Modeling Streamlining of Ambiguity Effect in Decisional Process

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The present study tries to validate the dual mechanisms of ambiguity effect in decisional process. Dual mechanisms operate in a streamlining way when a decision maker is uncertain of the occurrence probability of certain events. The ambiguity thus incurred modulates the estimation of event probability (P-mechanism or Streamline 1) and that of event consequence (U-mechanism or Streamline 2). We propose the existence of the streamlining of dual mechanisms, and argue that these two mechanisms are both influenced by perceived degree of ambiguity and attitude toward ambiguity. Furthermore, we developed a mathematical model to express these mechanisms. Based on the proposed streamlining mechanisms, two experiments were conducted to test three hypotheses derived from the revised model: (1) existence of the 'degree of perceived ambiguity' effect; (2) existence of the 'ambiguity attitude' effect; and (3) existence of the streamlining of dual mechanisms. The experimental results are in general agreement with the three hypotheses. Our demonstrations thus clearly complement the single-mechanism (i. e., P or U-mechanism, but not both in a streamlining way) explanations in the literature. The present study follows a substantial revision of Lattimore et al's (1992) model to separate and to accommodate the effects of 'degree of perceived ambiguity' and 'ambiguity attitude'. The revised Liou model (Liou, 1998) was then used to simulate the behavior of P- and U-mechanisms under various combinations and values. By comparing Liou model with other ambiguity models in data-fitness and parameter sensitivity, which proposed by Einhorn & Hogarth (1985), Kahn & Sarin (1988), and Lattimore et al (1992). The test results showed that Liou's model is the best functional form in modeling P and U mechanism.

Keywords: Ambiguity effect, Degree of ambiguity, Ambiguity attitude, Streamlining mechanism.