

UC Merced

Proceedings of the Annual Meeting of the Cognitive Science Society

Title

Relations Between Intuitive Biological Thought and Scientific Misconceptions

Permalink

<https://escholarship.org/uc/item/3mz5j26m>

Journal

Proceedings of the Annual Meeting of the Cognitive Science Society, 39(0)

Authors

Coley, John

Betz, Nicole

Leffers, Jessica

et al.

Publication Date

2017

Peer reviewed

Relations Between Intuitive Biological Thought and Scientific Misconceptions

John Coley

Northeastern University

Nicole Betz

Northeastern University

Jessica Leffers

Northeastern University

Yian Xu

Northeastern University

Michal Fux

Northeastern University

Kristin de Nesnera

San Francisco State University

Kimberly Tanner

San Francisco State University

Abstract: Students enter educational settings with complex and well-established intuitive conceptual understandings of the world, which have important educational consequences. In biology, intuitive thinking can be characterized in terms of cognitive construals (anthropocentric, teleological, and essentialist thinking, Coley & Tanner, 2015). We examined relations between intuitive thinking and biological misconceptions, and how formal biology education might influence such relations. 137 biology and non-science majors completed measures of anthropocentric, teleological, and essentialist thinking, and indicated agreement/disagreement with common misconceptions and explained their responses. Teleological thinking (but not anthropocentric or essentialist thinking) predicted teleological misconceptions. Anthropocentric and teleological thinking (but not essentialist thinking) predicted anthropocentric misconceptions. Agreement with essentialist misconceptions was unrelated to intuitive thinking. Similar patterns for non-majors and majors suggests formal biology education may have little influence on relations between intuitive reasoning and misconceptions. These findings demonstrate a clear impact of intuitive thinking on learning biology at the university level.