

CHILDHOOD RISK FACTORS AND RISK-FOCUSSED PREVENTION

David P. Farrington, Ph.D.

Institute of Criminology
University of Cambridge

August 1, 2006

Chapter for:
M. Maguire, R. Morgan and R. Reiner (Eds.)
The Oxford Handbook of Criminology
(4th ed.) Oxford: Oxford University Press, in press.

INTRODUCTION

The main aim of this chapter is to review key information about childhood risk factors and risk-focussed prevention. It focusses on individual and family risk factors for offending and antisocial behaviour, and on the results of prevention initiatives targeting these risk factors. The emphasis is on offending by males; most research on offending has concentrated on males, because they commit most of the serious predatory and violent offences (for reviews of risk factors for females, see Moffitt *et al.*, 2001). This review focusses on research carried out in the United Kingdom (especially), the United States and similar Western industrialized democracies.

Within a single chapter, it is obviously impossible to review everything that is known about childhood risk factors and risk-focussed interventions. I will be very selective in focussing on some of the more important and replicable findings obtained in some of the more methodologically adequate studies: especially, prospective longitudinal studies of large community samples and randomized experiments conducted to evaluate the impact of prevention techniques. (For more extensive reviews, see Farrington and Welsh, 2007.)

Tonry and Farrington (1995) distinguished four major prevention strategies. *Developmental prevention* (reviewed in this chapter) refers to interventions designed to prevent the development of criminal potential in individuals, especially those targeting risk and protective factors discovered in studies of human development (Tremblay and Craig, 1995). *Community prevention* refers to interventions designed to change the social conditions and institutions (e.g. families, peers, social norms, clubs, organizations) that influence offending in residential communities (Hope, 1995). *Situational prevention* refers to interventions designed to prevent the occurrence of crimes by reducing opportunities and increasing the risk and difficulty of offending (Clarke, 1995). *Criminal justice prevention* refers to traditional deterrent, incapacitative and rehabilitative strategies operated by law enforcement and criminal justice system agencies. The term “risk-focussed prevention” is

now used more generally than “developmental prevention”, but the two terms essentially have the same meaning.

This chapter is structured as follows. This section introduces the key concepts of developmental criminology, risk factors and risk-focussed prevention. This is followed by more detailed discussions of individual and family risk factors for offending, including reviews of explanations and possible intervening processes and a description of a wide-ranging integrative developmental theory. The next section reviews risk-focussed prevention programmes that have been proved to be effective in high quality evaluation research, and the final concluding section outlines recommendations for research and policy.

DEVELOPMENTAL CRIMINOLOGY

Developmental criminology is concerned with three main issues: the development of offending and antisocial behaviour, risk factors at different ages, and the effects of life events on the course of development (Loeber and LeBlanc, 1990; LeBlanc and Loeber, 1998; Farrington, 2006a). Developmental topics are reviewed only briefly here, as the focus is on risk factors and on risk-focussed prevention (see also Smith, this volume).

In studying development, efforts are made to investigate the prevalence of offending at different ages, the frequency of offending by offenders, the ages of onset and desistance, and specialization and escalation of offending over time (for reviews of criminal career research, see Piquero *et al.*, 2003, 2007). There are many studies of the persistence of offending and characteristics of persistent offenders (e.g. Farrington and West, 1993). There is an emphasis on investigating within-individual change over time, for example when people graduate from hyperactivity at age 2 to cruelty to animals at 6, shoplifting at 10, burglary at 15, robbery at 20, and eventually spouse assault, child abuse and neglect, alcohol abuse, and employment and mental health problems later on in life. Attempts are made to study developmental pathways and sequences over time, for example where one type of behaviour facilitates or acts as a kind of stepping stone to another (Loeber *et al.*, 1993). It is desirable

to identify non-criminal behaviours that lead to criminal behaviours, and early indicators of later frequent and serious offending that might suggest opportunities for early prevention.

It seems that offending is often part of a larger syndrome of antisocial behaviour that arises in childhood and tends to persist into adulthood (West and Farrington, 1977). There is significant continuity over time, since the antisocial child tends to become the antisocial teenager and then the antisocial adult, just as the antisocial adult then tends to produce another antisocial child. Typically, researchers find relative stability (the relative ordering of people on measures of antisocial behaviour is significantly stable) but changing behavioural manifestations over time, as individual capacities, opportunities and social contexts change (Farrington, 1990a). For example, only children at school can truant or be excluded from school, only older people can beat up their spouses, 70-year-olds have difficulty committing burglaries, and so on. There is a great deal of interest in different types of behavioural trajectories, for example the distinction between adolescence-limited and life-course persistent antisocial behaviour (Moffitt, 1993; Nagin *et al.*, 1995). Many of the results on offending that are reviewed in this chapter may be primarily driven by the more persistent offenders, who tend to be more extreme in many ways.

In developmental criminology, risk factors at different ages are studied, including biological, individual, family, peer, school, neighbourhood and situational factors. In general, similar results are obtained when studying risk factors for either self-reported or official offending (Farrington, 1992b). As mentioned, it is only possible to review individual and family factors within the scope of this chapter (for more wide-ranging reviews, see Rutter *et al.*, 1998; Farrington, 2006b).

Many risk factors for offending are well established and highly replicable. For example, a systematic comparison of two longitudinal surveys in London and Pittsburgh (Farrington and Loeber, 1999) showed numerous replicable predictors of delinquency over time and place, including impulsivity, attention problems, low school attainment, poor parental

supervision, parental conflict, an antisocial parent, a young mother, large family size, low family income, and coming from a broken family. Vazsonyi *et al.* (2001) found that the patterns of association between measures of self-control (e.g. impulsivity, risk-taking, getting angry) and measures of antisocial behaviour (e.g. theft, assault, vandalism, drug use) were highly similar across four countries (Hungary, Netherlands, Switzerland and the United States). Less well established are the causal mechanisms linking risk factors and offending. For example, does large family size predict offending because of the consequent poor supervision of each child, overcrowded households, poverty, or merely because more antisocial people tend to have more children than others?

There is a great deal of interest in the early prediction of later offending, and in risk factors that might form the basis of risk (and needs) assessment devices (e.g. Augimeri *et al.*, 2001). Typically, prospective prediction (e.g. the percentage of high-risk children who become persistent offenders) is poor but retrospective prediction (e.g. the percentage of persistent offenders who were high-risk children) is good. The fact that many children at risk have successful lives inspires the search for protective factors and individual resilience features that might inform prevention techniques. There is a great deal of interest in cumulative, interactive and sequential effects of risk factors. For example, the probability of becoming a persistent offender increases with the number of risk factors (Farrington, 2002), almost independently of which particular risk factors are included. There are also attempts to study individual development in different neighbourhood and community contexts (Wikström and Loeber, 2000).

