University | Graduate Studies
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Notice of the Final Oral Examination
for the Degree of Master of Science

of

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BSc (University of Victoria, 2014)

"Efficient Models of Choice for Examining Risk and Ambiguity: A Prospect Theory Approach"

Department of Psychology

Friday, April 15, 2016
10:00AM
Cornett Building
Room A228

Supervisory Committee:
Dr. Adam Krawitz, Department of Psychology, University of Victoria (Supervisor)
Dr. Anthony Marley, Department of Psychology, UVic (Member)

External Examiner:
Dr. Olav Krigolson, School of Exercise Science, Physical and Health Education, UVic

Chair of Oral Examination:
Dr. Richard Keeler, Department of Physics and Astronomiy, UVic

Dr. David Capson, Dean, Faculty of Graduate Studies

Abstract

Uncertainty in economic decision-making can present itself in a variety of forms however the most commonly researched are risk and ambiguity. Recently, there has been a resurgence of interest in evaluating the relationship between individuals' preference for risk and ambiguity through the use of cognitive decision models. Accurately characterizing these preferences therefore relies on the use of appropriate models and model fitting techniques. Huettel, Stowe, Gordon, Warner & Platt (2006) used Expected Utility Theory (EUT) and the alpha maxmin model to evaluate individuals risk and ambiguity preference, respectively. Their results suggest that risk and ambiguity evoke disparate cognitive processes and both a behavioural and neural level. The use of EUT in characterizing risk preference however, calls into question the accuracy of their results. The present study attempts to re-evaluate the relationship between risk and ambiguity using a more appropriate and well-established model of risky decision-making, Cumulative Prospect Theory (CPT). Using a similar task design as Huettel et al. (2006), participants (N = 93) were required to make a series of decisions between two options that involved monetary outcomes. Each trial consisted of choices between two of the following options: risky, certain and ambiguous. Parameters for both EUT and CPT were estimated on risky trials and used to inform the estimation of ambiguity parameters using the α-maxmin on ambiguous trials. Moreover, each model was estimated using two methods of model fitting, optimization and hierarchical Bayesian analysis methods. Overall, CPT outperformed EUT on risky trials as well, ambiguity parameters from α-maxmin informed by CPT risk parameters outperformed EUT informed α-maxmin parameters. Finally, CPT estimated alpha and beta values were found to be uncorrelated. However, the present results demonstrate that ambiguity preference parameters correlate with the probability distortion parameters that may be a more accurate depiction of an individuals' level of risk preference. These results can be used to inform future endeavours uncovering the neural correlates of levels of uncertainty in decision-making.