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Judgment and Decision Making

Psychological Perspectives



אוניברסיטת בן-גוריון בנגב
הספרייה

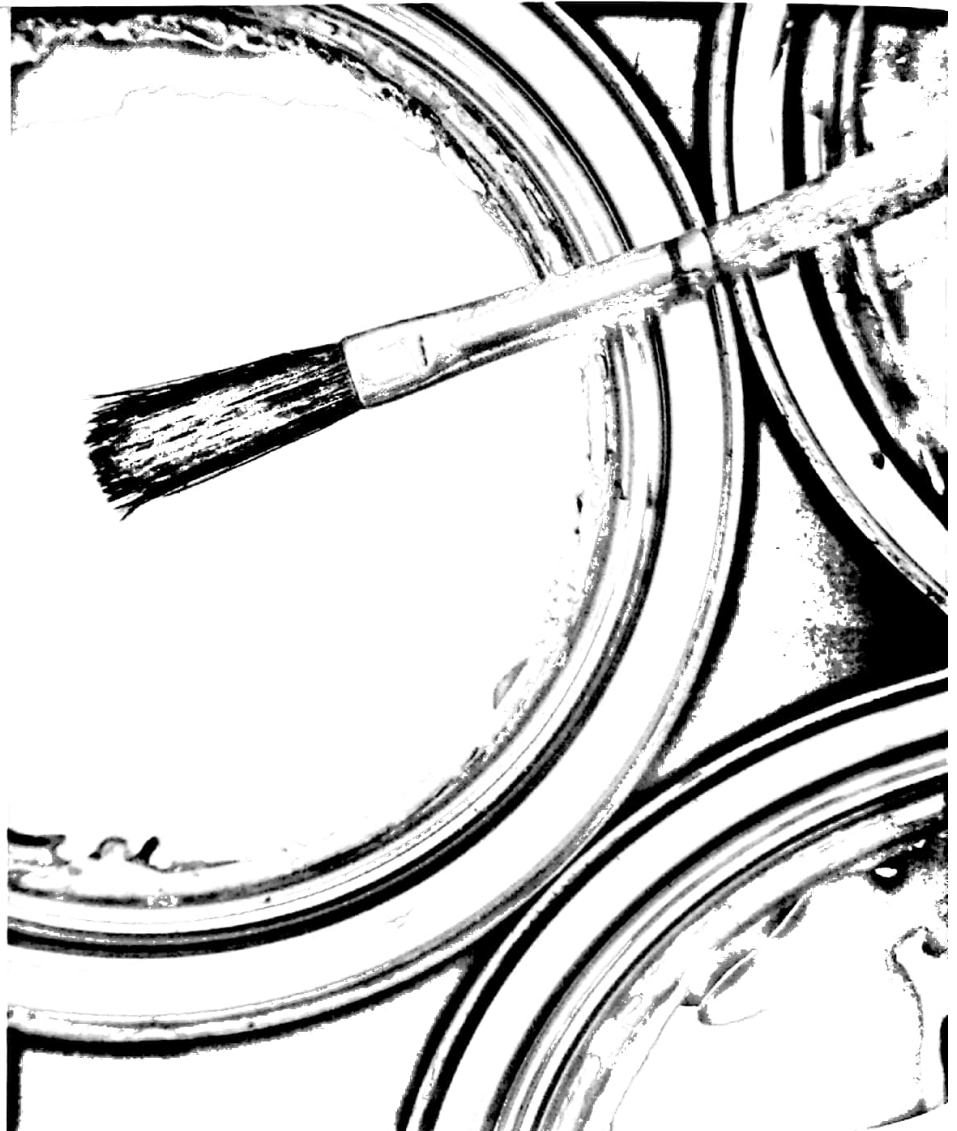
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Preference and Choice

KEY TERMS

acquisition utility
affect heuristic
asymmetric dominance effect
attraction effect
choice overload hypothesis
compatibility hypothesis
compensatory strategies
compromise effect
contingent valuation
elementary information
processes
elimination-by-aspects strategy
endowment effect
escalation of commitment
evaluability hypothesis
extremeness aversion
hedonic editing hypothesis
independence of irrelevant
alternatives (principle)
lexicographic semiorder
strategy
majority of confirming
dimensions heuristic
mental accounting
noncompensatory strategies
omission bias
prominence hypothesis
proportion dominance
regularity (property)
response mode compatibility
satisficing heuristic
status quo bias
sunk cost effect
transaction utility
weighted additive rule



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INTRODUCTION

Traditional economic theory assumes that individuals know better than anyone else what is good for them and act accordingly. The idea that people are rational actors implies that they should follow the axioms of rational choice. However, this is often not the case. In the first part of this chapter I describe some of the research that shows how people violate these axioms and why. Then I go on to look at several decision biases that are associated with 'mental accounting', the way in which people think about financial activities. In a third section I look at some issues concerned with the desire for choice and how people respond to complex choices. It turns out that simply desiring choice can sometimes be disadvantageous. People may also choose from a variety of strategies for making choices, depending on the complexity and importance of the decision. However, having greater choice does not necessarily lead to greater satisfaction. Finally, I look in greater depth at an aspect of choice that runs through most of the chapter – the role of emotion.

THE CONSTRUCTION OF PREFERENCE

According to rational choice theory, people have preferences that are *revealed* in their behaviour. However, a considerable body of psychological research indicates that people construct their preferences during the process of thinking about choice (see Lichtenstein & Slovic, 2006). This can lead to the violation of rational norms as described below.

Violations of transitivity

Table 8.1 shows how five hypothetical college applicants rate on the attributes of intellectual ability, emotional stability, and social facility. Tversky (1969) presented people with each possible pairing of the five applicants, except that the data were shown in the form of bar graphs. They were told that:

The college selection committee is interested in learning student opinion concerning the type of applicants that should be admitted to the school. Therefore, you are asked to select which you would admit from each of several pairs of applicants. Naturally, intellectual ability would be the most important factor in your decision, but the other factors are of some value, too. Also, you should bear in mind that the scores are based on the committee's ranking and so they may not be perfectly reliable. (E. Shafir, 2004, p.442)

Tversky found that most people preferred A to B, B to C, C to D, and D to E. By the axiom of transitivity, this means that the participants should also have preferred A to E, but in fact they mostly preferred E to A. When interviewed, not only did none of the participants realise that their preferences were intransitive, but when they were informed of this some denied it was possible and asked to see the experimenter's record. However, the vast majority of participants said that 'people are and should be transitive' (E. Shafir, 2004, p.455).

Table 8.1. Ratings of five applicants on three dimensions

Applicant	Intellectual ability	Emotional stability	Social facility
A	69	84	75
B	72	78	65
C	75	72	55
D	78	66	45
E	81	60	35

Source: Tversky, 1969.

It appears that people simplified this task by overlooking the small differences in intellectual abilities between A and B, B and C, C and D, and D and E, and choosing on the basis of the larger differences on other attributes. However, when A and E were compared they noticed the much larger difference in intellectual ability.

Although such simplifications do not maximise expected utility, this particular 'cost' is most likely outweighed by the benefit of less and faster computation. However, in principle it would be possible to take advantage of another person's intransitivity to their cost (Tversky, 1969).

