

The Pentagon Computerized Process Tracing Experiment

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In a study conducted with high ranking military officers at the National Defense University, we have tried to identify, using computerized process tracing experiments, whether military leaders are susceptible to information processing biases in decision making.

We presented high ranking military officers who participated in an NDU course on leadership, a decision scenario and a decision matrix. The decision scenario featured a decision problem-selecting among technologies for combating terrorism, whereas the decision matrix consisted of four alternatives (border crossing sensors, environmental monitors, local emergency responders, and do nothing) and three dimensions (military, economic, political).

Participants in this study accessed the Decision Board software which recorded how they arrived at a choice, their "Cognitive Algebra" and their cognitive biases.

Some of the key findings uncovered in this project, reported in Mintz, Redd, and Vedlitz (2006) and Mintz and Redd (2007), are:

- 1) Leaders are susceptible to information processing biases. Specifically, the military officers had a "preference over preference" to Do Something instead of Do Nothing;
- 2) they also locked in on one alternative instead of examining a range of alternatives;
- 3) in many instances, they ignored critical information.
- 4) they used satisficing strategies rather than maximizing processing;
- 5) they rated the military dimension as the most important factor influencing their decision and the economic dimension as the least important dimension.
- 6) Leaders make decisions in a two stage process: they eliminate alternatives which hurt them politically; they then conduct an analytic, rational analysis in an attempt to arrive at the optimal choice but only on the alternatives that "survived" the first stage of this decision process. This process is called Poliheuristic Theory (Mintz 2004a).

Svenson (1979:98) notes that the aim of process tracing is to reveal "a cognitive process, leading to a final decision or solution". Process-tracing methods focus on process and outcome validity, or the manner in which decision makers process information en route to a choice.

As Mintz, Geva, Redd, and Carnes(1997:556) state, "[process tracing's] main strength is its ability to identify specific strategies used by decision makers and to test theoretically derived implications of situational and personal variables on the decision process and its outcome." Process-tracing techniques have been used to investigate political decision-making processes, strategies, and outcomes in American politics see for example, Lau and Redlawsk 1992 and Riggle and Johnson 1996). In international relations research, experimental process-tracing examining foreign policy and national security decision making have been undertaken largely with the Decision Board platform.

The Decision Board Simulator Platform is an Internet-based computerized decision process tracer that records key features of the decision making process. A decision task is typically presented to the subjects in the form of a scenario and a decision matrix consisting of decision alternatives and relevant dimensions. The subjects choose from a set of alternatives based on information that can be accessed from the computer. The Decision Board records key features of what the subject examines prior to making his or her choice. This information is then analyzed to make inferences about process, choice, information processing biases and the decision profile of users.

The computerized process tracing methodology along with the Decision Board technology enabled our research team to also test experimentally:

- 1) The effect of dynamic versus static choice sets on information processing and choice (American Political Science Review 1997)
- 2) The effect of negative political information on processing and choice (2005)
- 3) The effect of familiar versus unfamiliar decision problem on information acquisition and choice (Journal of Conflict Resolution 2004b)
- 4) The effect of ambiguity on process and choice (Journal of Conflict Resolution 2004b)
- 5) The effect of framing and risk propensity on choice (ISA 2007, also see Frisch 2000)
- 6) The effect on choice of the appearance of a new dimension during the decision process (Geva et al 2006)
- 7) Groupthink versus Polythink (Mintz and DeRouen 2010)

“Real world” decision makers such as high ranking military officers at the US Air Force academy and at the National Defense University participated in these studies. The Decision Board has also been utilized in workshops at the United Nations, in Executive Training courses, in developing societies, and in many leading universities worldwide. It is the most popular information board in International Relations, foreign policy analysis and national security analysis. For more information on the potential use of this software, email the author at mintz.alex@idc.ac.il.

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