

UC Merced

Proceedings of the Annual Meeting of the Cognitive Science Society

Title

Stability and Instability Over Time in Explanatory Theories of Concepts

Permalink

<https://escholarship.org/uc/item/76p365gm>

Journal

Proceedings of the Annual Meeting of the Cognitive Science Society, 27(27)

ISSN

1069-7977

Author

Kim, Nancy S.

Publication Date

2005

Peer reviewed

Stability and Instability Over Time in Explanatory Theories of Concepts

Nancy S. Kim (nsgss@rit.edu)

Psychology Department, Rochester Institute of Technology
18 Lomb Memorial Drive, Rochester, NY 14623 USA

Introduction

The theory-based model of categorization suggests that our concepts are represented as theories (Murphy & Medin, 1985). Previous studies measuring expert, novice, and lay theories of concepts (e.g., Furnham, 1995; Kim & Ahn, 2002; Sloman, Love, & Ahn, 1998), have implicitly assumed that these theories are relatively stable. The current study attempts to reconsider this assumption, asking to what extent people's theories are stable over time. Specifically, this study examined the extent to which lay and expert causal theories of mental disorders remain stable across a short time interval. Barsalou (1987) previously showed that typicality judgments are unstable across time; however, it is not yet known whether theory reports are similarly unstable.

Method

Participants were undergraduates untrained in clinical psychology ($N=23$) and practicing clinical psychologists ($N=10$). Four mental disorders previously rated as highly familiar by undergraduates (Kim & Ahn, 2002) were used as stimuli. The features considered by participants were the diagnostic criteria and associated features described in the *DSM-IV-TR* (APA, 2000). Participants drew causal diagrams of the disorders using *Conceptbuilder*, a new piece of software developed for this study. Specifically, participants were asked to identify which features caused which other features by drawing arrows from cause to effect, assigning a number to each arrow indicating the strength of the causal relationship. Participants completed the identical task again after a time lag ($M=2.5$ weeks).

Results

The analyses compared each individual's causal theories across the time lag. Both groups retained a stable core of causal links over time; this core was larger for experts ($M=45.8$ links per disorder) than lay people ($M=20.7$; $F[1,31]=134.9$; $p<.001$; $\eta^2=.81$). Both groups also reported a substantial set of causal links in one session but not the other. This set was larger for experts ($M=55.9$ links) than lay people ($M=23.8$; $F[1,31]=44.0$; $p<.001$; $\eta^2=.59$). Both groups rarely reversed the direction of a causal link (experts, $M=1.7$ links; lay people, $M=1.0$). (See Figure 1).

Discussion

The results suggest that both lay and expert theories exhibit a core underlying stability, yet also show a substantial degree of variation over a short time span. True instability was rare in that causal links rarely reversed direction. Follow-up studies currently under way are examining whether these results were affected by the nature of the

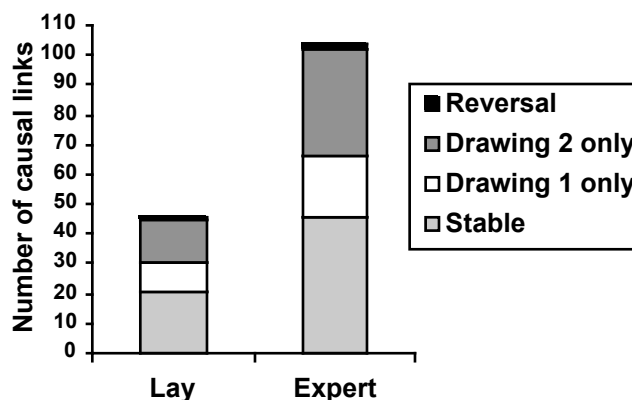


Figure 1: Results summary showing stability and instability over 2.5 weeks in lay and expert theories of disorders.

domain (by testing natural kinds and artifacts) or a problem with retrieval (by using a methodology in which participants must explicitly consider all possible feature pairings). Further studies will examine additional moderating factors.

Acknowledgments

Thanks to Edward van Aarle, Woo-kyoung Ahn, Lee Brooks, Marvin Chun, John Coley, Christian Luhmann, Jesseca Marsh, Anila Mehta, Edward Park, Alexandra Popa, Noah Stupak, and Lisa Yokomura.

References

- American Psychiatric Association. (2000). *Diagnostic and statistical manual of mental disorders (4th ed., text revision)*. Washington, DC: Author.
- Barsalou, L.W. (1987). The instability of graded structure: Implications for the nature of concepts. In U. Neisser (Ed.), *Concepts and conceptual development: Ecological and intellectual factors in categorization*. Cambridge: Cambridge University Press.
- Furnham, A. (1995). Lay beliefs about phobia. *Journal of Clinical Psychology, 51*, 518-525.
- Kim, N. S., & Ahn, W. (2002). Clinical psychologists' theory-based representations of mental disorders predict their diagnostic reasoning and memory. *Journal of Experimental Psychology: General, 131*, 451-476.
- Murphy, G. L., & Medin, D. L. (1985). The role of theories in conceptual coherence. *Psychological Review, 92*, 289-316.
- Sloman, S. A., Love, B. C., & Ahn, W. (1998). Feature centrality and conceptual coherence. *Cognitive Science, 22*, 189-228.