It has been argued that evolution is unlikely to select against occasional intransitive choice behaviour. Animals have to make a range of multiattribute choices, for which it helps to have fast, efficient choice mechanisms, but it seems unlikely that their natural environment provides the conditions for intransitivity to occur. However, in controlled studies animals too have been observed to make intransitive choices (e.g. Bernard and Giurfa, 2004; S. Shafir, 1994).

Violations of procedure invariance

Response mode compatibility In a series of studies Slovic and his colleagues found that the attractiveness of gambles depends on the question that people are asked about them (e.g. Lichtenstein & Slovic, 1971; Slovic & Lichtenstein, 1968). When asked to choose between pairs of gambles with a similar expected value, they tend to choose the gamble with the highest probability but lower potential payoff. However, when asked how much they would be willing to pay for any individual gamble, or how much they would sell such a gamble for, their stated amounts are related more to the potential outcomes rather than the probabilities. This kind of cognitive processing leads to preference reversals, with high-outcome/low-probability gambles being assigned higher prices but low-outcome/high-probability gambles being chosen when the two types of gambles are paired. Such preference reversals were even found when gambles were played for real money on the floor of the Queens Casino in Las Vegas (Lichtenstein & Slovic, 1973).

Later research showed that the primary cause of preference reversals in these studies is the overpricing of bets with a high payoff (Tversky *et al.*, 1990). It seems that people focus on the features of the task that are compatible with the response mode. Non-matching task features have less impact on judgment because they require extra cognitive effort in order to be mapped onto the response scale. This explanation is referred to as the *compatibility hypothesis* (Lichtenstein & Slovic, 1973; see also Tversky *et al.*, 1990; and Slovic *et al.*, 1990).

Further evidence for compatibility was provided by Slovic *et al.* (2002). One group of participants was asked to rate the attractiveness of a 7/36 chance to win \$9. Another group was asked to rate a modified version of this gamble to which a small loss had been added:

7/36 chance to win \$9
29/36 chance to lose 5¢

This inferior bet was rated as more attractive than the version where no loss was involved. Slovic *et al.* (2004) argued that it is quite difficult to assess the attractiveness of \$9 in isolation, whereas the payoff is more compatible with the attractiveness scale when the small loss is added.

Also supporting the compatibility hypothesis is the observation that people who exhibit the predicted reversal spend longer thinking about pricing than about choice (Schkade & Johnson, 1989). Also, fewer preference reversals occur with problems involving nonmonetary bets (Slovic *et al.*, 1990).

The prominence hypothesis Consider the following example of a preference reversal (Tversky *et al.*, 1988). In one scenario, Israeli participants were told that the transport ministry was trying to reduce traffic fatalities from the current level of 600 casualties per year. Some people were asked to choose between the following two options (the percentage choosing each is shown in parentheses):

Programme X: 500 casualties Cost \$55 million (67 per cent)
 Programme Y: 570 casualties Cost \$12 million (33 per cent)

As you can see, most people preferred the more expensive programme that led to fewer casualties. Other people were presented with the same options, except that there was a missing value that they had to fill in to make each option equivalent. For example:

Programme X: 500 casualties Cost \$?
 Programme Y: 570 casualties Cost \$12 million

In order that Programme X is equivalent to Programme Y, it should be assigned (on average) a value of at least \$55 million. Anything less than this would imply that people should not be choosing Programme X in the choice task. Nonetheless, the typical matching value was *less* than \$55 million, and only 4 per cent of participants gave a value higher than this.

Because safety is regarded as the most important attribute, most people use this as the basis for choice. However, such *qualitative* reasoning cannot be used to complete the matching task; this actually *requires* that people engage in *quantitative* reasoning.

This phenomenon has been formulated as the *prominence effect* (Tversky *et al.*, 1988): the more prominent attribute will weigh more heavily in choice than in matching. Simplifying strategies of this sort enable people to resolve conflicts and are easier to justify than more complex procedures.

Separate versus joint evaluation Imagine two possible scenarios for choosing a new stereo. In one scenario you are at an electronics store making direct comparisons between models. You have narrowed the choice down to two models (A and B) and are comparing various attributes, perhaps even listening to the same piece of music played on each stereo one after the other. In the other scenario, you spend some time evaluating model A at one particular store. Bearing this model in mind as a possibility, you then decide to wander to the only other store nearby, where you spend some time evaluating model B.

Table 8.2. Mean willingness-to-pay values for the two dictionaries in the dictionary study

Evaluation mode	Dictionary A	Dictionary B
Joint	\$19	\$27
Separate	\$24	\$20

Source: Hsee, 2000.

Chris Hsee (1996) has shown that these two modes of evaluation – joint versus separate – can lead to different outcomes. Consider the following two second-hand music dictionaries:

	Dictionary A	Dictionary B
Year of publication	1993	1993
Number of entries	10,000	20,000
Any defects?	No, it's like new	Yes, the cover is torn; otherwise it's like new

One group of students was informed about both these alternatives and asked how much they would be willing to pay for each dictionary, bearing in mind that they were planning to spend between \$10 and \$50. The remaining students were only told about one dictionary and asked how much they would be willing to spend.

As Table 8.2 shows, people were willing to pay more for Dictionary B under joint evaluation, but more for Dictionary A under separate evaluation. Hsee proposed the *evaluability hypothesis* to account for these results. He argued that such reversals occur when one of the attributes of an object is hard to evaluate independently, but the other attribute is relatively easy to evaluate independently. This was supported by a further study where the two objects of choice were CD changers. These differed in terms of CD capacity and sound quality, where the latter was indexed in terms of percentage scores for total harmonic distortion (THD). In one version of the study participants were told that the THD ratings for most CD players ranged from .002 per cent (best) to .012 per cent (worst). This range information was expected to make it easier for participants to evaluate the CD changer in the separate evaluation condition. In the other version of the study, participants were not provided with this information. As predicted, separate and joint evaluations only led to preference reversals among participants who were not provided with the range information for THD.

Hsee suggests that people may make choices that they later regret if they use the wrong mode of evaluation. Imagine a person is carefully comparing the sound quality of two sets of speakers in an audio store. After much thought, he decides to purchase the speakers that, in his opinion, have a slightly better sound quality than the other set. However, after a couple of weeks of having the speakers in his living room, he is struck by how visually unattractive they are, and can't help remembering how much nicer the other set had been. Worse, he realises that he is not getting any satisfaction from the fact that the sound quality of his chosen speakers is marginally better; the small difference

he perceived in the audio store is no longer salient when listening at home. In fact, if he had evaluated the two sets of speakers separately, he would almost certainly have not noticed the difference in sound quality.

Choice strategies

We have seen that people use simplifying procedures in determining their preferences. In fact, there are quite a few potential strategies for making choices, and these are typically divided into two broad classes: *compensatory* and *non-compensatory*. Compensatory strategies involve tradeoffs whereas non-compensatory strategies do not.

Consider the *weighted additive* (WADD) rule. This is a fully compensatory strategy. The decision maker scores each alternative on each relevant attribute. The attributes themselves are weighted according to their importance. Multiplying the scores by the weightings and summing across attributes provides an overall score for each alternative. For decisions under risk, probabilities are taken into account, so decision makers may use the expected value or expected utility rules.

