Much of the research investigating people's performance on making formal judgements could lead one to conclude that humans are fundamentally irrational in their decision making. Is this a reasonable conclusion?

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The ability to make rational decisions and to use logical reasoning has been studied since the Ancient Greeks. The philosopher, Aristotle (cited in Oaksford, 2005), suggested that it was this faculty that separated humans from other animals. On an everyday basis human beings have to make a number of decisions, yet it was not until the 1950's that psychologists began to study this phenomenon with any intensity, largely due to the dominance of the behaviourist paradigm, in which behaviours were explained in terms of stimulus-response associations to external stimuli, and thus cognitive processes such as decision-making were not recognised. This essay reviews more recent psychological research concerning decision-making, in order to establish whether or not humans are truly rational beings.

The origins of decision research began in the disciplines of mathematics and economics, and rather than focusing on how decisions were made, these theories concentrated upon how decisions should be made ideally. Early cognitive psychological research was influenced by these theories, on the assumption that the objective of decision-making was to make the 'best' possible choice, and that by some method, the best 'rational choice' could be measured (Ayton, 2005).

Ayton (2005) categorises psychological theories of decision-making into 'normative' theories, concerned with 'ideal' decisions that 'ought' to be taken, and 'descriptive' theories which attempt to examine how people make decisions. By posing such a distinction, he suggests that human decision-making is faulty in some way, yet also states that it should not be assumed from this, that human beings are in some way incapable of making rational choices that help them to live their lives.

Many decisions involve making a choice where the probable outcome is not known in advance; therefore these types of decisions involve an element of risk and are known as 'gambles'. Subjective expected utility theory (SEU), applies a normative model to choices involving risk. By taking a descriptive decision analysis approach, the SEU of von Winterfeldt and Edwards (1986, cited in Ayton, 2005), constructed a model known as the 'decision tree', based on visual representations, modelling the probabilities and utilities of the possible outcomes associated with possible alternative paths of action. According to SEU, if an individual making a decision, breaks one of four main principles (or axioms), then they will not maximise utility, and so would not be basing decisions on normative standards (Ayton, 2005). These axioms are: 'Comparability', where an individual must be able to show a preference between two alternative outcomes; 'Transitivity', meaning choices should be capable of being ordered in terms of preference; 'Dominance', where a choice is better in at least one respect, and at least good or better in every other respect, to other available options; 'Independence', where an outcome is unaffected by the choice made, and thus should not influence the choice made; and finally 'Invariance', where a preference for an option should be independent of how it is portrayed.

Tversky and Kahneman (1986, cited in Ayton, 2005) found however, that people often transgress these axioms in everyday decision-making. Therefore, people do not act according to how normative theory would prescribe. Implying either that something is going astray in the way people make choices, or normative theory does not capture how people come to make decisions, or both. Slovic and Liechtenstein (1968, cited in Ayton, 2005) discovered the 'preference reversal phenomenon', where in a choice between gambles, many people were less concerned with rational probabilities and more concerned with the attractiveness of a potential winning of a gamble. Indeed, one need only look as far as the money spent every week on the National Lottery to see evidence of this type of 'irrationality'. Tversky et al. (1988) found that in comparisons between matching tasks involving the assigning of values and those involving a choice between integers; that people were more likely to choose on the basis of the prominence of an attribute, in the latter rather than the former. Tversky et al. (1988) argued that this 'prominence effect' occurred due to the qualitative reasoning involved in making decisions between already available choices, whilst matching tasks require a more quantitative appraisal, with less emphasis being placed on the relative importance of the attributes. Hsee (1998, cited in Ayton, 2005) also found a 'preference reversal difficulty' with regards to the 'evaluability' of available choices, when evaluated either separately or jointly. For example, if one had to choose whether or not to buy an item in a shop that sells a multitude of similar options, or in a shop where it is the only available item of its kind.

In making choices between available options, Shafir (1993, cited in Ayton, 2005) found that when trying to select an option, people tend to focus on the positive features of making that choice, yet when asked to reject a choice; people tend to focus on negative aspects of the potential choice. Thus, rather than ranking choices, people tend to look for reasons to support a choice.

