

The Role of Prior Beliefs in Processing Analogical Arguments

Lelyn Saner (les53@pitt.edu) Christian D. Schunn (schunn@pitt.edu)

Department of Psychology, University of Pittsburgh
Learning Research and Development Center, 3939 O'Hara St.
Pittsburgh, PA 15260

Introduction

How is the background opinion of the person who is processing an analogy related to that person's evaluation of the analogy, both in terms of how the analogy is mapped to form a conclusion and in terms of the conclusion itself? Assuming that people have pre-existing perceptions of the analogs referred to, will they be more or less likely to reflect on and evaluate the analogy?

Several researchers have examined the degree to which the process of mapping between source and target analogs is influenced by the context in which it is done (Blanchette & Dunbar, 1997; Dunbar & Baker, 1994; Holyoak, 1985), including the type of problems, situations, or issues that are being compared, the environment in which the comparison is being made, and the goals or reasons that a person has for engaging in the mapping process. We explored the possibility that the attitudes that people have associated with the analogs prior to the presentation of the analogy might influence the way people respond to the analogy.

Methods

We elected to conduct this study over the Internet in order to get a broader, more representative sample of perspectives on the analogs, and participants were recruited primarily through Usenet newsgroups, where discussions and debates on various topics occur on a continuous basis. Two controversial socio-political issues, Abortion and Gun Control, were selected as target analogs for this study. Two novel source domains were selected for each of the two target domains such that they could be mapped to argue either for or against the key issue in the target domains.

Participants read a general introduction to the experiment on the first page of the website and were then asked for some demographic information. After completing a 14-item background opinion questionnaire to measure their opinions on the target issues, each participant performed two analogy-processing tasks, which instructed them to read a scenario that related one of the issues to one of its two analogs, and then to write a response to the scenario.

Each scenario argued for either a Pro- stance on the issue (Pro-Abortion or Pro-Gun Control) or an Anti- stance (Anti-Abortion or Anti-Gun Control). With the participants' actual background opinions on the issues and the record of which scenario that participant received for each issue, we determined if, for each issue, they received the statement supporting the same stance on that issue as their own.

Participants were also asked, immediately after reading the scenario, to rate their level of agreement with it.

Responses were classified according to whether or not the analogy was processed in the response. Those that either presented an argument for a position that did not include any analogy at all or described their opinion on the issue only, without employing any argument, were coded as not processing the analogy. Three indicators were used to code a response as processing the analogy; (1) explicitly discounting the validity of the analogy presented in the scenario, (2) building upon the presented analogy in the response, or (3) choosing new analogies for the issue in favor of the one presented. Between two raters, using Cohen's Kappa as the measure of reliability, the agreement in classification of the responses was relatively high ($\kappa=0.86$, $n=50$).

Results

We observed that the likelihood of processing the analogy in a response was related to the average level of overall agreement with the scenario that was read. As the level of agreement with a particular scenario increased, so did the proportion of people who processed the analogy. At the same time, contrary to our expectations, there was no significant relationship, for either issue, between participants' background opinions on the issues and the likelihood of processing. On the basis of the first result, however, we concluded that there is evidence that peoples' opinions influence how they process analogies. We suspect that background opinion is one component of agreement with the scenario and that further exploration may reveal how it contributes to the way people process analogies.

References

Blanchette, I. & Dunbar, K. (1997). Constraints Underlying Analogy Use in a Real-World Context: Politics. Poster presented at the 19th Annual Meeting of the Cognitive Science Society, Stanford, CA.

Dunbar, K., & Baker, L. M. (1994). Goals, analogy, and the social constraints of scientific discovery. *Behavioral and Brain Sciences*, 17, 538-539.

Holyoak, K. J. (1985). The pragmatics of analogical transfer. In G. H. Bower (Ed.), *The psychology of learning and motivation* (Vol. 19) (pp. 59-87). New York: Academic Press.