It is the most accurate choice strategy but also the most effortful precisely because it does use all the information available, makes tradeoffs, and evaluates every alternative. Other strategies are not as accurate but have the benefit of requiring less cognitive effort. For example, with the *elimination-by-aspects* strategy the decision maker first identifies the most important attribute and selects an aspiration level for this. Any alternative that fails to meet this threshold is eliminated from the choice set. If two or more alternatives remain in the choice set at this point, then the process is repeated using the second most important attribute, and so on until one alternative remains.

A decision maker can rely on a single strategy or use different strategies in combination. A person's repertoire of strategies depends upon factors such as age, experience, and formal training and education (Payne *et al.*, 1993), thus there are individual differences in the availability of strategies. The selection of a particular strategy is contingent on a combination of task factors and personal factors. This is consistent with our earlier observation that preferences are *constructed* rather than revealed during the process of choice. In general, people desire the best or most accurate outcome from a decision, but they also wish to expend the least effort possible in making the decision. These two aims are often incompatible. For example, achieving accuracy when there are multiple alternatives with multiple attributes will require a considerable degree of cognitive effort. Other task aspects that might call for effortful processing are the importance of the decision and whether or not the decision maker is accountable to others.¹

Computer simulations and other experimental studies reviewed by Payne *et al.* have shown that less effortful strategies can often be surprisingly accurate, though no single heuristic is accurate across all contexts (1993, p.131). They also examined combinations of strategies, noting that elimination-by-aspects combined with the weighted additive rule worked well in all task conditions, whereas elimination-by-aspects combined with the majority of confirming dimensions heuristic was much less efficient. Some less effortful strategies have also been found to be more advantageous when

making decisions under time pressure, because there is not enough time to apply the more complex rules (Payne *et al.*, 1988).

Context-dependent preferences

The theory of rational choice assumes that people try to maximise value when they choose between options. An assumption of this theory is that the preference between options does not depend on the presence or absence of other options. Suppose Bob prefers stereo system A to stereo system B. If we now add stereo system C to the set of options, Bob should still prefer A to B, regardless of where C ranks in his preferences. This principle is called the *independence of irrelevant alternatives*. It also follows that the 'market share' of an option cannot be increased by enlarging the choice set (a property known as *regularity*).

In fact, several studies have demonstrated violations of regularity (e.g. Huber *et al.*, 1982; Simonson & Tversky, 1992). For example, Simonson and Tversky gave participants descriptions and pictures of five microwave ovens taken from a catalogue. They were asked to scrutinise these carefully and to familiarise themselves with the options available on the market. Subsequently, one group of people was asked to choose between X and Y below, whereas another group was given a choice between X, Y, and Z:

- X. Emerson
(0.5 cu. ft.; regular \$109.99; sale price 35 per cent off)
- Y. Panasonic 1
(0.8 cu. ft.; regular \$179.99; sale price 35 per cent off)
- Z. Panasonic 2
(1.1 cu. ft.; regular \$199.99; sale price 10 per cent off)

Because the Panasonic 1 and Panasonic 2 were quite similar, the lower discount on the latter made it seem like a poorer option. However, it was not clearly inferior to the Emerson. Nonetheless, adding the Panasonic 2 to the choice set actually reduced the market share of the Emerson and increased the market share of the Panasonic 1 (Figure 8.1), thus violating the property of regularity. The observation that the popularity of an option can be increased

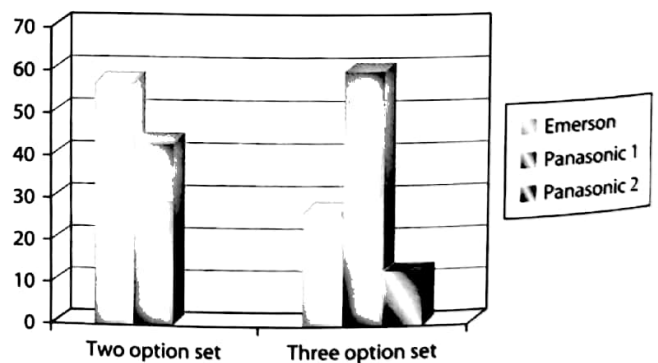


Figure 8.1. The percentage of people choosing microwave ovens from a two-option set and a three-option set

Source: Simonson & Tversky, 1992.

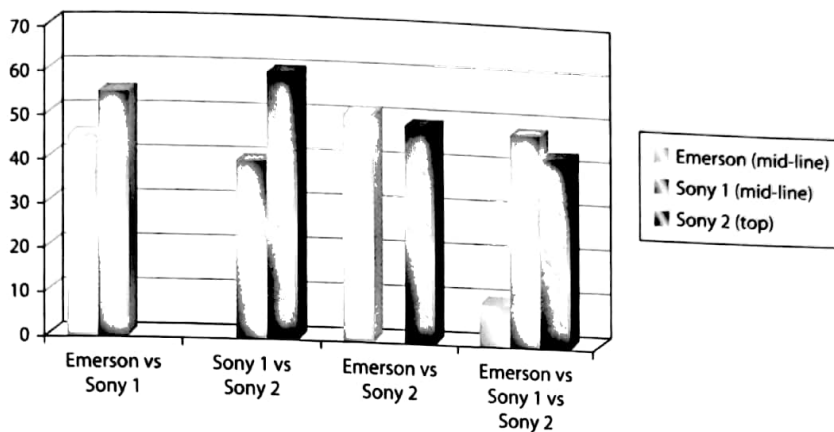


Figure 8.2. The percentage of participants choosing particular models of cassette player in two-option or three-option choices
Source: Simonson & Tversky, 1992.

by enlarging the choice set is referred to as the *asymmetric dominance effect* (or *attraction effect*).

In the study just described, the effect occurs as a result of 'local context'; that is, even though participants had familiarised themselves with an overall market of five options, the asymmetric dominance effect occurred due to the specific subset of choice options that was actually presented (the local context). Simonson and Tversky (1992) have also shown that 'background context' can affect choice. In this situation, a choice made earlier can affect a subsequent choice.

In other choice situations a *compromise effect* has been observed as a result of *extremeness aversion*. According to prospect theory (Kahneman & Tversky, 1979, 1992), people evaluate outcomes as gains or losses from a reference point that is normally the status quo. A general property of this value function is that people are loss averse, and that losses loom larger than gains. In some situations, choice options may be evaluated in terms of their advantages and disadvantages relative to each other, in which case the disadvantages will loom larger than the advantages. This being the case, options with extreme values are likely to be less attractive than options with intermediate values. For example, when asked to choose between cameras varying in quality and price, a \$170 camera and a \$240 camera were equally popular in a binary choice, but the \$240 camera was the most popular choice when a \$470 camera was added to the set of options.

Extremeness aversion can also give rise to *polarisation*. When disadvantages loom larger than advantages on just one attribute, then the introduction of a third option will produce a bias against one of the extreme options but not the other. Simonson and Tversky provided participants with details of three AM-FM cassette players, including photographs, information on features, brand names and prices. These can be summarised as:

- X. Emerson
(mid-line; \$39.99)
- Y. Sony
(mid-line; \$64.99)
- Z. Sony
(top; \$149.99)

In binary choices, the Emerson was about as popular as each of the Sony models. However, in the trinary set only 9 per cent chose the Emerson, with each of the Sony models being about equally popular (Figure 8.2).

