Rational Choice and Offender Decision Making: Lessons from the Cognitive Sciences

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To cite:

Wortley, R. (2013). Rational Choice and Offender Decision Making: Lessons from the Cognitive Sciences. In B. Leclerc & R. Wortley (eds), *Cognition and Crime: Offender Decision-Making and Script Analyses* (pp. 237-252). London: Routledge.

As outlined in the introductory chapter, the rational choice perspective (RCP) has become the primary conceptual underpinning for situational crime prevention (SCP) and as such has attracted both devoted supporters and trenchant critics. The starting point for this chapter is the contention that much of the criticism directed at RCP – and for that matter, much of the support it receives – is based on a misconception of the function that the model is designed to fulfil. The distinction is drawn between RCP as an organising framework for SCP policy and practice on the one hand, and RCP as a theoretical model of offender decision making on the other. The former function is what Cornish and Clarke intended for RCP, and in that role it has been outstandingly successful. The latter function was never intended by Cornish and Clarke and nor does RCP credibly fulfil that role.

Cornish and Clarke have been clear from the beginning that their intention was to develop models of offending that informed prevention, not to provide a detailed or literal account of how offenders make decisions. They have never claimed their approach to be a theory, choosing the term rational choice *perspective* advisedly. In the first exposition of RCP (Clarke and Cornish, 1985) they could scarcely be more explicit:

> This perspective provides a basis for devising models of criminal behavior that (1) offer frameworks within which to locate existing research, (2) suggest directions for new research, (3) facilitate analysis of existing policy, and (4) help to identify potentially fruitful policy initiatives. Such models need not offer comprehensive explanations; they may be limited and incomplete, yet still be "good enough" to achieve these important policy and research purposes. (p. 147)

And again:

> …we have argued (Clarke and Cornish 1983) that simple and parsimonious accounts of criminal behavior - such as those provided by dispositional or situational theories - can have considerable heuristic value. They do not have to be "complete" explanations of criminal conduct, but only ones "good enough" to accommodate existing research and to suggest new directions for empirical enquiry or crime control policy. As soon as they no longer serve these ends they should be modified or discarded. (p. 149)

And again:

> Section II outlines the main requirements of decision models, temporarily "good enough" to explain the processes of criminal involvement (initial involvement, continuance, and desistance) and the occurrence of criminal events. In essence, these models are flowchart diagrams that identify the main decision points and set out the groups of factors bearing upon the decisions made. (pp. 149-150)

And again:

> This research is still at a relatively early stage, and as yet there is only a comparatively small body of criminological data relevant to decision

> making upon which to draw. Any attempt to develop decision models of crime must at this stage be tentative. Thus our aim is only to provide models that are at present "good enough" to accommodate existing knowledge and to guide research and policy initiatives. (pp. 163-4).

And again:

> The decision models illustrated above should be seen as temporary, incomplete, and subject to continual revision as fresh research becomes available. (pp. 173-4).

And again:

> … the models have been developed primarily for the limited purposes of improving crime control policies and developing policy-relevant research. Such models have only to be "good enough"; they may not necessarily be the most appropriate or satisfactory for more comprehensive explanations of criminal behavior – though it seems likely that a decision approach might provide a useful starting point even for academic purposes. (p. 178)

I think they make their point. Moreover, they were well aware even then of the literature specifically highlighting the limitations of rational choice as a decision-making model. They understood clearly that offender rationality was far from perfect, compromised as it is by perceptual errors, distorted reasoning, emotional states and the swirling confusion that characterises the typical crime event. Again their response is pragmatic:

> The facts that people do not always make the most "rational" decisions, that they may pay undue attention to less important information, that they employ shortcuts in the processing of information, and that group decisions may be different from individual ones are all clearly relevant to an understanding of criminal decision making. But cognitive psychology is still at an early stage in its development and the topics studied so far are not necessarily those that best illuminate criminal decision making. For example, there has been perhaps too much concentration upon bias and error in information processing (see Nisbett and Ross 1980), whereas, in fact, the judgmental heuristics involved usually enable individuals to cope economically and swiftly with very complex tasks (Bruner, Goodnow, and Austin 1956) – a process Simon (1983) has termed "bounded rationality." (p. 160)