It can be seen from the above evidence, that human choices are not predictable by the use of normative theory such as SEU. Kahneman and Tversky (1979, cited in Ayton, 2005) proposed a descriptive model of decision-making, known as 'prospect theory', and restructures SEU in order to not define 'ideal choices'. According to prospect theory, choices can be broken down into two phases: firstly, an 'editing' phase, where decisions are mentally represented, negligible aspects are selected out, whilst other aspects retain prominence and are used as a reference point to weigh up 'gains' against 'losses' in the second phase of decision-making. Kahneman and Tversky (1979, cited in Ayton, 2005) also showed how prospect theory could predict phenomena, where SEU had failed. For example, when decisions are framed in terms of 'gain' or 'loss', people will be more or less likely to be risk averse and will make different decisions on this basis.

During the 1970's Kahneman and Tversky (cited in Ayton, 2005), identified through a variety of studies, that a number of human errors in judgement could be linked to 'mental heuristics' (or 'rules of thumb'), that the mind uses to simplify decision-making processes. These simplifications, therefore, were not normative, but applied simplistic principles that could be processed quickly. According to Kahneman et al. (1982, cited in Ayton, 2005), due to the limited processing capacity of the brain, these strategies are needed to lessen the complexity of decisions. These heuristics include: 'the representativeness heuristic', where people ignore relevant information regarding the prior probabilities of choices made; 'the conjunction fallacy', which occurs when the conjunction of two events is estimated to be more likely than one of the same events alone, which violates simple principles of probability; the 'availability' heuristic, whereby individuals estimate the probable frequency of an event, by using similar prior instances that can easily be brought to mind, yet may not represent probability, but emotional salience or some other factor; and the 'anchor and adjust' heuristic, where judgements of subsequent value are biased by judgements of initial value. Goldstein and Girgerenzer (2002, cited in Ayton, 2005) criticised previous research for using contrived laboratory techniques and lack of ecological validity, and studied naturally occurring heuristics in the everyday environment. They found that people employ simplistic 'fast and frugal' heuristics in order to be able to make quick decisions that can be functional and accurate within natural settings.

A review of behavioural decision research was conducted by Maule and Hodgkinson (2002), where a number of studies were referenced to show that these heuristic errors not only occur amongst economically inexperienced undergraduate research participants, but also in the judgements of business executives, therefore mistakes of this nature can have a profound effect on the wider social world. The level of evidence to show how people use simple heuristics in decision-making, suggests that one cannot establish an accurate theory of human decision-making on normative theory adapted from economic and mathematical theorems. According to Ayton (2005) however, just because humans are not perfect processors of information, this does not show that humans are essentially 'irrational', as any standard of rationality should accept that the computational requirements of normative theory are generally beyond the capacity of a human being making everyday decisions. For Ayton (2005), imperfect, 'bounded rationality', does not mean the same as 'irrationality', and that in order for theory to progress in this area:

"...we need studies that do more than merely knock down the straw man defined by normative models." (Ayton, 2005: 413).

The question remains however, as to how humans can be as competent as they are in navigating their environments, whilst being so fallible in regard to making errors of judgement due to heuristics and biases. Chase et al. (1998) however, question whether rationality should be defined as behaving in a 'logical' way to maximise rewards in a formal test. For Chase et al. (1998), both normative models and the 'heuristics-and-biases' view both represent reasoning in accord with the tenets of probability theory, and confuse irrationality with the human ability to make inferences of a semantic and pragmatic nature from their social and ecological environments. Chase et al. (1998) argue that normative theory fails to grasp what it is to be 'rational'. Instead, they argue that the mind has evolved to adapt to natural surroundings and not mathematical problem-solving.

In order to find out how the human mind makes decisions under bounded conditions, it can be argued that researchers will need to look at how humans interact within social and physical environments in order to attain goals. By looking at the social and ecological aspects of rationality, psychologists such as Chase et al. (1998) have begun to redefine what it is to be rational. In conclusion, whether humans are considered rational or not, depends on how one defines rationality. If rationality refers to making appropriate decisions given physical and social constraints, rather than the exact calculations of mathematical theorems, then humans are clearly rational beings, however fallible.

References

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