In all the examples presented in this section, participants were always required to choose one of the products. In real life, a person usually has the option to defer choice. Tversky and Shafir (1992) showed that choice conflict led to a greater tendency to defer choice. When given the opportunity to defer a hypothetical choice between a \$99 Sony CD player and a \$169 Aiwa, 46 per cent of participants postponed the decision. However, when the only model on offer was the \$99 Sony, 66 per cent of participants chose this rather than deferring the decision. Furthermore, 73 per cent of people chose a \$99 Sony when the only other product was an *inferior* \$105 Aiwa (24 per cent deferred and 3 per cent chose the Aiwa). This last example shows that it is not the mere presence of two products that leads to conflict. Rather, the conflict arises when there is not a clear reason to choose between options.

MENTAL ACCOUNTING

In the previous chapter, I noted that prospect theory has provided explanations for a variety of financial behaviours, including the tendency of bettors to switch to longshots on the day's final race and of inexperienced New York cab drivers to quit work once they had reached the day's target income. Prospect theory has influenced much theorising about the way that people think about money, or *mental accounting*. Thaler (1999) defines mental accounting as 'the set of cognitive operations used by individuals and households to organise, evaluate, and keep track of financial activities'. The reference to 'financial activities' in this definition may be unnecessarily restrictive. As some of the examples in this section show, various human activities may be thought about in the same way that we think about money.

The endowment effect

The loss aversion implied by prospect theory's value function suggests that people should find it hard to part with things that they own. This *endowment effect* suggests that people may tend to overprice items that they are trying to sell. In one study (Kahneman *et al.*, 1990), students were randomly assigned to three groups. One group, the sellers, were given a coffee mug and asked whether they would be willing to sell it at a series of prices between \$0.25 and \$9.25. A second group, the buyers, were asked whether they would be willing to purchase a mug at the same set of prices. Consistent with the endowment effect predicted by loss aversion, the sellers set a higher median price (\$7.12) than the buyers (\$2.87). However, we cannot truly say that the sellers are overpricing their mugs unless we have some independent valuation of the coffee mugs. This valuation was provided by a third group, the choosers. This group was asked to choose, for each of the prices, whether they would rather have the cash or a mug. The median price of the choosers was \$3.12, which is much closer to that of the buyers, thus supporting the idea that the sellers were overpricing a mug that they had only just been endowed with.

Some authors have argued that the endowment effect arises from using one-shot experiments with naive participants, and claim that experience in a market setting reduces the effect (e.g. Coursey *et al.*, 1987). Kahneman *et al.* (1990) included studies where advanced undergraduate students participated in a series of markets, but they found that the endowment effect persisted. More recently, however, List (2004) reported results from a field study carried out at a sports card show in a large city in the southern USA. The study examined the willingness to trade coffee mugs and luxury candy bars of a similar financial value. He found that a reluctance to trade one's endowment was common among non-dealers, whereas no such tendency was observed among dealers (who, a survey confirmed, had much more trading experience).

One practical implication of the endowment effect arises in relation to the use of *contingent valuation* for measuring the value of public goods. In a typical application of contingent valuation, relevant stakeholders are asked how much they would be willing to pay in order to improve some aspect of the environment (or reduce the damage to it). Alternatively, they might be asked how much they would be willing to accept in order to allow some damage to occur. Willingness to pay (WTP) and willingness to accept (WTA) ought to be equivalent, but people frequently give much higher prices for WTA than for WTP. This is consistent with loss aversion: WTA is associated with giving up a public endowment, and this loss translates into a higher valuation of the good in question. On the other hand, WTP is associated with prevention of damage or improvement. Because this is experienced as a gain, the value attached to it is not as high.

Discrepancies between WTP and WTA tend to be larger for goods that are hard to value, such as environmental services (Baron, 1997). Stated values are also associated with people's feelings. In a laboratory study that measured WTP and WTA for lottery tickets, positive feelings were associated with WTP judgments and negative feelings were associated with WTA judgments (Peters *et al.*, 2003). More highly positive feelings were associated

with higher WTP prices and more highly negative feelings were associated with higher WTA prices. Furthermore, comments made by buyers and sellers showed that they focused on different aspects of the situation. Buyers more than sellers tended to mention that there was only a small chance of winning, whereas sellers tended to mention that they *might* win; in other words, buyers tended to focus on probability whereas sellers tended to focus on the outcome.

Status quo bias, omission bias, and action effects

The endowment effect is a reluctance to trade objects that one owns. A related effect is that of *status quo bias*, or the preference for remaining in one's current state. Johnson *et al.* (1993) carried out an experiment that investigated people's willingness to change the nature of their auto insurance policies. This preceded an actual change in the insurance laws of Pennsylvania and New Jersey that provided the opportunity for a quasi-experimental follow-up. The change in the law allowed insurance companies to provide consumers with the option of a reduced right to sue accompanied by cheaper auto insurance.

The experimental study was conducted with university employees. A 'Full Right' group was told that the state's standard insurance policy had no restrictions on the bearer's right to sue for pain and suffering. Participants were asked whether they would forgo their right to sue in exchange for a 10 per cent reduction in their insurance premium. If they were unwilling to give up the right to sue for a 10 per cent reduction, they were asked what percentage reduction would be enough to make them give up the right to sue. In the 'Limited Right' condition, the standard auto insurance policy was described as restricting the right to sue and participants had the option to acquire the right to sue in exchange for an 11 per cent increase in their premium (equivalent to the 10 per cent decrease in the Full Right group). If 11 per cent was too much, then they were asked to indicate the percentage increase that would be acceptable to acquire the right to sue. A 'Neutral' group was not told what the standard policy was, but participants were asked to state their choice and to indicate the premium difference that would make the options equally attractive.

If people were making this decision on purely economic grounds, then there should not be any difference between the programmes chosen by each group. However, people's responses tended towards the status quo, consistent with the prediction of loss aversion (Figure 8.3). As it happens, the status quo bias was even larger in real life. Changes to the insurance laws in Pennsylvania and New Jersey permitted companies to offer Limited Right policies. However, in New Jersey the default policy is the Limited Right policy, so motorists have to acquire the right to sue actively. In Pennsylvania the situation is the reverse: the default policy is the Full Right policy. Data published in 1992 showed that only about 20 per cent of New Jersey motorists acquired a Full Right policy, whereas 75 per cent of Pennsylvania motorists retained their Full Right policy.