Throughout their 1985 paper, Cornish and Clarke invite further development of their decision models in the light of future research. Their proposed models are ‘tentative’ and ‘accommodate existing research’ that is ‘still at a relatively early stage’; the models provide a ‘useful starting point’ but ‘should be modified or discarded’ when they no longer serve their purpose. The fact is that despite advances in decision-making theory and research in the intervening years, current descriptions of RCP are essentially unchanged from those of 1985.

In this chapter I critique RCP as a model of offender decision-making. I contend that the concession by Clarke and Cornish that offender rationality is bounded – while undoubtedly true – has had the unintended effect of stifling further theoretical exploration of offender decision-making. In the quote immediately above, Clarke and Cornish at the same time acknowledge and dismiss the lack of rationality that may occur in offender decisions. The concession of non-rationality, once made, is set to the side; with the focus on policy and practice, the default position has become to proceed nevertheless 'as if' offenders are behaving rationally. As a consequence, the bounded nature of offender decision-making has been subject to little systematic investigation in its own right. I argue that the ways in which offenders deviate from rational choice may be as theoretically and practically important as are the ways in which they conform.

Back to basics

Almost all decisions we make in life involve a degree of uncertainty – we can never be totally sure of the outcome of our choice. Rational choice approaches seek to model decision-making under uncertainty. Rational decision-making in its purest form is expressed in the expected utility model. The expected utility model assumes that individuals will make choices that maximise their gains and minimise their losses (von Neumann and Morgenstern, 1944). Expected utility is calculated by multiplying two dimensions of risk – the magnitude of the payoff and the probability that the payoff will occur. Empirically, decision-making is typically studied by treating decisions as gambles; subjects may be set the task of choosing between gambles that involve different specified payoffs and probabilities. For example, consider being offered the choice between a) a .5 probability of winning $100, and b) a .75 probability of winning $80. The respective expected utilities are as follows:

a) EU = .5 X $ 100 = $50
b) EU = .75 X $80 = $60

Objectively, bet b represents the best option and should be selected by subjects if they are acting perfectly rationally.

Of course, in real life situations, decisions rarely involve objectively known payoffs and probabilities. A prospective burglar, for example, does not know precisely the value of the goods in a particular house, nor the exact likelihood that he will be caught. An extension of the expected utility model is the subjective expected utility model (Savage, 1954). The subjective utility model assumes that individuals make personal judgements about the value of an outcome and the likelihood that it will occur. With these judgments made, they will then behave in ways that maximise *subjective* expected utility. Rationality is assumed when decisions fulfil all of the following axioms:

> **Comparability:** alternatives must be comparable; e.g., when comparing house A and house B a burglar must be able to say that A is a more desirable target than B, that B is a more desirable target than A, or that A and B are equivalent.
>
> **Transitivity:** choices must be able to be ordered; e.g., if a burglar prefers

house A to house B, and house B to house C, he must also prefer house A to house C.

Dominance: an option that is be judged to be better than an alternative on at least one dimension, and to be at least as good on all other dimensions, must be preferred; e.g., if a burglar believes house A is less risky to burgle than house B, and the houses contain equivalent goods, then he must choose house A over house B.

Independence: If an outcome is unaffected by the choice, then this outcome should not play a role in the decision-making; e.g., if a burglar prefers house A over house B, then this preference should remain stable irrespective of whether it rains the following day.

Invariance: Choices should be independent of how the alternatives are presented; e.g., if a burglar judges he has a 90% chance of not being caught for a burglary, he should arrive at the same decision as he would if he judged he had a 10% chance of being caught for a burglary.

