Original Articles

Conceptualizing agency: Folkpsychological and folkcommunicative perspectives on plants

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Abstract

The present research addresses cultural variation in concepts of agency. Across two experiments, we investigate how Indigenous Ngöbe of Panama and US college students interpret and make inferences about nonhuman agency, focusing on plants as a critical test case. In Experiment 1, participants predicted goal-directed actions for plants and other nonhuman kinds and judged their capacities for intentional agency. Goal-directed action is pervasive among living kinds and as such we expected cultural agreement on these predictions. However, we expected that interpretation of the capacities involved would differ based on cultural folktheories. As expected, Ngöbe and US participants both inferred that plants would engage in goal-directed action but Ngöbe were more likely to attribute intentional agency capacities to plants. Experiment 2 extends these findings by investigating action predictions and capacity attributions linked to complex forms of plant social agency recently discovered in botanical sciences (communication, kin altruism). We hypothesized that the Ngöbe view of plants as active agents would productively guide inferences for plant social interaction. Indeed, Ngöbe were more likely than US participants to infer that plants can engage in social behaviors and they also attributed more social agency capacities to plants. We consolidate these findings by using bottom-up consensus modeling to show that these cultural differences reflect two distinct conceptual models of agency rather than variations on a single (universal) model. We consider these findings in light of current theories of domain-specificity and animism, and offer an alternative account based on a folktheory of communication that infers agency on the basis of relational interactions rather than having a mind.

1. Introduction

A long-standing question in psychology concerns how people recognize and reason about agents—the kinds of things that are capable of acting in, about, and towards the world. It is widely proposed that this rests on a dualistic distinction between psychological agents versus insentient actors (Johnson, 2003; Wellman & Johnson, 2008). Specifically, the actions of psychological agents like humans or other animals are explained in terms of mental states like beliefs and desires—a conceptual framework known as folkpsychology (e.g., Erickson, Keil, & Lockhart, 2010). By contrast, the actions of other kinds of actors like plants or clouds are explained by appeal to non-intentional biological (folkbiology) or physical forces (folkphysics). For instance, people purportedly activate different folktheories to interpret what causes movement toward the sun by a cloud versus a plant (folkphysics versus folkbiology), and both would be interpreted differently from what causes a person to move toward the sun (folkpsychology) (Gutheil, Vera, & Keil, 1998; Opfer & Gelman, 2001; Opfer & Siegler, 2004). This partitioning of domains presents a worldview in which entities in the natural world can be adequately described in terms of physical and biological causes without recourse to intentionality or sociality—properties that are considered exclusive to humans and perhaps some other animals. The corresponding theory of folkpsychology represents an anthropocentric model that may extend agency to some “higher” animals such as mammals, but excludes entities such as plants, minerals, or water bodies on the grounds that they do not share similar forms of agency to humans (e.g., Carey, 1985).

This is the account proposed by domain-specificity theory, which sees these intuitive folktheories as fundamental, untutored ways of organizing knowledge about the world that reflect universal cognitive structure (Hirschfeld & Gelman, 1994; Sperber & Hirschfeld, 2004; Wellman & Gelman, 1992). However, this particular delineation of intuitive domains has been formulated...
by Western psychologists and much of the evidence in support of it has come from Western study populations (Carey, 2009; Guthiel et al., 1998; Keil, 1995; Opfer, 2002; Opfer & Gelman, 2001), and some industrialized Eastern cultures (Hatanu & Inagaki, 1994; Inagaki & Hatanu, 2004). Yet more recent research suggests that this organization of domains may reflect Western cultural epistemologies. For instance, the Western anthropocentric stance leads to patterns of folkbiological reasoning that differ markedly from those of Indigenous communities that take an ecological stance (Herrmann, Waxman, & Medin, 2010; Ross, Medin, Coley, & Atran, 2003; Unsworth et al., 2012; Waxman & Medin, 2007). Based on such findings, it has been proposed that alternative partitions of domains may provide a better match for conceptual patterns in different cultures—for example, folkecology may be more apt than folkbiology in some Indigenous communities (ojalehto & Medin, 2015). Similarly, it is a distinct but untested possibility that the anthropocentric stance in folkpsychology may likewise reflect a Western orientation that is not shared in other cultures. In the current research, we propose that folkcommunication may be more apt than folkpsychology in the Indigenous Ngöbe community of Panama. The present experiments investigate whether Indigenous Ngöbe adults and US college students hold different conceptual frameworks for agency that facilitate distinct sets of inferences about and interpretations of nonhuman agency, focusing on plants as a critical test case.\footnote{On Western folkpsychology, capacities like “want” and “think” are interpreted as mental states associated with minds, but it may be that Ngöbe interpret these capacities differently. Thus, we refer broadly to “agency” rather than “minds” or “mental states” in order to avoid specific folkpsychological connotations.}