Ritov and Baron (1992) have proposed an alternative account of the status quo bias. They argue that a different kind of bias is

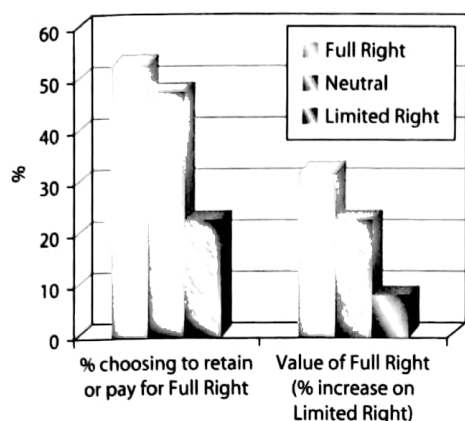


Figure 8.3. The percentage of participants retaining or acquiring a more expensive Full Right insurance policy (left-hand bars), and the percentage extra value of that policy above a Limited Right policy (right-hand bars). The differently shaded bars represent the current standard policy

Source: Johnson *et al.*, 1993.

actually at play: the *omission bias*. Omission bias arises when people are reluctant to risk a negative outcome as the result of performing an action. Whereas maintaining the status quo is often associated with doing nothing, in other situations a person might need to act in order to maintain the status quo if, for example, he knows that change will occur in the absence of such action. Ritov and Baron presented people with scenarios in which a negative outcome occurred. The scenarios varied in terms of whether a person had acted in order to maintain the status quo, acted to effect change, had maintained the status quo by not acting, or had allowed change to occur by not acting. For example, the following scenario describes a situation where a person maintains the status quo by acting, and a negative outcome results:

Henry owns shares in Company A. During the past year his investment manager asked him whether he would object to switching to stock in Company B. Henry objected and got to keep his shares in Company A. Now he finds out that he would have been better off by \$1200, if he had switched to the stock of Company B.

In line with earlier findings (Kahneman & Miller, 1986), participants thought that bringing about negative change through action was worse than maintaining the status quo through inaction. However, people also thought it was worse to maintain the status quo through action than to bring about change through inaction.

Omission bias could be harmful in many ways. For instance, when told about a hypothetical disease that could kill 10 out of 10,000 children, many people were unwilling to administer a vaccine that itself could kill 5 out of 10,000, despite the overall benefit this would bring (Ritov & Baron, 1990).² People often justified this reluctance on the grounds that they did not want to cause the death of any children, or even a single child.

Omission bias has been linked to the concept of 'protected values', values that people protect from tradeoffs (Fiske & Tetlock,

1997), such as the unwillingness to take any action that might harm a child no matter what the potential benefit. However, studies of moral norms in relation to environmental behaviour have found that protected values can also be associated with a commitment to action (e.g. Black *et al.*, 1985; Cialdini *et al.*, 1990; Hopper & Nielson, 1991; Stern *et al.*, 1993). People with strong views on the protection of the environment often perceive a moral obligation to act.

However, studies of omission bias are typically framed in such a way that respondents do not have the opportunity to express commissions. Tanner and Medin (2004) presented participants with a series of hypothetical environmental problems where they were asked to choose between taking an action or not taking an action. For different problems, acting or not acting were associated either with certain outcomes (for example, 'the health of 480 [out of 720] children will be damaged for sure') or risky outcomes (for example, 'there is a one third probability that the health of none of the 720 children will be damaged, and a two thirds probability that the health of all of them will be damaged'). Also, whereas the options just described are negatively framed, in some versions the options were positively framed (for example lives saved, rather than lives damaged). Participants also answered a series of questions designed to measure protected values (for example, 'People should only undertake this action if it leads to some benefits that are great enough').

In this study, participants with strong protected values were unaffected by the framing manipulation; they selected action more often than no-action regardless of positive or negative framing, and regardless of whether the act had certain or risky outcomes. However, for participants with low protected values the results were different. For positively framed outcomes, no-action was preferred when it was associated with a risky outcome. In the negative frame, no-action was preferred when it was associated with a certain outcome.

The sunk cost effect

If you go to the cinema but find that the movie you are watching is really boring, what do you do? Do you walk out or do you sit through to the end? If you sit through to the end when there are more enjoyable things you could be doing, then you may be committing a *sunk cost error*. According to Arkes and Blumer (1985), the sunk cost effect 'is manifested in a greater tendency to continue an endeavour once an investment in money, effort, or time has been made'. From the point of view of economic theory, this is an error because the only thing that should matter is a consideration of potential future costs and benefits.

Arkes and Blumer demonstrated the pervasiveness of the sunk cost effect across a series of studies. For example, they examined how frequently people visited the Ohio University Theatre after purchasing tickets that were either sold at full price (\$15), at a \$2 discount, or at a \$7 discount, according to a random schedule. More visits to the theatre were made in the first half of the season, when presumably the original purchase was still fairly fresh in people's minds, and during this period people who had bought the full-price tickets attended more often than people who had purchased the discounted tickets.

Sunk cost thinking can lead people to throw good money after bad, leading to an *escalation of commitment* (e.g. Staw, 1976). This has important implications for business and public policy decisions. For example, sunk cost thinking reduces decision makers' willingness to cancel big-budget projects that are going badly, or their willingness to bring soldiers home from a war zone where no clear victory is in sight.

Thaler (1980) explained the sunk cost effect in terms of prospect theory. He suggested that expenditures are not automatically felt as a loss, but in circumstances where they are then people act in such a way as to attempt to recoup the loss. For instance, purchases made for immediate consumption (such as buying lunch) are not in any way 'painful'; indeed, there is probably some net benefit. Similarly, purchasing items that will be consumed in the future, such as theatre tickets, is also probably pain-free; one is exchanging money for an asset that will be experienced as a benefit at the moment of consumption (there may also be a tingle of anticipation). However, expenditures without associated benefits, either due to unanticipated circumstances or one's own failure to take advantage of an asset, may be experienced as a loss, and the bigger the expenditure the bigger the pain of that loss.

Where people can act to prevent or to recoup a loss they are likely to do so. Thus, people who (on a random basis) paid full price for their season tickets to Ohio University Theatre went to the theatre more often, because not attending would have elicited a greater sense of loss compared to those who received discounted tickets.

According to Arkes and Blumer, 'prospect theory does not specify the psychological basis for the findings that sure losses are so aversive and sunk costs are so difficult to ignore' (1985, p.132). They suggested that people have an aversion to being wasteful or being seen to be wasteful (see also Arkes, 1996; Arkes & Ayton, 1999). However, to my mind it is not clear that this 'Do not waste' heuristic so much explains the aversiveness of losses as merely re-describes them. Perhaps people develop a rule about not wasting *because* they are averse to losses. It is also not clear to what extent people really are averse to waste. Evidence suggests that people are only really influenced by sunk costs when they attend to readily computable units of measurement within a mental account. Monetary expenditures on specific items often fall into this category. However, Soman (2001) found that people were unaffected by sunk costs involving *time*, except where time could be assessed against some more readily accountable unit.

It appears that ordinary monetary sunk costs do not last indefinitely. In the theatre study, people who had purchased season tickets attended less during the second half of the season and there was no effect of ticket price during this later period. Similarly, Gourville and Soman (1998) found that individual attendance at a health club was greatest during the period in which the dues were paid, but then swiftly fell away until the next payment period. Gourville and Soman used the term *payment depreciation* to refer to the declining relevance of an earlier expenditure.

There is some evidence that having an education in economics reduces the frequency with which sunk cost thinking occurs. Larrick *et al.* (1990) found that economics professors, as compared to professors of biology or the humanities, were more likely to report failing to use items they had purchased, and were more likely to abandon some activity before completion, such as dropping a research project that was not proving worthwhile or failing to

watch a movie until the end. They also found that naive students who underwent half an hour's training on normative principles performed more successfully up to a month later, compared to untrained students, on a subsequent decision-making test.

