is, the interplay of mentalizing and systemizing. Because GC theory does not detail whether hyper-empathizing leads directly to the beliefs or whether its influence is realized through cognitive biases, we tested both possibilities.

1.2. Cognitive biases: Core ontological confusions and promiscuous teleology

Two of the common biases argued to result from mentalizing abilities and to make it natural to believe in the

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