The Native Mind: Biological Categorization, Reasoning, and Decision Making in Development and Across Cultures

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To get along in the world, people need to be able to understand and predict the properties and behaviors of physical objects and substances (physics), plants and animals (biology), and their fellow human beings (psychology). This paper describes an ongoing program of research in the domain of folkbiology, including aspects of its interfacing with the other two domains. The topics range from simple categorization to complex environmental decision making. The contexts vary from the lowland rainforest of Guatemala to the most technologically developed urban settings. The study populations extend from the standard undergraduate research pool to bird watchers to Yukatek Maya children of Mexico, and from Itza' Maya elders in Guatemala who have no formal education to botany Ph.D.s in the USA. There is no single logical thread that unites all facets of this research program. Rather, there are several interwoven threads that can be integrated into a tight-knit fabric that provides a new perspective on a range of fundamental issues in cognition. This includes: 1. direct implications for models of categorization, reasoning, and decision making, 2. methodological tools for analyzing the within and between group variation that is associated with the study of culture and development, and 3. a distinctive approach to the conceptualization and study of culture and what has been called cultural epidemiology. To foreshadow, although we find likely candidates for cognitive universals, we also find that results gathered from "standard populations" more often than not fail generalize to humanity at large. In the area of categorization, such apparently fundamental phenomena as similarity-driven typicality effects and the basic level either are not found or play out differently when we move beyond undergraduate participants. In research on category-based reasoning, we find again that undergraduates are the "odd group out," which has corresponding implications for models of induction. In the development of biological categorization and reasoning, we show that folkbiology does not derive from folkpsychology, and that conceptions of humans as biological kinds vary extensively as a function of cultural milieu and input conditions. In decision making, our observations reveal that abstract game-theoretic analyses of resource dilemmas miss content-based "mental models" of the environment that may play a crucial role in guiding people's decisions about cooperative or selfish use of common-pool resources. Indeed, when nature is perceived as a relational entity (such as a friend, foe, or intermediary) rather than an extensionally-defined object (substitutable along some utility metric, such as monetary value), current game-theoretic analyses are incomplete and inadequate.