Decades of research on decision-making have shown unequivocally that, when presented with decision tasks involving uncertain outcomes, people will frequently make choices that do not maximise expected utility; that is to say, their decisions are not rational. Moreover, many of the deviations from rationality that individuals make are not random or idiosyncratic but are systematic, indicating species-typical patterns of thinking. Edwards (1992) reported a survey of leading decision-making theorists who unanimously agreed that expected utility models do not account for the way human beings make decisions. The expected utility approaches to decision-making are now recognised as *normative* models of rationality; they show how judgements *should* be made and provide benchmarks against which errors in reasoning can be judged. Approaches that try to capture how people *actually* think are referred to as *descriptive* models.

Simon's (1955; 1983) concept of bounded rationality, cited by Clarke and Cornish (1985) as underpinning their adaptation of rational choice, is an example of a descriptive decision-making model. All descriptive models recognise and seek to accommodate the ways in which everyday choices deviate from optimal utility maximisation. Simon believed that human decision-making was neither perfectly rational nor wholly irrational. Individuals strive to benefit themselves to the best of their ability. Rationality is bounded not just by the fundamental limits of human information processing, but also by environmental structures that impose constraints on the quality and amount of information that is available to the decision-maker and on the time in which decisions must be made.

Simon described human decision-making as satisficing – satisfactory and sufficient. He argued that decision-making typically occurred as a search process guided by the decision-maker's level of aspiration, which may change from one situation to the next. In the expected utility model all options are provided to individuals who then have the opportunity to compare possible alternatives before arriving at a decision; in satisficing decision-making, the decision-maker

seeks out alternatives which are examined one at a time until an option is encountered that meets the decision-maker's minimum requirements at that time. Searching for alternatives and adjusting our standards according to what is on offer is how most choices are made in the real world. Consider a burglar searching for a suitable target. He does not weigh up the costs and benefits associated with every house in a neighbourhood before deciding which one to burgle. Rather he keeps looking until he finds a house that offers the prospect of adequate rewards at an acceptable risk. His decision may be sub-optimal, but it is good enough for his current purposes.

There are other descriptive decision-making models, notably Kahneman and Tversky's (1979) prospect theory (see also Kahneman, 2011), and some of the research supporting these variants of bounded rationality is discussed in the sections that follow. In these sections I unpack the concept of bounded rationality. I examine three factors that impinge upon the capacity of offenders to make rational choices, namely, cognitive 'errors', emotions, and automatic cognitive processing.

Cognitive 'errors'

Descriptive models of decision-making recognise that the human brain is not a perfect computer but, rather, that there are biologically imposed limitations on what it can do. Descriptive models examine the subjective perception of outcomes and probabilities, the cognitive shortcuts and rules of thumb (heuristics) that are employed to reach a decision, and the resultant biases in reasoning that may occur. While these deviations from rationality may be regarded as cognitive errors, many theorists think that they represent adaptive solutions, designed by evolution, that allow humans to deal efficiently and effectively with the complexity of the physical and social world that they encounter.

Researchers have identified over a hundred types of systematic deviations from expected utility predictions in the form of perceptual errors, heuristics and biases. There are overlaps among these processes and not all are especially relevant to offender decision-making. Below I present some of the principles that underpin the cognitive errors in human decision-making, drawing particularly on Kahneman and Tversky's (1979) prospect theory, and I make some speculative suggestions about how they might relate to criminal behaviour – necessarily speculative because the implications of bounded rationality for criminal behaviour have rarely been empirically examined.

<u>The greater the gain or loss, the less effect an increase in that gain or loss has</u>

Expected utility theory assumes that increases in costs and benefits follow a straight-linear trajectory; every unit increase in a gain or loss will produce the same unit increase in weighting given to the gain or loss in the decision-making process. At the heart of Kahneman and Tversky's (1979) prospect theory is the finding that subjective gains and losses follow a decay function; the subjective rate of increase diminishes as the objective size of the gains and losses gets larger. Put simply, the difference between $0 and $10 is assessed to be greater than the difference between $100 and $110, which in turn is assessed to be

greater than the difference between $1000 and $1010. We might expect, therefore, that a burglar searching a house where the pickings are slim will place more value on the discovery of an additional $50 (and expend more time and effort to locate it) compared with a burglar in a house that offers rich pickings. Similarly, the principle helps explain why increases in prison sentences do not produce commensurate increases in deterrence, and perhaps also suggests that there may be diminishing returns for some situational crime prevention measures.

