

UC Merced

Proceedings of the Annual Meeting of the Cognitive Science Society

Title

Spatial alignment supports comparison of life science visuals for 7th graders

Permalink

<https://escholarship.org/uc/item/51d873xs>

Journal

Proceedings of the Annual Meeting of the Cognitive Science Society, 42(0)

Authors

Simms, Nina

Jee, Benjamin

Matlen, Bryan

et al.

Publication Date

2020

Copyright Information

This work is made available under the terms of a Creative Commons Attribution License, available at <https://creativecommons.org/licenses/by/4.0/>

Peer reviewed

Spatial alignment supports comparison of life science visuals for 7th graders

Nina Simms

Northwestern University, Evanston, Illinois, United States

Benjamin Jee

Worcester State University, Worcester, Massachusetts, United States

Bryan Matlen

WestEd, San Francisco, California, United States

Dedre Gentner

Northwestern University, Evanston, Illinois, United States

Abstract

Visual comparisons are ubiquitous in STEM education. We suggest that visual comparisons are carried out by a structural alignment process that draws correspondences between analogs based on relational structure (Sagi, Gentner, & Lovett, 2012). The spatial arrangement of images can influence visual comparisons by increasing or decreasing competition from incorrect correspondences (Matlen, Gentner, & Franconeri, 2020). The present study tested whether this could be leveraged to help children compare complex STEM-related images. Seventh graders were shown drawings of skeletons containing an anomalous bone, either solo or paired with a correct standard. Children were more accurate at finding the anomaly when given a correct standard to compare to. On especially difficult trials in which skeletons were shown in non-canonical orientations (e.g., a cow oriented vertically), performance was enhanced when the spatial placement of the two skeletons was direct, minimizing competing correspondences. Thus, direct placement may help students compare complex unfamiliar images.