In researching development, risk factors and life events, it is essential to carry out prospective longitudinal surveys. I will refer especially to knowledge gained in the Cambridge Study in Delinquent Development, which is a prospective longitudinal survey of over 400 London males from age 8 to age 48 (Farrington and West, 1990; Farrington, 1995, 2003b; Farrington *et al.*, 2006). In general, results obtained in British longitudinal surveys of

offending (e.g. Wadsworth, 1979; Kolvin *et al.*, 1990) are highly concordant with those obtained in comparable surveys in North America (e.g. Capaldi & Patterson, 1996; Loeber *et al.*, 2003), the Scandinavian countries (e.g. Pulkkinen, 1988; Klinteberg *et al.*, 1993), and New Zealand (e.g. Fergusson *et al.*, 1994; Henry *et al.*, 1996), and indeed with results obtained in British cross-sectional surveys (e.g. Graham and Bowling, 1995; Flood-Page *et al.*, 2000). For more information about the longitudinal surveys mentioned in this chapter, see Farrington and Welsh (2007).

RISK FACTORS

Risk factors are prior factors that increase the risk of occurrence of the onset, frequency, persistence or duration of offending (Kazdin *et al.*, 1997). Longitudinal data are required to establish the ordering of risk factors and criminal career features. The focus in this chapter is on risk factors measured in childhood that predict the onset or prevalence of offending; few studies have examined risk factors for persistence or duration. For simplicity, risk factors are reviewed one by one in this chapter. However, many risk factors tend to be inter-related, and it is of course necessary to investigate which factors are independent predictors of offending. This is discussed later in the section on “Explaining Development and Risk Factors”.

It is difficult to decide if any given risk factor is an indicator (symptom) or a possible cause of offending. For example, are heavy drinking, truancy, unemployment, and divorce symptoms of an antisocial personality, or do they cause people to become more antisocial? Similarly, to the extent that delinquency is a group activity (Reiss and Farrington, 1991), delinquents will usually have delinquent friends, and this does not necessarily show that delinquent friends cause delinquency. It is important not to include a measure of the dependent variable (e.g. delinquent friends) as an independent variable in causal analyses, because this will lead to false (tautological) conclusions and an over-estimation of explanatory or predictive power (Amdur, 1989).

It is possible to argue that some factors may be both indicative and causal. For example, long-term variations *between* individuals in an underlying antisocial tendency may be reflected in variations in alcohol consumption, just as short-term variations *within* individuals in alcohol consumption may cause more antisocial behaviour during the heavier drinking periods. In other words, heavy drinking may be viewed as a situational trigger rather than a long-term cause. The interpretation of other factors may be easier. For example, being exposed as a child to poor parental child-rearing techniques might cause (or even be a consequence of) the child's antisocial behaviour but would not be an indicator of it.

One methodological problem is that most knowledge about risk factors is mainly based on variation between individuals, whereas prevention requires variation (change) within individuals. Kraemer *et al.* (1997) argued that only risk factors that can change within individuals can have causal effects. It is not always clear that findings within individuals would be the same as findings between individuals. To take a specific example, unemployment is a risk factor for offending between individuals, since unemployed people are more likely than employed people to be offenders (West and Farrington, 1977). However, unemployment is also a risk factor for offending within individuals, since people are more likely to offend during their periods of unemployment than during their periods of employment (Farrington, *et al.*, 1986). The within-individual finding has a much clearer implication for prevention, namely that a reduction in unemployment should lead to a reduction in offending. This is because it is much easier to demonstrate that a risk factor is a cause in within-individual research. Since the same individuals are followed up over time, many extraneous influences on offending are controlled (Farrington, 1988).

In the Pittsburgh Youth Study, in which 1,500 Pittsburgh males were followed up from age 7 to age 25, risk factors for delinquency were compared both between individuals and within individuals (Farrington *et al.*, 2002). Peer delinquency was the strongest correlate of delinquency in between-individual correlations but did not predict delinquency within

individuals. In contrast, poor parental supervision, low parental reinforcement, and low involvement of the boy in family activities predicted delinquency both between and within individuals. It was concluded that these three family variables were the most likely to be causes, whereas having delinquent peers was most likely to be an indicator of the boy's offending.

RISK-FOCUSSED PREVENTION

The basic idea of risk-focussed prevention is very simple: Identify the key risk factors for offending and implement prevention methods designed to counteract them. There is often a related attempt to identify key protective factors against offending and to implement prevention methods designed to enhance them. Typically, longitudinal surveys provide knowledge about risk and protective factors, and experimental and quasi-experimental studies are used to evaluate the impact of prevention and intervention programmes. Thus, risk-focussed prevention links explanation and prevention, links fundamental and applied research, and links scholars, policy makers, and practitioners (Farrington, 2000). The book *Serious and Violent Juvenile Offenders: Risk Factors and Successful Interventions* (Loeber and Farrington, 1998) contains a detailed exposition of this approach as applied to serious and violent juvenile offenders.

Risk-focussed prevention was imported into criminology from medicine and public health by pioneers such as Hawkins and Catalano (1992). This approach has been used successfully for many years to tackle illnesses such as cancer and heart disease. For example, the identified risk factors for heart disease include smoking, a fatty diet, and lack of exercise. These can be tackled by encouraging people to stop smoking, to have a more healthy low-fat diet, and to take more exercise. Interventions can be targeted on the whole community or on persons at high risk. Typically, the effectiveness of risk-focussed prevention in the medical field is evaluated using the "gold standard" of randomized controlled trials, and there has been increasing emphasis in medicine on cost-benefit analyses of interventions.

Not surprisingly, therefore, there has been a similar emphasis in criminology on high quality evaluations and on cost-benefit analyses (Welsh *et al.*, 2001; Sherman *et al.*, 2006).

Risk factors tend to be similar for many different outcomes, including violent and non-violent offending, mental health problems, alcohol and drug problems, school failure and unemployment. Therefore, a prevention programme that succeeds in reducing a risk factor for offending will in all probability have wide-ranging benefits in reducing other types of social problems as well. Because of the interest in linking risk factors with prevention programmes, risk factors that cannot be changed feasibly in such programmes (e.g. gender and race) are excluded from consideration in this chapter, except to the extent that they act as moderators (e.g. if the effect of a risk factor is different for males and females).