Losses are felt more acutely than gains

Kahneman and Tversky's (1979) further argued that the decay function for subjective values is greater for gains than it is for losses, meaning that people feel losses more than they do gains of equivalent (or even greater) value. This phenomenon is known as loss aversion. Most people would not risk $100 in a 50/50 chance to win $200, even though the expected utility is $50 (.5 X $200 - .5 X $100) (Benzarti & Thaler, 1995); the prospect of losing $100 is judged to have greater value than the prospect of winning $200. Samuelson and Zeckhauser (1988) argued that loss aversion is the basis for status quo bias, that is, people's tendency to stick with current or previous choices even when more attractive options are offered. Perhaps (happily for us) status quo bias encourages many offenders to persevere with tried-and-true modus operandi and targets rather than to branch out into potentially more lucrative pursuits. Camerer (2000) also proposed that loss aversion underlies the tendency for some self-employed workers (which we might extend to include offenders) to quit after achieving their daily income targets. A street robber who quits after he reaches a preset target of, say, $1000 is behaving irrationally since he will quit earlier on days when the pickings are easy than on days when the pickings are slim. This is an example of loss aversion since the focus of the burglar is on not making his target (losing) rather than on increasing his haul above his target.

People give too much weight to low probability events and insufficient weight to high probability events

Yet a further principle of prospect theory is that individuals give distorted weightings to probability estimates. They will give disproportionately high weighting to events that are unlikely, resulting in relatively little discrimination between extremely unlikely events and moderately unlikely events. They will correspondingly give disproportionately low weighting to events that are likely, meaning that probabilities that are just short of certainty will be treated as being less probable than they really are. Thus while people will buy lottery tickets at infinitesimal odds, they will be unwilling to exchange the certainty of winning $1 million for a 99% chance of winning $5 million (Allais, 1979). Note that this effect is not the same as making inaccurate estimations of probability that an event will occur; it is about the weighting given to estimates. Research indicates that offenders also underestimate their chances of arrest (Anderson, 2002; Copes & Vieraitis, 2007; Kleck et al, 2005). This is an example of optimism bias, that is, the tendency for individuals to believe that they are at a lower risk of negative outcomes, and more likely to experience positive outcomes, when compared with others (Kahneman, 2011; McAdams & Ulen, 2009). The

weighting phenomenon suggests that the underestimation of risk will be further distorted by inaccurate weights applied to it. An offender is likely to regard anything short of certain arrest to be a relatively good bet (that is, he will give insufficient weight to a high probability of arrest).

Distant rewards have less effect than proximal rewards

In a process called temporal discounting, the subjective value of rewards reduces with time (e.g., Green, Fry & Meyerson, 1994). Further, the relationship between objective and subjective rewards is described by a decay function, leading to a phenomenon known as preference reversal. If people are asked if they would prefer $100 today or $110 in a month's time, many will select $100 today. However, if they are asked if they would prefer $100 in a year's time or $110 in a year and one month's time, they will switch preference to the $110. The subjective length of a month reduces as it approaches the time horizon. Temporal discounting might be viewed as a generic cause of criminal behaviour. Crime occurs largely because people value immediate rewards more highly than delayed rewards. This principle reinforces the central logic of situational crime prevention; the most effective strategy to prevent crime is to remove the prospect of reward at the time the crime is being contemplated.

Emotion

One of the most persistent criticisms of RCP is that it cannot account for the decisions made by offenders who commit so-called expressive crimes (assault, murder, rape) when in a state of emotional arousal (anger, fear, jealousy, sexual excitation). There are two elements to this criticism. The first is that these are crimes of passion that do not involve rewards and therefore cannot be subject to a cost–benefit analysis. The second is that offenders in highly emotional states are not capable of exercising rational choice.

