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### **Cognitive Bias**

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A cognitive bias is any systematic deviation from a normative criterion that affects thinking, often leading to errors in judgment. Affect, in particular, may bias cognition, both by altering the depth of cognitive processing and by impacting the content of cognitions. A useful example of emotion altering depth of processing appears in studies by Bodenhausen et al (1994). Happy individuals demonstrated less depth of processing than individuals in a neutral affective state, as evidenced by their reliance on simple mental categories rather than on complex stimuli. A useful example of emotion altering the content of thought appears in studies on the affect-as-information model (see *affect-as-information*). Individuals in a positive mood judged their overall life satisfaction more positively than did individuals in a negative mood. That is, their temporary positive mood altered the content of their thoughts about satisfaction as a whole.

Psychologists attempt to measure the existence and magnitude of a bias in different ways (Hastie and Rasinski, 1988). Below are four ways that emotional biases have been demonstrated by researchers.

1. Judgment lacks correspondence with a criterion.

The most direct way to measure a bias is to compare human judgment to a known normative criterion. For example, Bechara et al. (1997) examined the decision making of patients with lesions in their pre-frontal cortex – an area that integrates emotion with cognition. They compared patients' performance on the Bechara Gambling Task to an optimal (i.e., normative)

strategy that maximized expected value. The patients consistently chose riskier options that failed to maximize expected value, and the patients also exhibited lower levels of galvanic skin conductance in response to risky choices. The patients' diminished skin conductance was used to argue for the idea that patients lacked emotional responses to the risky choices, and that emotions can be a necessary cue for making normatively rational decisions.

## 2. Judgment lacks correspondence with judgments of others.

Another way to measure a bias is to compare the judgment of different groups on a task. If the groups' judgments fail to cohere, then one can infer that at least one of the groups must be biased. When using this approach, it is especially useful to identify one group as expert, so it can serve as the standard for comparison. In a study by Wilson and Schooler (1991), individuals were randomly assigned either to generate a list of reasons for their ratings regarding different types of jam or else to simply list their ratings. Results revealed that the ratings among individuals who simply listed ratings more closely resembled the ratings of jam experts. The authors thus concluded that reason giving can bias judgments of one's preferences.

## 3. Judgment relies on bad information.

The existence of cognitive bias can also be inferred from individuals' reliance on a bad judgmental cue. In this case, information used to make a decision does not correlate with good judgment on a task (where good judgment would be defined along some normative criteria). In a study by Bodenhausen et al. (2000), for example, subjects made judgments about various domains of real world knowledge after being exposed to an arbitrary anchor. For example, they were asked to estimate the length of the Mississippi River after being asked if its length was above or below 5000 miles. In this case, 5,000 miles was an arbitrary/bad cue. Sad individuals' responses were more strongly related to these arbitrarily high or low anchors. Therefore, sad individuals' increased reliance on these anchors was interpreted as evidence of cognitive bias.

## 4. Judgment fails to use good information.

Finally, one can infer a bias if individuals fail to utilize a good judgmental cue. In Lerner et al's (1998) study of legal decision making, participants were randomly assigned to an anger condition or a neutral condition. In addition, half of the participants in each condition were randomly assigned to be accountable for their legal decisions and half were not. Then they all read a series of fictional tort cases and assess the extent, if at all, to which the defendant should be punished. Results revealed that unaccountable participants in the anger condition failed to consider mitigating factors about the defendants. Instead, they relied on their own feelings of incidental anger over past, unrelated events (i.e., bad cues). By contrast, accountable participants in the anger condition showed a better pattern of cue utilization. They disregarded their personal feelings of incidental anger and instead focused on all the facts of the cases, including mitigating information. In sum, the failure to use mitigating information was used as evidence for a judgmental bias.

To recap, researchers use a variety of analytic methods to uncover cognitive biases – these four forming the fundamental approaches. It is important to highlight the fact that none of these methods demonstrate that emotions, on average, have a detrimental effect on human judgment. Whereas an emotion can bias judgment in some cases (as in the Bodenhausen et al. study), the lack of an appropriate emotion (as in Bechara et al.'s study) can bias judgment in other cases. Thus, emotions do not have a consistent biasing influence on judgment. It is also important to highlight the fact that emotion and cognition can influence bias in a bi-directional fashion. Whereas intense emotion can bias thoughts (e.g., in studies by Lerner et al.), intense thought can bias affective responses (e.g., in studies by Wilson and Schooler).

## References

- Bechara, A., Damasio, H., Tranel, D. & Damasio, A. R. (1997) Deciding advantageously before knowing the advantageous strategy. *Science*, 275, 1293-1294.
- Bodenhausen, G. V., Gabriel, S. & Lineberger, M. (2000) Sadness and susceptibility to judgmental bias: The case of anchoring. *Psychological Science*, 11, 320-323.
- Bodenhausen, G. V., Kramer, G. P. & Süsner, K. (1994) Happiness and stereotypic thinking in social judgment. *Journal of Personality and Social Psychology*, 66, 621-632.
- Hastie, R. & Rasinski, K. A. (1988) The concept of accuracy in social judgment. IN Bar-Tal, D. & Kruglanski, A. W. (Eds.) *The social psychology of knowledge*. New York, Cambridge University Press.
- Lerner, J. S., Goldberg, J. H. & Tetlock, P. E. (1998) Sober second thought: The effects of accountability, anger and authoritarianism on attributions of responsibility. *Personality and Social Psychology Bulletin*, 24, 563-574.
- Wilson, T. D. & Schooler, J. W. (1991) Thinking too much: Introspection can reduce the quality of preferences and decisions. *Journal of Personality and Social Psychology*, 60, 181-192.

## State of the Art References

- Forgas, J. P. (2003) Affective influences on attitudes and judgments. In Davidson, R. J., Scherer, K. R. & Goldsmith, H. H. (Eds.) *Handbook of Affective Science*. New York, Oxford University Press.
- Loewenstein, G. & Lerner, J. S. (2003) The role of affect in decision making. In Davidson, R., Scherer, K. & Goldsmith, H. (Eds.) *Handbook of Affective Science*. London, Oxford University Press.