A major problem of risk-focussed prevention is to establish which risk factors are causes and which are merely markers or correlated with causes (Farrington, 2000). It is also desirable to establish mediators (intervening causal processes) between risk factors and outcomes (Baron and Kenny, 1986). Ideally, interventions should be targeted on risk factors that are causes; interventions targeted on risk factors that are markers will not necessarily lead to any decrease in offending. The difficulty of establishing causes, and the co-occurrence of risk factors, encourages the blunderbuss approach: interventions that target multiple risk factors. However, there is also evidence that integrated or multi-modal intervention packages are more effective than interventions that target only a single risk factor (Wasserman and Miller, 1998).

In principle, a great deal can be learned about causes from the results of intervention experiments, to the extent that the experiments establish the impact of targeting each risk factor separately (Robins, 1992). For example, Najaka *et al.* (2001) attempted to draw conclusions about causality by analysing relationships between risk factors and antisocial behaviour in school-based experiments. Ideally, intervention experiments need to be designed to test causal hypotheses, as well as to test a particular intervention technology.

However, there is a clear tension between maximizing the effectiveness of an intervention (which encourages a multiple component approach) and assessing the effectiveness of each component and hence drawing conclusions about causes (which requires disentangling of the different components).

Risk-focussed prevention includes protective factors. Ideally, risk and protective factors should be identified and then risk factors should be reduced while protective factors are enhanced. However, both the definition and existence of protective factors are controversial. On one definition, a protective factor is merely the opposite end of the scale to a risk factor. Just as a risk factor predicts an increased probability of offending, a protective factor predicts a decreased probability. However, to the extent that explanatory variables are linearly related to offending, researchers may then object that risk and protective factors are merely different names for the same underlying construct.

Another possible definition of a protective factor is a variable that interacts with a risk factor to minimize the risk factor's effects. Such interactive variables are often termed "moderators" (Baron and Kenny, 1986). If poor parental supervision predicted a high risk of offending only for males from low income families, and not for males from high income families, then high income might be regarded as a protective factor counteracting the effects of the risk factor of poor parental supervision. Problems associated with the definition of protective factors may be alleviated by focussing on resilience or psychosocial skills and competencies. More research is needed to identify protective factors, linked to the use of interventions targeted on protective factors.

INDIVIDUAL RISK FACTORS

Among the most important individual factors that predict offending are low intelligence and attainment, low empathy, and impulsiveness, as the meta-analysis by Lipsey and Derzon (1998) showed. These factors are reviewed in this section, which concludes by discussing social cognitive skills and cognitive theories (see also Hollin, this volume).

LOW INTELLIGENCE AND ATTAINMENT

Low intelligence is an important predictor of offending, and it can be measured very early in life. For example, in a prospective longitudinal survey of about 120 Stockholm males, Stattin and Klackenber-Larsson (1993) reported that low intelligence measured at age 3 significantly predicted officially recorded offending up to age 30. Frequent offenders (with four or more offences) had an average IQ of 88 at age 3, whereas non-offenders had an average IQ of 101. All of these results held up after controlling for social class. In the Perry pre-school project in Michigan, Schweinhart *et al.* (1993) found that low intelligence at age 4 significantly predicted the number of arrests up to age 27. Also, in the Providence (Rhode Island) site of the National Collaborative Perinatal project, Lipsitt *et al.* (1990) showed that low IQ at age 4 predicted later juvenile delinquency.

In the Cambridge Study, one-third of the boys scoring 90 or less on a non-verbal intelligence test (Raven's Progressive Matrices) at age 8-10 were convicted as juveniles, twice as many as among the remainder (Farrington, 1992b). Low non-verbal intelligence was highly correlated with low verbal intelligence (vocabulary, word comprehension, verbal reasoning) and with low school attainment at age 11, and all of these measures predicted juvenile convictions to much the same extent. In addition to their poor school performance, delinquents tended to be frequent truants, to leave school at the earliest possible age (15) and to take no school examinations.

Low intelligence and attainment predicted both juvenile and adult convictions (Farrington, 1992a). Low intelligence at age 8-10 was also an important independent predictor of spouse assault at age 32 (Farrington, 1994). Also, low intelligence and attainment predicted aggression and bullying at age 14 (Farrington, 1989, 1993b), and low school attainment predicted chronic offenders (Farrington and West, 1993). Low non-verbal intelligence was especially characteristic of the juvenile recidivists (who had an average IQ of 89) and those first convicted at the earliest ages (10-13). Furthermore, low intelligence and

attainment predicted self-reported delinquency almost as well as convictions (Farrington, 1992b), suggesting that the link between low intelligence and delinquency was not caused by the less intelligent boys having a greater probability of being caught.

Low non-verbal intelligence was about as strong a predictor of juvenile convictions as other important childhood risk factors (low family income, large family size, poor parental child-rearing behaviour, poor parental supervision, and poor concentration or restlessness) but it was a weaker predictor than having a convicted parent or a daring (risk-taking) personality. Measures of intelligence and attainment predicted measures of offending independently of other risk factors such as family income and family size (Farrington, 1990b).

The key explanatory factor underlying the link between intelligence and delinquency may be the ability to manipulate abstract concepts. People who are poor at this tend to do badly in intelligence tests such as the Matrices and in school attainment, and they also tend to commit offences, probably because of their poor ability to foresee the consequences of their offending and to appreciate the feelings of victims (i.e. their low empathy). Certain family backgrounds are less conducive than others to the development of abstract reasoning. For example, lower-class, economically deprived parents tend to talk in terms of the concrete rather than the abstract and tend to live for the present, with little thought for the future, as Cohen (1955, p.96) pointed out many years ago. In some ways, it is difficult to distinguish a lack of concern for future consequences from the concept of impulsiveness (discussed later).

Low intelligence may be one element of a pattern of cognitive and neuropsychological deficits. For example, the "executive functions" of the brain, located in the frontal lobes, include sustaining attention and concentration, abstract reasoning and concept formation, anticipation and planning, self-monitoring of behaviour, and inhibition of inappropriate or impulsive behaviours (Morgan and Lilienfeld, 2000). In the Montreal longitudinal-experimental study, Seguin *et al.* (1995) found that a measure of executive functioning based on cognitive-neuropsychological tests at age 14 was the strongest

neuropsychological discriminator of violent and non-violent boys. This relationship held independently of a measure of family adversity (based on parental age at first birth, parental education level, coming from a broken family, and low socio-economic status). In the Pittsburgh Youth Study, the life-course-persistent offenders had marked neurocognitive impairments (Raine *et al.*, 2005).

