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# Retrieval Effects on Confidence in General Knowledge

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At a recent panel discussion sponsored by the Ohio Board of Education, credential-laden fellows of the Discovery Institute argued with absolute conviction that the Darwinian theory of evolution is flawed, and that we must have been created by intelligent design.

What underlies the confidence we have in our beliefs and knowledge? A typical assumption underlying many models of confidence in general world knowledge is that assessments of arguments that favor or oppose chosen answers will primarily, if not exclusively, determine confidence in choice (e.g. Griffin & Tversky, 1992; Koriat, Lichtenstein, & Fischhoff, 1980; also see Allwood & Granhag, 1996). Differences between models largely reflect distinct proposals for how evidence assessment is accomplished, and the extent and manner of bias that is postulated to exist in the process. For example, Koriat et al. (1980) suggested that memory search produces reasons for and against presented alternatives, and that assessment is biased in that choice-consistent reasons are relied upon more heavily than choice-inconsistent reasons.

The current study tests the hypothesis that confidence also depends in part on successful retrieval of topical information that is not directly relevant towards arriving at a choice. Successful retrieval of facts about the general topic is used as evidence that one is knowledgeable about the subject area, and thus likely to be reasoning correctly.

## Method

Participants (n=159) were presented with a series of questions following the form: "Which species has a longer gestation period: (a) chimpanzees, or (b) humans?" Participants first chose one of the two alternatives as more likely to be correct, and then specified a probability between 50% and 100% that their choice was, in fact, correct. Subjects in a *reasons* condition were asked to write all possible reasons for and against each alternative answer, prior to choosing. Participants in a *recall* condition were asked to recall all of the facts they could about the topic of each question before choosing. *Control* condition participants simply answered the questions with standard, non-directive instructions.

## Results

The principal results are shown in Table 1. Mean confidence, proportion correct, and overconfidence were

virtually equivalent across conditions. Accuracy discrimination (mean confidence given correct – mean confidence given incorrect) was larger for recall than the other two conditions. Also, the correlation between confidence level and choice accuracy was larger for recall than the other conditions.

Table 1: Confidence/Correct Indices by Condition.

Indices	Control	Reasons	Recall
Mean Conf.	.73	.72	.72
Prop. Correct	.66	.66	.66
Accuracy	.04	.05	.10
Discrimination			
Pearson's r	.12	.16	.29

## Discussion

Writing all possible reasons for and against alternatives had no impact on choice or confidence. Writing all facts that could be recalled about the topic of each question resulted in confidence judgments that better discriminated between correct and incorrect answers, as compared with control and reasons conditions. Preliminary results from coding of the listed reasons and recollections (not shown), indicate that approximately the same amounts of information were generated under the two procedures, but that important qualitative differences in the protocols seem to exist. It appears that successful recall of facts that are relevant to the topic, but that do not constitute reasons for or against presented alternatives, is taken as critical evidence that chosen alternatives are correct.

## Acknowledgments

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