2. Background

2.1. Indigenous perspectives on agency

Anthropological observations suggest that many Indigenous communities organize knowledge about agents in ways that differ from Western folkpsychology (Lillard, 1998; Luhrmann, 2011). First, understanding of others is framed more in terms of relational interaction or communication than individual subjectivity (Ingold, 2010). Here the focus is on explaining actions in terms of overt behavior, relationships and social roles, and speech acts or other signs rather than explicit inferences about the private mental states of others (Danziger, 2006, 2010; Danziger & Rumsey, 2013; Duranti, 1998, 2008; Robbins & Rumsey, 2008). Second, communication with nonhumans is a significant concern in communities where everyday life involves intimate interaction with ecologies (Harvey, 2005; Ingold, 2006, 2011; Kohn, 2013). Personally navigating relationships with nonhuman kinds such as soil, thunder, plants, or animals requires close attention to nonhuman behaviors and responses (Anderson, 1996, 2012; Hallowell, 1960; Rappaport, 1979; Reichel-Dolmatoff, 1976). Native and non-native scholars alike have argued that these exchanges are founded on a conception of nonhumans as beings with a perspective or locus of agency, where agency is understood to be expressed through the capacity to participate in relationships (e.g., predator-prey relations, healing relations) (Bird-David, 1999; Cajete, 2000; Descola, 1996; Kimerer, 2013; Lima, 1999; Pierotti, 2011; Santos-Granero, 2009; Viveiros de Castro, 1998) (see also Ramos, 2012).\footnote{These observations have been theorized under distinct frameworks, including animism, perspectivism, and relational epistemology. There are significant differences among these approaches and among Indigenous communities (e.g., Ramos, 2012). However, while anthropological theories of human-nonhuman interaction are debated, the significance of such interactions in everyday life among Indigenous communities is not (Ramos, 2012, p. 483).}

As a consequence of these views on agency, nonhumans are often included in social relationships within Indigenous communities. For instance, dogs are administered medicinal treatments to enhance their perceptual acuity while hunting, and their behaviors, from barking (while awake or dreaming) to body language and eye contact, are analyzed as meaningful forms of communication (e.g., Kohn, 2007). Plants and animals are also included in the moral circle, as exemplified by such customs as prohibiting rude actions (e.g., spitting) toward plants (Santos-Granero, 2012) and chastising children for wanton harm to insects (Anderson, 2005).

In sum, many Indigenous communities emphasize attention to nonhuman agency and communication—two principles that anthropologists have argued diverge from the Western focus on humans and psychology. To be sure, there is great diversity among Indigenous communities (Descola, 1996). Yet within this diversity, a common principle of many Indigenous epistemologies is that animals, plants, and other natural forces are agents capable of relating and communicating with others and their environments (Pierotti, 2011). In fact, the widespread salience of these principles across so many native societies has generated important debates about the nature and extent of cultural variability in this cognitive domain.

2.2. Understanding cultural variability in agency concepts

Indigenous ideas about nonhuman agency have figured prominently in theories of cognitive variability across cultures (e.g., Guthrie et al., 1980). Several influential accounts have treated the attribution of agency to nonhuman kinds such as plants as a mistaken inference. Building on the assumption that Western folkpsychology is a universal framework that applies to the proper domain of animates (i.e., humans and animals), these accounts argue that attributing agency to plants represents a “category error” by extending mentalistic attributions beyond the proper intuitive domain (Atran & Norenzayan, 2004; Boyer, 1996). Such “overextensions” imply a conceptual slippage that requires explanation, and scholars have argued that they represent counterintuitive concepts, religious beliefs, or a strategy adopted in the absence of knowledge (e.g., mistakenly assuming that plants have minds) (e.g., Barrett, 2000; Boyer, 2003; for similar arguments in the developmental domain, see also Kelemen, 2003). In short, overextension accounts assume that the Western folkpsychological concept of mind is universal and cultures vary in how far they extend the concept to nonhumans, resulting in incorrect inferences.

An alternative approach would be to remain neutral about the epistemological status of agency attributions to nonhumans and instead ask on what conceptual grounds such a framework could support useful inferences. Such inferences would presumably be based on a folktheory that provides a framework for understanding complex behaviors of diverse nonhuman kinds, unlike folkpsychology which (by definition) is not applicable to plants and other non-animals. One possible alternative could take the form of a folktheory of communication where the relevant explanatory constructs revolve around relationships and interactions rather than mental states. By focusing on mental states, Westerners take an anthropocentric stance on the psychological causes of action, presumably using knowledge about the kinds of entities that have a brain or nervous system as a fundamental constraint on folkpsychology. Ngöbe do not share this constraint, which frees them to recognize plant behavior as an instance of agency. A folktheory that uses communicative principles as the basis for inferring agency would provide a framework for viewing both plants and animals (as well as other kinds) as agents actively relating to their environments. By hypothesis, this approach would also encourage a broader stance for observing and expecting complex plant behaviors, specifically forms of interacting and relating. From a folkcommunication perspective, recognition of nonhuman agency need not index a
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