Alternatively, it might be argued that IQ tests are designed to measure ability to succeed in school (which may be a different construct from “intelligence”). Hence, low IQ predicts school failure, and there are many criminological theories suggesting that school failure leads to delinquency (for example, through the intervening construct of status deprivation: see Cohen, 1955). Lynam *et al.* (1993) completed one of the most important attempts to test these and other possible explanations, using data collected in the Pittsburgh Youth Study. Their conclusions vary according to the ethnicity of the boys. For African-American boys, they found that low verbal intelligence led to school failure and subsequently to self-reported delinquency, but for Caucasian boys the relationship between low verbal intelligence and self-reported delinquency held after controlling for school failure and all other variables. It may be that poor executive functioning and school failure are both plausible explanations of the link between low intelligence and offending.

EMPATHY

There is a widespread belief that low empathy is an important personality trait that is related to offending, on the assumption that people who can appreciate or experience a victim’s feelings (or both) are less likely to victimize someone. This belief also underlies cognitive-behavioural skills training programs that aim to increase empathy (see later). However, its empirical basis is not very impressive. There are inconsistent results, measures of empathy are not well validated or widely accepted, and there are no prospective longitudinal surveys relating early empathy to later offending.

A distinction has often been made between cognitive empathy (understanding or

appreciating other people's feelings) and emotional empathy (actually experiencing other people's feelings). Jolliffe and Farrington (2004) carried out a systematic review of 35 studies comparing questionnaire measures of empathy with official record measures of delinquent or criminal behaviour. They found that low cognitive empathy was strongly related to offending, but low affective empathy was only weakly related. Most importantly, the relationship between low empathy and offending was greatly reduced after controlling for intelligence or socio-economic status, suggesting that they might be more important risk factors or that low empathy might mediate the relationship between these risk factors and offending.

The best studies of the 1990s that have related empathy to offending in relatively large samples are as follows. In Australia, Mak (1991) found that delinquent females had lower emotional empathy than non-delinquent females, but that there were no significant differences for males. In Finland, Kaukiainen *et al.* (1999) reported that empathy (cognitive and emotional combined) was negatively correlated with aggression (both measured by peer ratings). In Spain, Luengo *et al.* (1994) carried out the first project that related cognitive and emotional empathy separately to (self-reported) offending, and found that both were negatively correlated.

Jolliffe and Farrington (2006a) developed a new measure of empathy called the Basic Empathy Scale. An example of a cognitive item is "It is hard for me to understand when my friends are sad" and an example of an emotional item is "I usually feel calm when other people are scared". In a study of 720 British adolescents aged about 15, they found that low affective empathy was related to self-reported offending and violence for both males and females, and to an official record for offending for females (Jolliffe and Farrington, 2006b). Low cognitive empathy was related to self-reported serious theft (including burglary and car theft) for males. Low affective and cognitive empathy were related to fighting and vandalism for males and to theft from a person for females.

Therefore, low empathy may be an important risk factor for delinquency.

IMPULSIVENESS

Impulsiveness is the most crucial personality dimension that predicts offending. Unfortunately, there are a bewildering number of constructs referring to a poor ability to control behaviour. These include impulsiveness, hyperactivity, restlessness, clumsiness, not considering consequences before acting, a poor ability to plan ahead, short time horizons, low self-control, sensation-seeking, risk-taking, and a poor ability to delay gratification. Virtually all these constructs, measured in different ways, are consistently related to measures of offending (see e.g. Blackburn, 1993, pp. 191-196; Pratt *et al.* 2002).

Many studies show that hyperactivity predicts later offending. In the Copenhagen Perinatal project, Brennan *et al.* (1993) discovered that hyperactivity (restlessness and poor concentration) at age 11-13 significantly predicted arrests for violence up to age 22, especially among boys experiencing delivery complications. More than half of those with both hyperactivity and high delivery complications were arrested for violence, compared to less than 10% of the remainder. In the Mater University Study of Pregnancy in Brisbane, Australia, Bor *et al.* (2004) found that problems of attention and restlessness at age 5 more than doubled the risk of delinquency at age 14.

In the Orebro longitudinal study in Sweden, Klinteberg *et al.* (1993) reported that hyperactivity at age 13 predicted police-recorded violence up to age 26. The highest rate of violence was among males with both motor restlessness and concentration difficulties (15%), compared to 3% of the remainder. In another Swedish longitudinal study, Eklund and Klinteberg (2003) concluded that attention problems were the most important components of hyperactivity that predicted later violent offending.

In the Cambridge Study, boys nominated by teachers as lacking in concentration or restless, those nominated by parents, peers, or teachers as the most daring or risk-taking,

and those who were the most impulsive on psychomotor tests at age 8-10, all tended to become offenders later in life. Later self-report measures of impulsiveness were also related to offending. Daring, poor concentration and restlessness all predicted both official convictions and self-reported delinquency, and daring was consistently one of the best independent predictors (Farrington 1992b). A combined measure of HIA (“hyperactivity-impulsivity-attention deficit”) significantly predicted juvenile convictions independently of conduct problems at age 8-10 (Farrington *et al.*, 1990). Lynam (1996) argued that children with both HIA and conduct problems were at greatest risk of later chronic offending.

The most extensive research on different measures of impulsiveness was carried out in the Pittsburgh Youth Study by White *et al.* (1994). The measures that were most strongly related to self-reported delinquency at ages 10 and 13 were teacher-rated impulsiveness (e.g. “acts without thinking”), self-reported impulsiveness, self-reported under-control (e.g. “unable to delay gratification”), motor restlessness (from videotaped observations), and psychomotor impulsiveness (on the Trail Making Test). Generally, the verbal behaviour rating tests produced stronger relationships with offending than the psychomotor performance tests, suggesting that cognitive impulsiveness (based on thinking processes) was more relevant to delinquency than behavioural impulsiveness (based on test performance). Future time perception and delay of gratification tests were only weakly related to self-reported delinquency.

SOCIAL COGNITIVE SKILLS AND COGNITIVE THEORIES

Many researchers have argued that offenders use poor techniques of thinking and problem-solving in interpersonal situations (Blackburn 1993, pp. 204-209). Offenders are often said to be self-centred and callous, with low empathy. They are relatively poor at role-taking and perspective-taking, and may misinterpret other people's intentions. Their lack of awareness or sensitivity to other people's thoughts and feelings impairs their ability to form

relationships and to appreciate the effects of their behavior on other people. They show poor social skills in interpersonal interactions, fidgeting and avoiding eye contact rather than listening and paying attention.