Transaction utility

During a recent trip to a cinema in London's West End, I purchased a bottle of Italian beer for £3.50. At my local off-licence in London's East End, the same bottle would have cost me £1; indeed, I would be unwilling to purchase from my off-licence if it cost substantially more. So why was I willing to pay more at the cinema? Thaler (1999) suggests that there are two kinds of utility associated with a purchase: *acquisition utility* and *transaction utility*. Acquisition utility is simply the value of a good relative to its price, whereas transaction utility is the perceived value of the 'deal'. The deal is the difference between the amount paid and the 'reference price' for the good, where the reference price is what you would expect to pay in a given context. The West End of London tends to be expensive, because many tourists go there, and cinemas generally tend to sell refreshments at high prices because they have a captive audience (does anybody take their own beer to the cinema?); therefore, the reference price that I have for beer purchased there is higher than the reference price in the less salubrious area where I live.

The validity of my anecdotal example could be questioned, because the places in which I consume the beers is different (cinema versus my home), therefore the consumption experience may be different. However, Thaler (1985) held the consumption experience constant in a study where he asked people how much they would be willing to pay to drink a bottle of beer while lying on a hot beach. Half the participants were told that their friend would go to a fancy resort hotel to buy the beer, and the other half were told that their friend would go to a run-down grocery store. The median prices that people were willing to pay (in 1984 prices) were \$2.65 (resort) and \$1.50 (store), indicating that people had a different reference price depending on the place of purchase – even though the consumption experience was the same. Economically, this is irrational.

Budgeting

Thaler (1999) noted that we can categorise money at three levels. Firstly, there is our income which, broadly speaking, consists of regular income, irregular income, and windfalls. Secondly, there is our wealth, which might consist of our pensions, current account (or checking account in the USA), insurance plans, and so on. Thirdly, there are our expenditures, such as money spent on food, housing, and so forth. In economics, it is assumed that these different accounts are substitutable, or *fungible*, meaning that money can be moved between the different accounts. However, people tend not to think like this. For example, a person might be willing to spend \$50 on a sweater after having previously spent \$50 on theatre tickets, but not after having spent \$50 on slacks.

People generally set budgets for expenditure prior to actually spending their money. Because we cannot be sure how many spending opportunities we will be faced with in a given time

period, we sometimes overestimate or underestimate the money required for a particular account. Consequently, we overconsume some goods and underconsume others.

Heath and Soll (1996) suggest that people use similarity judgments and categorisation to *post* items to a particular budget. To test this idea, they investigated underconsumption across the categories of entertainment, food, and clothes. To use their example, suppose Susan normally spends \$50 per week on entertainment. We now need to assess the effects of Purchase (P), Satiation (S), and Income (I) on her spending behaviour.

Suppose she makes a \$20 expenditure. How much is she now willing to spend on entertainment? If the \$20 was spent on a sports ticket, then she says she is likely to spend \$32 on entertainment, thus $P = 50 - 32 = 18$. If, in fact, she receives the sports ticket as a gift, then because of the effects of satiation she is not now willing to spend the full \$50 on entertainment, but is still willing to spend \$42, so $S = 50 - 42 = 8$. Lastly, if Susan spent the \$20 on an unexpected parking fine then she is now willing to spend \$45 on entertainment, so $I = 50 - 45 = 5$.

To assess Susan's level of underconsumption we calculate $P - S - I$, which is $18 - 8 - 5 = 5$. In other words, Susan spends less on entertainment after having already spent money on entertainment, compared to having already spent money in some other category. Heath and Soll's participants were asked exactly these kinds of questions and they found a widespread tendency to underconsumption. Furthermore, there was a typicality effect: a previous expenditure on a highly typical category member, as compared to a less typical category member, reduced the amount that people were willing to subsequently spend in that category (typicality was independently assessed). For instance, more people underconsumed entertainment after purchasing a \$20 sports ticket (highly typical) than after purchasing \$20 worth of party snacks (not so typical).

Kahneman and Tversky (1984) provided further evidence that people's choices are affected by the organisation of expenditures into *topical* mental accounts. Suppose you are in a store, considering a purchase. You discover that you could save \$5 by taking a 20-minute drive to a different store. Would you do this? If people think about this problem in terms of a *minimal mental account*, then the only thing that should matter is the \$5 saving, not the type of purchase. A second possibility, assumed by economic theory, is that people use a *comprehensive account* that considers current wealth, future earnings, and the possible outcomes of other probabilistic holdings. However, the evidence suggests that people evaluate the choice using a *topical mental account*, within which outcomes are considered in relation to a reference point that is determined by the context. Kahneman and Tversky presented people with one of two versions of the following problem (one version has the figures in parentheses):

Imagine that you are about to purchase a jacket for \$125 (\$15) and a calculator for \$15 (\$125). The calculator salesman informs you that the calculator you wish to buy is on sale for \$10 (\$120) at the other branch of the store, located 20 minutes' drive away. Would you make the trip to the other store?

Most people were willing to make the trip to save \$5 on a \$15 calculator, but not to save it on a \$125 calculator.

The following example is also from Kahneman and Tversky (1984):

Problem 1 ($N = 200$):

Imagine that you have decided to see a play and paid the admission price of \$10 per ticket. As you enter the theatre, you discover that you have lost the ticket. The seat was not marked, and the ticket cannot be recovered.

Would you pay \$10 for another ticket?

Yes (46 per cent) No (54 per cent)

Problem 2 ($N = 183$):

Imagine that you have decided to see a play where admission is \$10 per ticket. As you enter the theatre, you discover that you have lost a \$10 bill.

Would you still pay \$10 for a ticket for the play?

Yes (88 per cent) No (12 per cent)

In this example, people are less likely to purchase a new ticket after having lost the old one, because the two expenditures come from the same topical mental account. Losing a \$10 bill is less painful because it is most likely considered part of our general wealth account rather than part of our budget for entertainment.

Hedonic framing and the hedonic editing hypothesis

Consider the following two scenarios, adapted from Thaler and Johnson (1990):

Scenario 1

Suppose Mr A wins \$25 in an office lottery, and on the same day wins \$50 in another office lottery. Now consider Mr B, who wins \$25 in an office lottery and, two weeks later, wins \$50 in a second office lottery. Who do you think would be happier, Mr A or Mr B?

Scenario 2

Suppose Mr A receives a \$20 parking ticket and, on the same day, receives a bill for \$25 from the registrar because a form was filled in improperly. Now consider Mr B, who receives a \$20 parking ticket and, two weeks later, receives a bill for \$25 from the registrar because a form was filled in improperly. Who is more unhappy, Mr A or Mr B?

In thinking about these problems, we are asked to consider (a) whether it is better to have one large gain or two equivalent smaller gains, and (b) whether it is worse to have one large loss or two equivalent smaller losses. Thaler (1985) proposed that people might cognitively separate or integrate gains and losses in such a way as to maximise their happiness (the *hedonic editing hypothesis*). Based on the curvature of the value function in prospect theory, he derived four principles of hedonic framing:

1. Segregate gains (because the gain function is concave).
2. Integrate losses (because the loss function is convex).

3. Integrate smaller losses with larger gains (to offset loss aversion).
4. Segregate small gains (silver linings) from larger losses (because the gain function is steepest at the origin, the utility of a small gain can exceed the utility of slightly reducing a large loss).