The first criticism is easily dealt with. While rational choice models are often said to be based on a view of 'economic man' (e.g., Simon, 1955, p. 99), it is not implied that they are concerned only with decisions that involve the weighing up of objective costs and benefits. Rational choice theories require only that individuals have preferences and that they select options that give them greatest satisfaction. As Cornish and Clarke (2008) explain, 'The benefits of offending include satisfying the usual human motives, such as desires for sexual gratification, excitement, autonomy, admiration, revenge, control, reduction of tension, material goods, and so on' (p. 25).

The second criticism deserves more consideration. The usual response to this criticism by RCP theorists is to point out that even under high levels of emotional arousal people still retain some rational control over their behaviour. This is the position eloquently argued by Richard Felson in this volume and elsewhere (Felson, 2005; Tedeschi and Felson, 1994) with respect to violent behaviour. Felson challenges the concept of reactive aggression whereby violence is seen to be an innate and reflexive response to negative affect. The source of aggression is not a biological urge but an aversive environmental stimulus that the individual interprets as intentional mistreatment or humiliation. Felson points out that individuals engaged in 'reactive' violence will often adjust the ferocity of their

response to suit the situational circumstances, giving the example of the baseball batter who drops his bat before he charges the pitcher. Strong emotions may overwhelm inhibitions, and individuals may act without much thought to the consequences, but their decision to harm others 'is a decision nonetheless' (Felson, this volume).

I have no issue with Felson's analysis of the role of anger in violent crime, and his conclusions can be broadened to cover the role of emotion more generally in offender decision-making. A problem does arise, however, in the way that RCP theorists and researchers have used the sorts of arguments that Felson presents. The issue is the same as that raised with respect to bounded rationality more generally. Once the effect of emotion on rationality is conceded it is no longer discussed; the focus remains on the vestiges of rationality that remain. It is a bit like the proverbial glass half full / glass half empty scenario – one side of the issue (reason) is privileged over the other (emotion). Cognitive psychologists even have a label for this bias: confirmation bias, defined as the tendency to pay more attention to information that supports one's existing belief. Individuals who are emotionally aroused may well retain some level of rationality, but they are undoubtedly *less* rational than when they are not emotionally aroused. And the fact that they are less rational is important and deserves attention.

There is good experimental evidence that individuals tend to engage in more diverse, more extreme and riskier behaviours when they are emotionally aroused than when they are not (Ariely & Lowenstein, 2006; Bouffard, 2002; Leith & Baumeister, 1996; Lerner & Keltner, 2001; Lowenstein, Nagin & Paternoster, 1997; MacDonald et al, 2000). To take just one example, Ariely and Lowenstein (2006) compared the responses of subjects (male college students) under sexually aroused and non sexually-aroused conditions. Sexual arousal was achieved via masturbation (to sub-ejaculation) to a series of erotic photographs. Subjects were presented with 20 questions about how stimulating they would find various activities, many involving fetishes (e.g., 'Would it be fun to be tied up by your sexual partner?') and some involving illegal behaviour if acted upon ('Can you image being attracted to a 12 year old girl?'). They were presented with a further 5 questions concerning their likelihood to engage in immoral (and in some cases illegal) 'date-rape' behaviours (e.g., 'Would you keep trying to have sex after your date says "no"?'). Finally, they were presented with 8 items concerning their willingness to engage in unprotected sex (e.g., 'Would you always use a condom if you didn't know the sexual history of a new sexual partner?'). Responses to all items were on a 0-100 scale (0=no; 100=yes). Of the 20 questions concerning the attractiveness of sexual activities, the arousal condition produced a significant increase in endorsement for 18 questions. For example, in the case of attraction to a 12-year-old girl, the average score went from 23 (non-aroused) to 46 (aroused). There was a significant increase in endorsement for all 5 of likelihood-to-engage questions. For example, the average score for pursuing sex after a date said "no" went from 20 (non-aroused) to 45 (aroused). For the 8 unprotected sex questions, aroused subjects indicated the preparedness to take greater risks in 5 questions. For example, endorsement for the use of a condom with a new sex partner fell from 88% (non-aroused) to 69% (aroused). In summary, under conditions of sexual arousal subjects were interested in a wider range of sexual activities, they anticipated higher levels of

sexual arousal when engaging in those activities, and they were prepared to be more forceful and to take more risks in their pursuit of sexual gratification.