It is further argued that offenders tend to believe that what happens to them depends on fate, chance, or luck, rather than on their own actions. Such thinking makes them feel that they are controlled by other people and by circumstances beyond their control. Hence, they think that there is no point in trying to succeed, so that they lack persistence in aiming to achieve goals. Arguably, offenders often externalize the blame for their acts to other people rather than taking responsibility themselves, and expect people to believe far-fetched stories. Furthermore, they fail to stop and think before acting and fail to learn from experience. These social cognitive deficits are linked to offenders' concrete as opposed to abstract thinking and their poor ability to manipulate abstract concepts (Ross and Ross, 1995). While this constellation of features fits in with many previously cited characteristics of offenders, it has to be said that the evidence in favour of some of them (e.g. the poor social skills of delinquents) is not convincing.

Perhaps the best developed theory to explain the development of social cognitive skills in relation to aggressive behaviour is the social information processing model of Dodge (1991). According to this, children respond to an environmental stimulus by (a) encoding relevant cues, (b) interpreting those cues, (c) retrieving possible behavioural responses from long-term memory, (d) considering the possible consequences of alternative responses, and (e) selecting and performing an act. According to Dodge, aggressive children are more likely to interpret cues as hostile, to retrieve aggressive alternative responses, and to evaluate the consequences of aggression as beneficial.

Huesmann and Eron (1984) put forward a cognitive script model, in which aggressive behaviour depends on stored behavioural repertoires (cognitive scripts) that have been learned during early development. In response to environmental cues,

possible cognitive scripts are retrieved and evaluated. The choice of aggressive scripts, which prescribe aggressive behaviour, depends on the past history of rewards and punishments, and on the extent to which children are influenced by immediate gratification as opposed to long-term consequences. According to Huesmann and Eron, the persisting trait of aggressiveness includes a collection of well-learned aggressive scripts that are resistant to change. Other theories focussing on the thinking processes of offenders are not reviewed here (e.g. the rational choice theory of Clarke and Cornish, 1985).

FAMILY RISK FACTORS

In this section, family factors are grouped into five categories: (a) criminal and antisocial parents; (b) large family size; (c) child-rearing methods (poor supervision, poor discipline, coldness and rejection, low parental involvement with the child); (d) abuse (physical or sexual) or neglect; and (e) disrupted families. Excluded are socio-economic factors such as low family income, low social class of the family, living in a poor neighbourhood and the residential mobility of the family.

CRIME RUNS IN FAMILIES

Criminal and antisocial parents tend to have delinquent and antisocial children, as shown in the classic longitudinal surveys by McCord (1977) in Boston and Robins (1979) in St. Louis. The most extensive research on the concentration of offending in families was carried out in the Cambridge Study. Having a convicted father, mother, brother or sister predicted a boy's own convictions, and all four relatives were independently important as predictors (Farrington *et al.*, 1996). For example, 63% of boys with convicted fathers were themselves convicted, compared with 30% of the remainder. Same-sex relationships were stronger than opposite-sex relationships, and older siblings were stronger predictors than younger siblings. Only 6% of the families accounted for half of all the convictions of all family members.

Similar results were obtained in the Pittsburgh Youth Study. Arrests of fathers,

mothers, brothers, sisters, uncles, aunts, grandfathers and grandmothers all predicted the boy's own delinquency (Farrington *et al.*, 2001). The most important relative was the father; arrests of the father predicted the boy's delinquency independently of all other arrested relatives. Only 8% of families accounted for 43% of arrested family members.

In the Cambridge Study, having a convicted parent or a delinquent older sibling by the tenth birthday were consistently among the best age 8-10 predictors of the boy's later offending and antisocial behaviour. Apart from behavioural measures such as troublesomeness, they were the strongest predictors of juvenile convictions (Farrington, 1992b). Having a convicted parent or a delinquent older sibling were also the best predictors, after poor parental supervision, of juvenile self-reported delinquency.

There are several possible explanations (which are not mutually exclusive) for why offending tends to be concentrated in certain families and transmitted from one generation to the next. First, there may be intergenerational continuities in exposure to multiple risk factors. For example, each successive generation may be entrapped in poverty, disrupted families, single and/or teenage parenting, and living in the most deprived neighbourhoods.

Second, the effect of a criminal parent on a child's offending may be mediated by environmental mechanisms. In the Cambridge Study, it was suggested that poor parental supervision was one link in the causal chain between criminal fathers and delinquent sons (West and Farrington, 1977, p.117).

Third, the effect of a criminal parent on a child's offending may be mediated by genetic mechanisms (Raine, 1993). In a convincing design comparing the concordance of identical twins reared together and identical twins reared apart, Grove *et al.* (1990) found that heritability was 41% for childhood conduct disorder and 28% for adult antisocial personality disorder, showing that the intergenerational transmission of offending was partly attributable to genetic factors. Fourth, criminal parents may tend to have delinquent children because of official (police and court) bias against criminal families, who also tend

to be known to official agencies because of other social problems. At all levels of self-reported delinquency in the Cambridge Study, boys with convicted fathers were more likely to be convicted themselves than were boys with unconvicted fathers (West and Farrington 1977, p. 118). However, this was not the only explanation for the link between criminal fathers and delinquent sons, because boys with criminal fathers had higher self-reported delinquency scores and higher teacher and peer ratings of bad behaviour.

LARGE FAMILY SIZE

Large family size (a large number of children in the family) is a relatively strong and highly replicable predictor of delinquency (Ellis, 1988). It was similarly important in the Cambridge and Pittsburgh studies, even though families were on average smaller in Pittsburgh in the 1990s than in London in the 1960s (Farrington and Loeber, 1999). In the Cambridge Study, if a boy had four or more siblings by his tenth birthday, this doubled his risk of being convicted as a juvenile (West and Farrington, 1973, p.31), and large family size predicted self-reported delinquency as well as convictions (Farrington, 1992b). It was the most important independent predictor of convictions up to age 32 in a logistic regression analysis; 58% of boys from large families were convicted up to this age (Farrington, 1993a).

In the National Survey of Health and Development, Wadsworth (1979) found that the percentage of boys who were officially delinquent increased from 9% for families containing one child to 24% for families containing four or more children. The Newsons in their Nottingham study also concluded that large family size was one of the most important predictors of offending (Newson *et al.*, 1993). A similar link between family size and antisocial behaviour was reported by Kolvin *et al.* (1988) in their follow-up of Newcastle children from birth to age 33, by Rutter *et al.* (1970) in the Isle of Wight survey, and by Ouston (1984) in the Inner London survey.

