

## **UC Merced**

# **Proceedings of the Annual Meeting of the Cognitive Science Society**

### **Title**

Order Effects in One-shot Causal Generalization

### **Permalink**

<https://escholarship.org/uc/item/7974408p>

### **Journal**

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

### **Authors**

Zhao, Bonan  
Bramley, Neil

### **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

# Order Effects in One-shot Causal Generalization

**Bonan Zhao**

The University of Edinburgh, Edinburgh, United Kingdom

**Neil Bramley**

University of Edinburgh, Edinburgh, Scotland, United Kingdom

## Abstract

We introduce a novel task exploring how people make causal generalizations over the abstract features of the objects involved in a causal interaction. Specifically, we investigate how people generalize from a single observation of two simple objects in which one (the agent, or cause) interacts with another (the recipient, or effect) resulting in some feature change(s). In line with recent demonstrations of human strength in few-shot concept learning, we find strong and systematic patterns of generalizations that are well explained by a Bayesian inference model favoring simpler causal rules. However, we also identify a clear order effect depending on what order generalizations are made. To capture the observed patterns, we develop a causal hypothesis generation model that takes peoples natural generalization tendency and the order effect into consideration, and outperforms plain Bayesian inference both in computational efficiency and in match to the behavioral data.