There is a burgeoning theoretical literature (most of it post-dating Clarke and Cornish's 1985 paper) seeking to accommodate emotion within a cognitive decision-making framework (Gutnick et al, 2006; Lerner & Keltner, 2001; Lowenstein & Lerner, 2003; Lowenstein et al, 2001; Slovic et al, 2005). Theorists draw the distinction between expected and immediate emotions. Expected emotions refer to how individuals anticipate they will feel if they proceed with a given behaviour; these anticipated feelings become one of the predicted consequences of behaviour that feeds into their cost-benefit analysis. Expected emotions are readily incorporated into normative subjective expected utility models. They have also been used to help explain the deviations from expected utility examined in descriptive decision-making models. For example, loss aversion may be explained as the anticipation of the negative emotion of regret. Immediate emotions refer to how individuals feel at the time the decision is made; these feelings have the potential to alter the way that the predicted consequences of the behaviour are perceived and processed. The role played by immediate emotions has until recently received less theoretical attention and presents a greater challenge to rational choice models of decision-making.

Lowenstein and Lerner (2003) set out three pathways by which immediate emotions might affect decision-making. First, immediate emotional states may affect the predicted value of prospective payoffs and probabilities. People will assess payoff and probability values more positively when they are in a positive mood, and more negatively when they are in a negative mood. This pathway suggests, for example, that as an individual becomes more enraged he/she will increasingly judge that inflicting injury on a victim will produce a more satisfying outcome and/or will be less risky to carry out. Second, immediate emotional states may affect the way that information about prospective payoffs and probabilities is attended to and processed. In this pathway, predicted values do not change but the individual's attention to decision-relevant cues shifts. Positive emotional states are associated with a broadening of attentional focus; negative emotional states are associated with a narrowing of attentional focus. In a state of anger and individual will become more present-focussed and thus more likely to ignore the longer term consequences of engaging in assaultive behaviour, even if those consequences are judged to be severe. Third, immediate emotions may have a direct influence on behaviour, bypassing or overwhelming evaluative cognitive processes. A person's anger may become so intense that the individual becomes 'out of control' and performs behaviour that is maladaptive and self-defeating. This pathway is most challenging for rational choice models suggesting as it does that there may come a point when rationality is abandoned.

Automatic cognitive processing

Cognitive psychologists distinguish between two types of cognitive process – controlled processes and automatic processes (Bargh, 1984; Chartrand & Bargh, 1996; Kahneman, 2003; Moors & De Houwer, 2006). Controlled processes are those cognitions of which we have conscious awareness, that we intentionally initiate, that we deliberately control, that are relatively slow, and that require

cognitive effort. Learning to drive a car involves controlled processes. In the early stages of learning to drive we must attend to and consciously initiate every element of the task – scanning the road, judging the distance to the car in front, turning the steering wheel, applying the brake, and so on. Driving consumes all of our attention and effort. Automatic processes, in contrast, occur below the level of conscious awareness, are activated without intention, operate in the absence of conscious control, are fast, and consume little in the way of cognitive resources. Many controlled processes become automatic processes with practice. Most practiced drivers will have the experience of arriving at their destination and realising that they have little recollection of the journey. It is as if they have been driving on 'auto-pilot'. Since automatic processes require minimal cognitive effort, they allow humans to maximise information processing resources and to undertake multiple tasks simultaneously. It is universally acknowledged by cognitive psychologists that most cognition occurs automatically and that individuals have access to just a tiny fraction of the neuronal activity that occurs within their skulls.