There are many possible reasons why a large number of siblings might increase the risk of a child's delinquency. Generally, as the number of children in a family increases, the amount of parental attention that can be given to each child decreases. Also, as the number of children increases, the household tends to become more overcrowded, possibly leading to increases in frustration, irritation and conflict. In the Cambridge Study, large family size did not predict delinquency for boys living in the least crowded conditions (West and Farrington, 1973, p.33). This suggests that household overcrowding might be an important intervening factor between large family size and delinquency.

Brownfield and Sorenson (1994) reviewed several possible explanations for the link between large families and delinquency, including those focussing on features of the parents (e.g. criminal parents, teenage parents), those focussing on parenting (e.g. poor supervision, disrupted families) and those focussing on economic deprivation or family stress. Another interesting theory suggested that the key factor was birth order: large families include more later-born children, who tend to be more delinquent. Based on an analysis of self-reported delinquency in a Seattle survey, they concluded that the most plausible intervening causal mechanism was exposure to delinquent siblings. In the Cambridge Study, co-offending by brothers was surprisingly common; about 20% of boys who had brothers close to them in age were convicted for a crime committed with their brother (Reiss and Farrington, 1991).

CHILD-REARING METHODS

Many different types of child-rearing methods predict a child's delinquency. The most important dimensions of child-rearing are supervision or monitoring of children, discipline or parental reinforcement, warmth or coldness of emotional relationships, and parental involvement with children. Parental supervision refers to the degree of monitoring by parents of the child's activities, and their degree of watchfulness or

vigilance. Of all these child-rearing methods, poor parental supervision is usually the strongest and most replicable predictor of offending (Smith and Stern, 1997; Farrington and Loeber, 1999). Many studies show that parents who do not know where their children are when they are out, and parents who let their children roam the streets unsupervised from an early age, tend to have delinquent children. For example, in the classic Cambridge-Somerville study in Boston, poor parental supervision in childhood was the best predictor of both violent and property crimes up to age 45 (McCord, 1979).

Parental discipline refers to how parents react to a child's behaviour. It is clear that harsh or punitive discipline (involving physical punishment) predicts a child's delinquency, as the review by Haapasalo and Pokela (1999) showed. In their follow-up study of nearly 700 Nottingham children, John and Elizabeth Newson (1989) found that physical punishment at ages 7 and 11 predicted later convictions; 40% of offenders had been smacked or beaten at age 11, compared with 14% of non-offenders. Erratic or inconsistent discipline also predicts delinquency (West and Farrington, 1973, p.51). This can involve either erratic discipline by one parent, sometimes turning a blind eye to bad behaviour and sometimes punishing it severely, or inconsistency between two parents, with one parent being tolerant or indulgent and the other being harshly punitive. It is not clear whether unusually lax discipline predicts delinquency. Just as inappropriate methods of responding to bad behaviour predict delinquency, low parental reinforcement (not praising) of good behaviour is also a predictor (Farrington and Loeber, 1999).

Cold, rejecting parents tend to have delinquent children, as McCord (1979) found 20 years ago in the Cambridge-Somerville study. More recently, she concluded that parental warmth could act as a protective factor against the effects of physical punishment (McCord, 1997). Whereas 51% of boys with cold physically punishing mothers were convicted in her study, only 21% of boys with warm physically punishing mothers were

convicted, similar to the 23% of boys with warm non-punitive mothers who were convicted. The father's warmth was also a protective factor against the father's physical punishment.

Low parental involvement in the child's activities predicts delinquency, as the Newsons found in their Nottingham survey (Lewis *et al.*, 1982). In the Cambridge Study, having a father who never joined in the boy's leisure activities doubled his risk of conviction (West and Farrington, 1973, p.57), and this was the most important predictor of persistence in offending after age 21 as opposed to desistance (Farrington and Hawkins, 1991).

Most explanations of the link between child-rearing methods and delinquency focus on attachment or social learning theories. Attachment theory was inspired by the work of Bowlby (1951), and suggests that children who are not emotionally attached to warm, loving and law-abiding parents tend to become delinquent (Carlson and Sroufe, 1995). The sociological equivalent of attachment theory is social bonding theory, which proposes that delinquency depends on the strength or weakness of a child's bond to society (Catalano and Hawkins, 1996).

Social learning theories (Patterson, 1982, 1995) suggest that children's behaviour depends on parental rewards and punishments and on the models of behaviour that parents represent. Children will tend to become delinquent if parents do not respond consistently and contingently to their antisocial behaviour and if parents themselves behave in an antisocial manner. These theories have inspired the use of parent training methods to prevent delinquency (see later).

CHILD ABUSE AND NEGLECT

Children who are physically abused or neglected tend to become offenders later in life (Malinosky-Rummell and Hansen, 1993). The most famous demonstration of this was completed by Widom (1989) in Indianapolis. She used court records to identify over 900 children who had been abused or neglected before age 11, and compared them with a

control group matched on age, race, gender, elementary school class and place of residence. A 20-year follow-up showed that the children who were abused or neglected were more likely to be arrested as juveniles and as adults than were the controls, and they were more likely to be arrested for juvenile violence (Maxfield and Widom, 1996). Child sexual abuse, and child physical abuse and neglect, also predict adult arrests for sex crimes (Widom and Ames, 1994).

Similar results have been obtained in other studies. In the Cambridge-Somerville study in Boston, McCord (1983) found that about half of the abused or neglected boys were convicted for serious crimes, became alcoholics or mentally ill, or died before age 35. In the Rochester Youth Development Study, which is a prospective longitudinal survey of about 1,000 children originally aged 12-14, Smith and Thornberry (1995) showed that recorded child maltreatment under age 12 (physical, sexual or emotional abuse or neglect) predicted later self-reported and official delinquency. Furthermore, these results held up after controlling for gender, race, socio-economic status and family structure.

Numerous theories have been put forward to explain the link between child abuse and later offending. Brezina (1998) described three of the main ones. Social learning theory suggests that children learn to adopt the abusive behaviour patterns of their parents through imitation, modelling and reinforcement. Attachment or social bonding theory proposes that child maltreatment results in low attachment to parents and hence to low self-control. Strain theory posits that negative treatment by others generates negative emotions such as anger and frustration, which in turn lead to a desire for revenge and increased aggression. Based on analyses of the Youth in Transition study, Brezina found limited support for all three theories.

DISRUPTED FAMILIES

Most studies of broken homes have focussed on the loss of the father rather than the mother, because the loss of a father is much more common. In general, it is found that children who are separated from a biological parent are more likely to offend than children from intact families. For example, in their birth cohort study of over 800 children born in Newcastle-upon-Tyne, Kolvin *et al.* (1988) discovered that boys who experienced divorce or separation in their first five years of life had a doubled risk of conviction up to age 32.

