

Information-processing Models of Decisions Involving Risk

Rob Ranyard

**Department of Psychology and Life Sciences,
Bolton Institute**

Abstract

In the first part of the paper, two alternative approaches to modelling decisions involving risk are compared, namely, generalised utility theories and information processing models. The two approaches are illustrated in the context of both simple and relatively complex lottery choice problems, for example, six alternatives each with four possible outcomes. The focus is on modelling the decision process in terms of elementary and complex operators. The next section of the paper illustrates how information processing models can account for key results in empirical decision research. Two well-known choice patterns are discussed, intransitive preference and violations of the principle of independence. Part of this discussion involves the presentation of some recent evidence of violations of the independence principle. The information-processing framework proposed to account for these and other choice patterns includes the following complex operators:

- (1) Subheuristics such as *dominance and satisfice*;
- (2) Structuring plans, referred to as similarity-contingent editing operators, *option grouping, cancellation-by-similarity* and *amalgamation*;
- (3) Decision heuristics such as *non-linear additive difference, NLAD*.

The third section of the paper considers the problems of constructing testable decision process models and assessing their validity by comparing the results of computer simulations with actual choice patterns. It concludes with a discussion of directions for future research.

e-mail: rr1@bolton.ac.uk