Consistent with the hedonic editing hypothesis, Thaler and Johnson (1990) found that 63 per cent of participants thought that Mr B would be happier in Scenario 1 above (25 per cent thought Mr A would be happier). However, for Scenario 2, which concerns losses, the results did not support the hypothesis: 75 per cent of participants thought that Mr A would be more unhappy (17 per cent said Mr B would be). Across a range of materials, Thaler and Johnson found that people preferred to separate losses rather than integrate them, though where it was possible to combine a small loss with a larger gain then they did so. Thaler argues that, with the exception of multiple losses, the rules of hedonic framing are a good description of how people would like to have the world organised. He suggests that 'loss aversion is even more important than the prospect theory value function would suggest, as it is difficult to combine losses to diminish their impact' (1999, p.188).

Further evidence of hedonic editing can be found in studies of choices between indulgences and cash or necessities. Cash itself is fungible, so can be spent on luxuries, necessities, or savings. Therefore, given the choices between cash and a luxury, or cash and necessities, in each case people should generally prefer the cash. However, if people receive cash they may feel obliged to add it to their savings or to spend it on necessities, despite the fact they would get greater enjoyment from the indulgence of a luxury (a holiday, a fancy dinner, etc.). But when given advance choice between cash or luxury, people might opt for the latter, because this precommitment to indulgence ensures that they will not end up adding the cash to their general pool of money.

For instance, Kivetz and Simonson (2002, Study 2) gave three different groups of participants one of the following choices, which they could receive if they won a (hypothetical) lottery: (1) a cash prize of \$80, or a massage or facial (valued at \$70); (2) a cash prize of \$80 or \$70-worth of credit towards grocery bills; (3) a massage or facial worth \$70, or \$70-worth of credit towards grocery bills. As predicted, participants made intransitive choices. Specifically, 25 per cent preferred the massage or facial to the cash, only 9 per cent preferred the grocery credit to the cash, but 63 per cent chose the grocery credit over the massage or facial.

WANTING CHOICE AND COPING WITH IT WHEN YOU GET IT!

Suppose you want to see a particular movie that is showing at both a single-screen cinema and at a multiplex near you. Where would you go? It is likely that many people would choose to go to the

multiplex simply because it offers choice. Indeed, experimental evidence suggests that both people and animals prefer choice over no-choice. It may be that people are predisposed to opt for choice because keeping our options open can often deliver us with better outcomes. However, sometimes people can be induced to opt for choice over no-choice, even when this cannot improve their outcome. This effect has been referred to as *the lure of choice* (Bown *et al.*, 2003).

Sometimes people may be less satisfied when they opt for choice rather than no-choice (Gilbert & Ebert, 2002). Photography students who had been given the opportunity to change their minds about one of two prints they had chosen liked their prints less, several days later, than students who had not been given the option to change their mind. However, they themselves failed to anticipate this reduction in liking. Nonetheless, in another study (Gilbert & Ebert, 2002, Study 2b), 66 per cent of participants said they would prefer to be in a condition where they had the opportunity to change their mind (in this case, about a choice of art poster). In other words, most people chose to be assigned to a condition that would result in the least satisfaction.

One of the features of modern consumer societies is that we are faced by more and more choice. In his 1970 classic *Future Shock*, the futurologist Alvin Toffler used the term 'overchoice' to describe the situation in which the proliferation of consumer options, as well as the increasing number of decisions that it is necessary to take in a modern society, would actually pose a problem for people's ability to make those choices. The observation that heuristics can be quite effective for laboratory decisions – often about monetary gambles – might suggest that people are easily able to navigate a world in which many decisions must be made and where consumer options proliferate. However, other research suggests that Toffler's warning may have been quite prescient.

A series of studies reported by Iyengar and Lepper (2000) tested a *choice overload hypothesis*, according to which the provision of extensive choices, whilst initially desirable, would ultimately reduce people's motivation to engage with choice. Their first study was conducted in a field setting. Draeger's Supermarket is an upmarket grocery store in California. It offers an enormous array of products, and provides tasting booths in which customers are frequently offered sample tastes from the produce available. On two consecutive Saturdays two researchers, dressed as store employees, set up a tasting booth and invited passing customers to 'come and try our Wilkin and Sons jams'. The tasting-booth display was rotated on an hourly basis between a limited-selection display (6 flavours of jam) and an extensive-selection display (24 flavours of jam).

Of 242 customers who passed the extensive-selection display, 145 (60 per cent) stopped at the booth, whereas of 260 customers who passed the limited-choice selection only 104 (40 per cent) stopped. Of the people who did stop and taste some jam, one might expect that more jam would be tasted in the extensive-selection condition; in fact, there was not a significant difference between the conditions. However, in the limited-choice condition 31 (30 per cent) of the consumers purchased some jam, whereas just 4 (3 per cent) customers purchased jam in the extensive-choice condition. One limitation of this study was that the consumers were self-selecting in each condition. However, Iyengar and

Lepper reported similar results in experimental settings where they assigned people to different conditions.

In a series of studies, Schwartz and his colleagues used questionnaire measures to divide people into maximisers and satisficers. Maximisers were consumers who wanted to choose the best possible product, whereas satisficers were simply interested in finding something good enough to satisfy them. Schwartz *et al.* (2002, Study 2) found that maximisers showed greater regret about recent purchases they had made. It seems that people who tend to give consideration to multiple alternatives are more likely to continue pondering non-chosen alternatives after a choice has been made, worrying that they did not make the right choice. Maximisers also tended to compare themselves with others. When they compared themselves with people who had done worse they did not appear to feel any happier, whereas making comparisons with people who had done better made them feel less happy.

These social comparison effects were also confirmed experimentally (2002, Study 3), using a task in which participants were asked to work on anagrams alongside another person working independently on the same task. The other person was actually a confederate of the experimenter, and deliberately appeared to solve problems either faster or more slowly than the real participant. Maximisers rated their own abilities as much poorer, and they experienced more negative affect, after they had worked alongside a faster peer. By contrast, they showed little response to working alongside a slower peer. Satisficers' self-ratings showed little sensitivity to working alongside either slower or faster peers.

Schwartz *et al.* have also noted a link between mental well-being and individual differences in choice behaviour (2002, Study 1). Across several samples,³ a tendency to maximise was associated with a tendency to experience more regret and depression, less optimism, less happiness, lower self-esteem, and less life satisfaction. Maximising also showed a small association with a tendency to perfectionism. Maximising was not, however, associated with neuroticism. Consistent with the experimental research described above, statistical analyses indicated a possible mediating role for regret between maximisation and depression, and between maximisation and happiness.

EMOTION AND CHOICE

There is an increasing recognition of the role that emotion plays in choice behaviour and our response to choice. Several sections of this chapter have referred to certain aspects of this topic. For example, emotion affects the extent of the endowment effect, with sadness actually leading to a reverse endowment effect. In the section on mental accounting I referred to the *hedonic editing hypothesis* – the idea that people 'cognitively separate or integrate gains or losses in such a way as to maximise their happiness'. We have also seen that people who try to maximise during choice are more likely to worry afterwards that they did not choose the best outcome, and thereby experience regret. People also sometimes forgo good opportunities if they anticipate there is a possibility of regret (Tykocinski & Pittman, 1998; see also Chapter 10).