McCord (1982) in Boston carried out an interesting study of the relationship between homes broken by loss of the biological father and later serious offending by boys. She found that the prevalence of offending was high for boys from broken homes without affectionate mothers (62%) and for those from unbroken homes characterized by parental conflict (52%), irrespective of whether they had affectionate mothers. The prevalence of offending was low for those from unbroken homes without conflict (26%) and – importantly – equally low for boys from broken homes with affectionate mothers (22%). These results suggest that it might not be the broken home which is criminogenic but the parental conflict which often causes it. They also suggest that a loving mother might in some sense be able to compensate for the loss of a father.

In the Cambridge Study, both permanent and temporary (more than one month) separations before age 10 predicted convictions and self-reported delinquency, providing that they were not caused by death or hospitalization (Farrington, 1992b). However, homes broken at an early age (under age 5) were not unusually criminogenic (West and Farrington, 1973). Separation before age 10 predicted both juvenile and adult convictions (Farrington, 1992a), and was an important independent predictor of adult social dysfunction and spouse assault at age 32 (Farrington, 1993a, 1994).

The importance of the cause of the broken home is also shown in the National Survey of Health and Development, which is a survey of over 5,000 children born in one

week in England, Scotland or Wales (Wadsworth, 1979). Boys from homes broken by divorce or separation had an increased likelihood of being convicted or officially cautioned up to age 21 (27%) in comparison with those from homes broken by death of the mother (19%), death of the father (14%) or from unbroken homes (14%). Homes broken while the boy was under age 5 especially predicted delinquency, while homes broken while the boy was between ages 11 and 15 were not particularly criminogenic. Remarriage (which happened more often after divorce or separation than after death) was also associated with an increased risk of delinquency, suggesting a negative effect of step-parents. The meta-analysis by Wells and Rankin (1991) also shows that broken homes are more strongly related to delinquency when they are caused by parental separation or divorce rather than by death.

In the Dunedin Study in New Zealand, boys from single parent families were disproportionately likely to be convicted; 28% of violent offenders were from single parent families, compared with 17% of non-violent offenders and 9% of unconvicted boys (Henry *et al.*, 1996). Based on analyses of four surveys (including the Cambridge Study), Morash and Rucker (1989) concluded that the combination of teenage child-bearing and a single-parent female-headed household was especially conducive to the development of offending in children. Later analyses of the Cambridge Study showed that teenage child-bearing combined with a large number of children particularly predicted offending by the children (Nagin *et al.*, 1997).

Much research suggests that frequent changes of parent figures predict offending by children. In a longitudinal survey of a birth cohort of over 500 Copenhagen males, Mednick *et al.* (1990) found that divorce followed by changes in parent figures predicted the highest rate of offending by children (65%), compared with divorce followed by stability (42%) and no divorce (28%). In the Dunedin study in New Zealand, Henry *et al.* (1993) reported that both parental conflict and many changes of the child's primary caretaker

predicted the child's antisocial behaviour up to age 11. However, in the Christchurch study in New Zealand, Fergusson *et al.* (1992) showed that parental transitions in the absence of parental conflict did not predict an increased risk of child offending. Also, in the Oregon Youth Study, Capaldi and Patterson (1991) concluded that antisocial mothers caused parental transitions which in turn caused child antisocial behaviour.

Explanations of the relationship between disrupted families and delinquency fall into three major classes. Trauma theories suggest that the loss of a parent has a damaging effect on a child, most commonly because of the effect on attachment to the parent. Life course theories focus on separation as a sequence of stressful experiences, and on the effects of multiple stressors such as parental conflict, parental loss, reduced economic circumstances, changes in parent figures and poor child-rearing methods. Selection theories argue that disrupted families produce delinquent children because of pre-existing differences from other families in risk factors such as parental conflict, criminal or antisocial parents, low family income or poor child-rearing methods.

Hypotheses derived from the three theories were tested in the Cambridge Study (Juby and Farrington, 2001). While boys from broken homes (permanently disrupted families) were more delinquent than boys from intact homes, they were not more delinquent than boys from intact high conflict families. Interestingly, this result was replicated in Switzerland (Haas *et al.*, 2004). Overall, the most important factor was the post-disruption trajectory. Boys who remained with their mother after the separation had the same delinquency rate as boys from intact low conflict families. Boys who remained with their father, with relatives or with others (e.g. foster parents) had high delinquency rates. It was concluded that the results favoured life course theories rather than trauma or selection theories.

EXPLAINING DEVELOPMENT AND RISK FACTORS

KEY INDEPENDENT PREDICTORS

In explaining the development of offending, a major problem is that most risk factors tend to coincide and tend to be inter-related. For example, adolescents living in physically deteriorated and socially disorganized neighbourhoods disproportionately tend also to come from families with poor parental supervision and erratic parental discipline and tend also to have high impulsivity and low intelligence. The concentration and co-occurrence of these kinds of adversities makes it difficult to establish their independent, interactive and sequential influences on offending and antisocial behaviour. Hence, any theory of the development of offending is inevitably speculative in the present state of knowledge.

A first step is to establish which factors predict offending independently of other factors. In the Cambridge Study, it was generally true that each of six categories of variables (impulsivity, intelligence or attainment, poor parenting, criminal family, socio-economic deprivation, child antisocial behaviour) predicted offending independently of each other category (Farrington, 1990b). For example, the independent predictors of convictions between ages 10 and 20 included high daring, low school attainment, poor parental child rearing, a convicted parent, poor housing and troublesomeness (Farrington and Hawkins, 1991). Hence, it might be concluded that impulsivity, low intelligence, poor parenting, a criminal family and socio-economic deprivation, despite their inter-relations, all contribute independently to the development of delinquency. Any theory needs to give priority to explaining these results.

THE INTEGRATED COGNITIVE ANTISOCIAL POTENTIAL (ICAP) THEORY

The modern trend is to try to achieve increased explanatory power by integrating propositions derived from several earlier theories (Catalano and Hawkins, 1996). My own theory of male offending and antisocial behaviour (Farrington, 2005b) is also integrative, and it distinguishes explicitly between the development of underlying antisocial tendencies and

the occurrence of antisocial acts.

Figure 1 shows the key elements of this theory, which was primarily designed to explain offending by lower class males. I have called it the “Integrated Cognitive Antisocial Potential” (ICAP) theory. It integrates ideas from many other theories, including strain, control, learning, labelling and rational choice approaches (see Agnew, 2002); its key construct is antisocial potential (AP); and it assumes that the translation from antisocial potential to antisocial behaviour depends on cognitive (thinking and decision-making) processes that take account of opportunities and victims. Figure 1 is deliberately simplified in order to show the key elements of the ICAP theory on one sheet of paper; for example, it does not show how the processes operate differently for onset compared with desistance or at different ages.

