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Proceedings of the Annual Meeting of the Cognitive Science Society

Title

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Permalink

<https://escholarship.org/uc/item/5vs310bs>

Journal

Proceedings of the Annual Meeting of the Cognitive Science Society, 40(0)

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Publication Date

2018

Cross-Cultural Differences in Children's Conceptions of Space Science

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Abstract

Many children struggle to comprehend basic space science, including the scientific explanations of the day/night cycle and seasonal change (e.g., Plummer, 2014; Vosniadou & Brewer, 1994). With notable exceptions (e.g., Samarapungavan, Vosniadou, & Brewer, 1994), prior research has focused on Westerners' ideas and experiences. Using structured interviews, we explored U.S. and Indonesian 3rd graders' conceptions of the day/night cycle and seasonal change. Children from both communities had similar explanations of the day/night cycle, often confusing the Sun's apparent movement as actual motion. Cross-cultural differences emerged in children's explanations of seasons: U.S. children were more likely to use changes in Sun-Earth proximity, whereas Indonesian children tended to provide Earth-centric, geographical explanations (e.g., "America gets snow because it is near the North Pole"). These findings reveal an interesting interplay between children's geographically limited observations of the sky, the seasons, and their ideas about invisible causal forces in the solar system.