



Individual differences in rational and intuitive thinking styles as predictors of heuristic responses and framing effects

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Abstract

Two studies were conducted to test the hypothesis that heuristic responses can be predicted from variance in two 'thinking styles', rational-analytic and experiential-intuitive, as defined by the cognitive-experiential self-theory [CEST; Epstein, S. (1983), *The unconscious, the preconscious and the self-concept*. In J. Suls, & A. Greenwald, *Psychological perspectives on the self* (Vol. 2, pp. 219–247). Hillsdale, N.J.: Lawrence Erlbaum. Epstein, S. (1990). *Cognitive-experiential self-theory*. In: L. Pervin, *Handbook of personality theory and research*. (pp. 165–192), New York: Guilford. Epstein, S. (1994). An integration of the cognitive and psychodynamic unconscious. *American Psychologist*, 49, 709–724. Epstein, S. (1998a). Cognitive-experiential self theory: A dual-process personality theory with implications for diagnosis and psychotherapy. In: R.F. Bornstein & J.M. Masling, *Empirical perspectives on the psychoanalytic unconscious*. (pp. 99–140), Washington, D.C.: American Psychological Association]. Study 1 demonstrated systematic individual differences in participants' normative-statistical versus heuristic responses to judgmental tasks requiring the assessment of chances for the next event in a sequence. Normative-statistical responses were found to be correlated positively with rational thinking style, and negatively with experiential-intuitive thinking style. In study 2, these thinking styles were tested in relation to framing effects [Tversky, A., & Kahneman, D. (1981) The framing of decisions and the psychology of choice. *Science*, 211, 453–458.]. A 2×2×2 between-subjects experiment was designed with 2 (high/low rational) × 2 (high/low intuitive) × 2 (positive/negative frame) as independent variables, and the tendency to choose non-risky options as the dependent variable. The results showed that specific combinations of thinking styles, high rational/high intuitive and low rational/low intuitive, were the ones most prone to framing effects. The findings were interpreted as supporting the individual-differences perspective on heuristic processing, and as a validation of main assumptions of CEST. Implications regarding individual differences in thinking styles and the interactions between them were discussed. © 2002 Published by Elsevier Science Ltd. All rights reserved.

Keywords: Thinking styles; Heuristics; Framing effects; CEST (Cognitive Experiential Self-Theory); Intuition; Rationality

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Over the last two decades, vast numbers of reports in the literature have indicated that people often deviate from responses considered as being normative in many judgmental and decision-making tasks. Much of the research in this area stemmed from the work of Kahneman and Tversky (1972, 1973, 1982) who described a number of heuristics that are commonly used in judgments and choices. Heuristics are cognitive shortcuts for reducing complex problems into simpler judgmental ones. By and large, they are considered to be serious sources of error because of their overuse or inappropriate application (Kahneman & Tversky, 1973).

A typical exemplar is the ‘representativeness’ heuristic, manifested when people form generalizations from highly limited information. This heuristic often causes misconceptions of chance. People expect that a sequence of events generated by a random process will represent the essential characteristics of that process even when the sequence is short. As a consequence, after observing a sequence of events which deviates systematically from chance expectation, most people erroneously believe that in the next event the deviation should be corrected by a deviation in the opposite direction (Tversky & Kahneman, 1982). Tversky and Kahneman (1981) also demonstrated the ‘framing effect’ bias, where predictable shifts of preference occur as a result of framing the same problem in different ways. Choices involving gains are often risk averse, whereas choices involving identical outcomes presented as losses are often risk seeking, in violation of predictions based on normative decision-making models.

Although judgmental and decisional heuristics or simplification strategies are broad and predictable, they are by no means universal. There were always some people in each of the studies who gave the standard normative response. For example, Maule (1989) found that the predictions based on framing effects failed in just under half of the individuals tested who adopted a more elaborate frame. Some studies demonstrated moderating factors, mainly situational demands affecting the amount of thought devoted to the problem, under which framing effects are not obtained or are obtained less strongly (Davis & Bobko, 1986; Miller & Fagley, 1991; Takemura, 1993).

Another factor that may explain variance in usage of judgmental and decisional heuristics is individual differences. Kahneman and Tversky (1972) originally suggested that such differences exist, a suggestion which has gradually gained interest over the years (e.g. Galotti, Baron, & Sabin, 1986; Jepson, Krantz, & Nisbett, 1983; Nisbett, Krantz, Jepson, & Kunda, 1983; Roberts, 1993; Stanovich, 1999). A representative attempt to explore consistent individual differences in the use of cognitive heuristics was made by Shaham, Singer, and Schaeffer (1992). They found consistent individual differences in risk seeking and risk avoidance, but not in the use of representativeness and availability heuristics, which they concluded to be mainly determined by problem-driven processes.

Other researchers provided evidence that individual differences in various personality traits and cognitive styles are related to heuristic processing (e.g. statistical intuitions, Nisbett, Krantz, Jepson, & Fong, 1982; cognitive complexity, Schroder, Driver, & Streufert, 1967; conversational skills, Slugoski & Wilson, 1998; uncertainty orientation, Sorrentino et al., 1988; and cognitive styles, Wright, 1985). Smith and Levin (1996) identified need for cognition (Cacioppo & Petty, 1982) — defined as a natural tendency to engage in and enjoy thought — as a moderator of framing effects. They showed that framing biases affected people low in need for cognition and did not affect those high in need for cognition. Stanovich and West (1998) gave further support for the meaningfulness of ‘thinking styles’ to heuristic reasoning. They found significant

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