Stopping Rules In Information Acquisition At Varying Probabilities And Consequences: An Integrated Psychophysiological Measures Approach

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Abstract

An experiment aiming to assess the use of stopping rules in information acquisition was performed. An exploratory experimental paradigm was used. Participants (47 healthy individuals) were requested to make a decision in 24 financial scenarios with the possibility of buying information pieces. Participants were able to accept, reject or choose not to decide. Behavioral, EEG, ECG and Eyetracker data were recorded and integrated offline for analysis. Results showed that participants followed primarily Bayesian calculations in order to determine when to cease information acquisition and decide. Participants would tend to rely more on the valences (BAL) of the information acquired (positive or negative) than on sheer quantity. Acceptance tended to be made with mean positive BAL, rejection with mean negative BAL and procrastination with mean zero BAL. Uncertainty was seen to affect the information acquisition and decision process; EEG data suggest Slow Cortical Potentials at fronto-central electrodes for risk with low consequences and uncertainty with high consequences. Eyetracker data shows greater mean fixation time for decisions and information areas of interest (AOI). Heart rate data shows no difference in scenarios and/or information acquisition behavior, meaning that the decision scenarios did not elicit significant emotional engagement. Integrated psychophysiological measures were of important assistance to the conclusions given that they provided information as to what happened or not both behaviorally and physiologically.