Many of our likes and dislikes are often not consciously arrived at, but are quite intuitively determined. This includes things like visual art, music, and food. If pressed, we can of course come up with reasons as to why we do or don't like these things, though these may simply be post hoc rationalisations rather than genuine reasons. In fact, simply asking people to provide reasons for their choices in these domains may actually lead to poorer-quality choices being made. For example, students who were asked to list reasons for liking or disliking various jams were more likely to disagree with expert jam tasters than students who simply stated their preferences (Wilson & Schooler, 1991). Similarly, people who provide reasons for an (intuitively determined) choice may subsequently indicate less satisfaction with their choice (Wilson *et al.*, 1993). Such results are consistent with the idea that two systems are involved in thinking: a deliberative, analytical system, and a fast, intuitive system. In the studies just described, it appears that the normal operation of the intuitive system is disrupted and overridden by the analytical system when a person is asked to provide reasons for an intuitive preference.

Slovic *et al.* (2002) have reviewed a series of studies supporting the existence of an *affect heuristic*, whereby preferences and choices may be determined by a simple feeling of 'goodness' or 'badness' that is taken to represent the positive or negative quality of a stimulus. For instance, Slovic *et al.* (1991; see also Peters & Slovic, 1996) asked people to generate images of cities and states, using a word-association technique. Participants then rated how positive or negative each image was. The averaged ratings were clearly associated with people's stated preferences for those cities or states.

Several studies show that people's evaluations of an attribute can be strongly affected by representing that attribute as a proportion or percentage of something. This is referred to as *proportion dominance*. In the studies reviewed at the start of this chapter, we saw that the rated attractiveness of a gamble is determined mainly by the probability involved rather than the monetary payoff. These results can be interpreted in terms of proportion dominance. For instance, consider how attractive a 7/36 chance of \$9 is. In assessing this, people know where the probability of 7/36 lies on the probability scale. However, there are no obvious boundaries to help define how good or bad an outcome of \$9 is. Slovic *et al.* (2002) report that this gamble was made more attractive, when a small loss was added (i.e. a 7/36 chance of winning \$9, but a 29/36 chance of losing 5¢). This is because the small loss helps bring the value of \$9 into sharper focus.

People's responses to life-saving interventions can also be dramatically affected by proportion dominance. In a study on airport safety, people were more willing to pay for a programme to save 98 per cent of 150 lives than for a programme to save 150 lives in total (Slovic *et al.*, 2002; see also Fetherstonhaugh *et al.*, 1997). Whereas it is not clear how to assess the value of saving 150 lives, 98 per cent is very close to the high end of the probability scale, so is clearly good.

More trivially, people placed more value on a 7 oz helping of ice cream, in which the ice cream was brimming over the top of a small carton, than they did on an 8 oz helping of ice cream in a very large carton (Hsee, 1998).

It is clear from these and other studies that people's judgments may sometimes be at fault due to the application of the affect

heuristic. In particular, we may be vulnerable to the way in which others frame information so as to trigger affective feelings. Slovic *et al.* (2002) list various examples from the world of entertainment and marketing: entertainers who change their name to a more pleasing one; background music in movies; smiling models in mail-order catalogues; and the labelling on food products, such as '98 per cent fat-free'. In other circumstances, it might be desirable if we could trigger more affective responses. For example, young smokers find it hard to worry about risks that are perceived to be far into the future. Likewise, we are often more responsive to the suffering of one identified person than we are to the suffering of hundreds of thousands; indeed, merely adding statistical information to information about an identified individual can *reduce* people's willingness to help (Jenni & Loewenstein, 1997; Kogut & Ritov, 2005a, 2005b; Small & Loewenstein, 2003). Similarly, where wrongdoing is concerned we are more punitive with regard to an identified individual than with regard to unidentified individuals (Small & Loewenstein, 2005).

SUMMARY

People do not appear to behave according to the principles of rational choice. They make intransitive choices, they make different choices depending on how they are required to indicate their preferences (a violation of procedure invariance), and their choices are also affected by the presence of irrelevant alternatives. Importantly, these results indicate that people are not 'revealing' their preferences during the process of choice but, rather, they are 'constructing' them.

Mental accounting refers to the way in which people think about financial activities. Many of the insights in this domain come from prospect theory. For instance, consistent with loss aversion, people appear to overprice goods that they currently possess (the endowment effect), though this is also moderated by a person's emotional state at the time. There is also evidence that people separate or integrate gains and losses so as to maximise their happiness (the hedonic hypothesis). Like the other research presented in this chapter (and in this book generally), this strand of research indicates that people are using cognitive simplifications that may be quite useful, but which sometimes may act against their own interests.

In general people prefer having choice to no-choice. However, sometimes the existence of choice acts as a 'lure' such that people may end up choosing an option that they may not otherwise have chosen. Having choice does not necessarily lead to greater satisfaction. Similarly, having less choice and using simpler strategies are often associated with greater subsequent satisfaction. Having greater choice or using an analytical choice strategy can prompt subsequent feelings of regret in relation to the options that were not chosen.

Finally, choices involve emotional content, such as the experience of liking or disliking, or of regret (anticipated or experienced). Indeed, preferences and choices may often be determined by the

application of the *affect heuristic*, a simple feeling of goodness or badness in relation to a stimulus that drives one's judgments and behaviour.



QUESTIONS

1. Design a novel sunk cost experiment.
2. Explain the concept of underconsumption and overconsumption.
3. Discuss the status quo bias, omission bias, and action effects.
4. Would it be advantageous to always use the weighted additive strategy when making choices?
5. 'Preferences are constructed rather than revealed.' Discuss.
6. Do you think maximisers would be happier with their choices if they learned to satisfice instead? How would you test this idea?
7. How might an intransitive thinker be turned into a 'money pump'?
8. What are 'protected values'? Give an example from everyday life.

NOTES

1. Accountability may or may not lead to more effortful processing (see the discussion in Payne *et al.*, 1993, pp.254–255). For instance, a decision maker who knows what the audience wants to hear might behave as a 'cognitive miser', whereas a decision maker who does not know the views of his audience may think more carefully.
2. Sunstein (2005) notes that people are far more troubled by the idea of euthanasia (which many governments prohibit) than they are by the withdrawal of life-saving equipment. For example, a doctor who administers a lethal injection to a patient is seen as causing that death through his own action, whereas the withdrawal of life-saving equipment may be seen as 'allowing nature to take its course'.
3. The participants, all recruited in the US and Canada, included students from three universities, health care professionals, commuters, and jurors-in-waiting. In total, there were 1747 respondents. Some samples filled out more questionnaires than others, so my generalised summary here does not actually apply to every single participant.

RECOMMENDED READING

Gilbert, D. (2006). *Stumbling on Happiness*. London: Harper Press.
This is a marvellously well written popular science book in which Daniel Gilbert examines the topic of affective forecasting. Winner of the UK Royal Society's science book prize.

Payne, J.W., Bettman, J.R. & Johnson, E.L. (1993). *The adaptive decision maker*. Cambridge: Cambridge University Press.

This academic book summarises much of the authors' own research on choice strategies.

Schwartz, B. (2004). *The paradox of choice*. New York: HarperCollins. Barry Schwartz contends that when it comes to choice more is not necessarily better.