One explanation for many automatic processes involves the concept of schema (Fiske & Taylor, 1991; see also Leclerc, this volume). Schemas are content-based memory constructs that contain learned information about a specific topic or domain. All of the accumulated knowledge and assumptions that an individual has acquired about the world are collected and organised into schemas. The purpose of schemas is to permit individuals to manage the complexity of their world and to provide them with a basis to deal efficiently with new situations. Drawing on exiting schemas the individual can rapidly interpret familiar stimuli, fill in any gaps, and make predictions and judgements without the need to engage in deliberative decision-making.

Both common sense and the empirical evidence tell us that a great deal of criminal behaviour occurs as the result of an automatic process. Few researchers seriously believe that offenders carefully draw up a ledger of costs and benefits before engaging in a crime. Research on the decision-making of burglars indicates that experienced offenders – compared with inexperienced burglars and non-offenders – make rapid-fire judgements about likely targets based on a few salient cues (Garcia-Retamero & Dhami, 2009; Nee & Meenaghan, 2006. See also Homel, Macintyre and Wortley, this volume). Through their experience they have developed a 'suitable target for burglary' schema, which is activated by the sight of features of a potential target that are consistent with the schema. Once inside the targeted premises, offenders operate on the basis of an event schema, or script[1]. Crimes that go according to script can be performed as 'mindless' behaviour. Nee and Meenaghan (2006) reported that three-quarters

[1] While Cornish (1994) borrowed the concept of script from cognitive psychology, the application of the concept in environmental criminology has been very different from way it was originally conceptualised. In cognitive psychology scripts describe molar activities that require no deliberative thought processes. Cornish, on the other hand, deconstructs the script to identify decision points during the crime commission process. Once again, Cornish's goal is to develop a model for prevention, not to describe the cognitive processes of offenders.

of their sample of experienced burglars actually used terms such as 'automatic', 'routine', 'second nature' and 'instinctive' when describing their burglary strategies.

A closely related phenomenon is that of priming. Priming refers to the increased sensitivity to a stimulus as a result of previous exposure to it. Primes facilitate the retrieval of stored information from implicit memory, that is, memory of which there is no conscious awareness. In a classic demonstration of priming effects, Marcel (1983) required subjects to identify whether a word presented to them was a real word (e.g., 'doctor') or a non-word (e.g., 'glayner'). Subjects were quicker at identifying a real word if it was preceded by a related real word. For example, 'doctor' was identified more quickly if it was preceded by 'nurse' rather than by an unrelated word; 'nurse' acted as a prime to facilitate retrieval of 'doctor'. Priming has been used to explain the so-called weapons effect. In the original study demonstrating this effect, Berkowitz and LePage (1967) found that the sight of a gun increased the tendency for subjects behave more aggressively (to deliver electric shocks to other subjects). The gun primed subjects for aggression. The weapons effect has been replicated many times using a wide variety of primes. Carlson, Marcus-Newhall and Miller (1990) conducted a meta-analysis on 23 studies that examined the effects of aggression cues that included guns, knives, the names of people who had been previously paired with violent images, Ku Klux Klan clothing, aggressive verbalisations, vengeance-themed bumper-stickers, aggressive films, and boxing films. The mean effect size for the association between aggression cues and the expression of aggressive attitudes or behaviour was .38 (medium). The effects were stronger when the target of the aggressive response was of low status or an outgroup member.

So where does the concept of automatic processing leave RCP? To what extent does rationality necessarily imply a consciously controlled process? There are divided opinions on this issue. Some definitions of rational choice explicitly require that decisions involve a conscious process, 'as opposed to being motivated by habit, tradition, or social appropriateness' (MacDonald, 2003, p. 552). Other definitions are more liberal; Herrnstein (1990) allows that even animals can be acting rationality if their behaviours maximise utility. Clarke and Cornish (1985) have it both ways. On the one hand, they were interested in 'the conscious thought processes that give purpose to and justify conduct, and the underlying cognitive mechanisms by which information about the world is selected, attended to, and processed' (p. 147). At the same time, they recognised that the choices to engage in criminal acts might be made rapidly and efficiently on the basis of 'standing decisions' or 'knowledge structures' – effectively, schemas.

The general consensus would seem to be that while reasoning is by definition a deliberate and effortful process, automatic processes do not necessarily preclude the production of (boundedly) rational outcomes (Glöckner & Betch, 2008; Kahneman, 2003; Slovic et al, 2005). However, controlled and automatic processes have different strengths and weaknesses and can produce conflicting outcomes. According to Kahneman (2003), because controlled processes involve greater attention to the data they are relatively flexible and rule-governed. In

comparison, automatic processes are governed by habit, are more likely to be affected by emotion, and are more difficult to change. The quality of decisions made by automatic processes is only as good as the schemas on which the decisions have been made. For example, schemas that contain stereotypical assumptions about particular groups of people support discriminatory decisions and practices with respect to those groups.

Conclusion

It may seem odd to include a critique of RCP in a volume paying homage to the publication of the *Reasoning Criminal*. Most criticisms of RCP come with hostile intent, designed to denigrate the situational perspective on crime more broadly. I have no such agenda. I have written this chapter not as a trenchant critic of SCP – for there are enough of them – but as someone who has devoted much of his academic career to the field. My aim is to strengthen the situational perspective, not to weaken it.

The scope of the critique is clearly circumscribed. RCP was designed by Clarke and Cornish as a heuristic to guide policy and practice. It has been an outstanding success in this role. The critique focuses narrowly on the limitations of RCP as a comprehensive and accurate theoretical account of how offenders make decisions. Clarke and Cornish did not intend this role for it and nor does it fulfil this role. However it seems that many researchers – both critics and adherents – believe that RCT is meant as a literal description of offender decision-making.

The problem, in fact, is not so much that bounded rationality is necessarily an inadequate model of crime, but rather that the full implications of the model have been broadly ignored by researchers in the field. They have focused on the 'rationality' part of the model and forgotten the 'bounded' part. In doing so they have thrown away some of the most interesting and potentially useful bits. The fact is, there has been almost no theoretical development of RCP since it was first presented in 1985. Over this period, in the cognitive sciences there has been an explosion of interest in decision making research, almost none of which has found its way into environmental criminology.

Attacks on RCP from outside the field are often attacks on SCP (e.g., Hayward, 2007). The logic runs as such: SCP is based on RCP; offenders are not rational; therefore SCP is flawed. Critics of SCP can draw no comfort from the critique offered in this chapter. Most of the factors that impinge upon offender rationality – the 'bounded' bit of the model – are themselves situationally dependent. Cognitive errors are the systematic misinterpretation of situational data (often based on how those data are presented); the source of emotional arousal is almost always located in the immediate environment; and the automatic processes that produce the decision to commit a crime are typically primed by situational cues. The issue is not that situational factors have been rendered unimportant by the current critique, but that their effects are shown to be more complex than a simple model of rationality would suggest.

The theory that underpins SCP must satisfy the needs of two audiences. In the first instance it needs to provide clear and persuasive guide for practitioners,

and as I have noted, this has been the primary focus of Clarke and Cornish. For this audience, arguably 'good enough' theory is, well, good enough. The second audience comprises the researchers and academics whose job is to enrich and carry forward the situational perspective. By the very nature of their role, academics should not be satisfied with 'good enough' theory; they should strive for nothing less than 'good' theory[2].

Clarke and Cornish were rightly concerned about the dangers of developing criminological theory for its own sake. However, there are three pragmatic reasons to pay greater attention to the theoretical bases of SCP. First, good theory provides a smaller target for critics of situational crime prevention. In its current neglected and unelaborated state, RCP offers itself as an easy target for those who want to undermine the situational perspective. Second, drawing on recent developments from the cognitive sciences can help to better integrate the SCP perspective with other disciplines such as psychology and economics. Pease and Laycock (2012) have made the point that SCP research is poorly cited by academics working within a similar theoretical framework in other disciplines. Third, we may find that the current model of RCP isn't 'good enough' for practice after all – that there are new crime prevention strategies to be discovered or that the deployment of current strategies can be carried in a more nuanced and targeted manner.

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[2] In the words of Kurt Lewin (1952, p. 169), 'There is nothing more practical than a good theory.'

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