The key construct underlying offending is antisocial potential (AP), which refers to the potential to commit antisocial acts. “Offending” refers to the most common crimes of theft, burglary, robbery, violence, vandalism, minor fraud and drug use, and to behaviour that in principle might lead to a conviction in Western industrialized societies such as the United States and the United Kingdom. Long-term persisting between-individual differences in AP are distinguished from short-term within-individual variations in AP. Long-term AP depends on impulsiveness, on strain, modelling and socialization processes, and on life events, while short-term variations in AP depend on motivating and situational factors.

Regarding long-term AP, people can be ordered on a continuum from low to high. The distribution of AP in the population at any age is highly skewed; relatively few people have relatively high levels of AP. People with high AP are more likely to commit many different types of antisocial acts including different types of offences. Hence, offending and antisocial behaviour are versatile not specialized. The relative ordering of people on AP (long-term between-individual variation) tends to be consistent over time, but absolute

levels of AP vary with age, peaking in the teenage years, because of changes within individuals in the factors that influence long-term AP (e.g. from childhood to adolescence, the increasing importance of peers and decreasing importance of parents).

Figure 1 shows how risk factors are hypothesized to influence long-term AP. Following strain theory, the main energizing factors that potentially lead to high long-term AP are desires for material goods, status among intimates, excitement and sexual satisfaction. However, these motivations only lead to high AP if antisocial methods of satisfying them are habitually chosen. Antisocial methods tend to be chosen by people who find it difficult to satisfy their needs legitimately, such as people with low income, unemployed people, and those who fail at school. However, the methods chosen also depend on physical capabilities and behavioural skills; for example, a 5-year-old would have difficulty in stealing a car. For simplicity, energizing and directing processes and capabilities are shown in one box in Figure 1. Ideally, I should develop an electronic map of my theory that allows people to click on different boxes to see more underlying detail, as with electronic street maps.

Long-term AP also depends on attachment and socialization processes. AP will be low if parents consistently and contingently reward good behaviour and punish bad behaviour. (Withdrawal of love may be a more effective method of socialization than hitting children.) Children with low anxiety will be less well socialized, because they care less about parental punishment. AP will be high if children are not attached to (prosocial) parents, for example if parents are cold and rejecting. Disrupted families (broken homes) may impair both attachment and socialization processes.

Long-term AP will also be high if people are exposed to and influenced by antisocial models, such as criminal parents, delinquent siblings, and delinquent peers, for example in high crime schools and neighbourhoods. Long-term AP will also be high for impulsive people, because they tend to act without thinking about the consequences. Also, life

events affect AP; it decreases (at least for males) after people get married or move out of high crime areas, and it increases after separation from a partner.

According to the ICAP theory, the commission of offences and other types of antisocial acts depends on the interaction between the individual (with his immediate level of AP) and the social environment (especially criminal opportunities and victims). Short-term AP varies within individuals according to short-term energizing factors such as being bored, angry, drunk, or frustrated, or being encouraged by male peers. Criminal opportunities and the availability of victims depend on routine activities. Encountering a tempting opportunity or victim may cause a short-term increase in AP, just as a short-term increase in AP may motivate a person to seek out criminal opportunities and victims.

Whether a person with a certain level of AP commits a crime in a given situation depends on cognitive processes, including considering the subjective benefits, costs and probabilities of the different outcomes and stored behavioural repertoires or scripts. The subjective benefits and costs include immediate situational factors such as the material goods that can be stolen and the likelihood and consequences of being caught by the police. They also include social factors such as likely disapproval by parents or female partners, and encouragement or reinforcement from peers. In general, people tend to make decisions that seem rational to them, but those with low levels of AP will not commit offences even when (on the basis of subjective expected utilities) it appears rational to do so. Equally, high short-term levels of AP (e.g. caused by anger or drunkenness) may induce people to commit offences when it is not rational for them to do so.

The consequences of offending may, as a result of a learning process, lead to changes in long-term AP and in future cognitive decision-making processes. This is especially likely if the consequences are reinforcing (e.g. gaining material goods or peer approval) or punishing (e.g. receiving legal sanctions or parental disapproval). Also, if the consequences involve labelling or stigmatizing the offender, this may make it more difficult

for him to achieve his aims legally, and hence may lead to an increase in AP. (It is difficult to show these feedback effects in Figure 1 without making it very complex.)

Farrington (2003a, 2005b) has described how this theory explains and predicts key results from developmental and life-course criminology. For reviews of other developmental and life-course theories, see Farrington (2005a).

RISK-FOCUSSED PREVENTION

Within the limited space available, it is not feasible to present an exhaustive or systematic review of the effectiveness of risk-focussed interventions to reduce crime. In particular, I will not focus on interventions that do not work. Instead, a selection of some of the most effective programmes will be described, with special reference to programmes that have carried out a cost-benefit analysis. As far as possible, programme elements will be linked to risk factors, but there is often only a tenuous link between risk factors and prevention programmes. As mentioned, many programmes have multiple components, making it difficult to isolate their "active ingredients".

The most important risk-focussed prevention programmes that have been targeted on individual and family risk factors use skills training, general parent education, parent training, pre-school intellectual enrichment programmes, and some combination of these (multi-component programmes). The most convincing evidence of the effectiveness of these programmes has been obtained in randomized experiments (for reviews of such experiments, see Farrington and Welsh, 2005, 2006). Programmes that have proved to be effective in high quality evaluation research are reviewed here (see also Lipsey and Wilson, 1998; Farrington and Welsh, 2003).

SKILLS TRAINING

The most important prevention techniques that target the risk factors of impulsiveness and low empathy are cognitive-behavioural skills training programmes (see also Hollin, this volume). For example, Ross and Ross (1995) devised a programme that aimed to teach

people to stop and think before acting, to consider the consequences of their behaviour, to conceptualise alternative ways of solving interpersonal problems, and to consider the impact of their behaviour on other people, especially victims. It included social skills training, lateral thinking (to teach creative problem solving), critical thinking (to teach logical reasoning), values education (to teach values and concern for others), assertiveness training (to teach non-aggressive, socially appropriate ways to obtain desired outcomes), negotiation skills training, interpersonal cognitive problem-solving (to teach thinking skills for solving interpersonal problems), social perspective training (to teach how to recognise and understand other people's feelings), role-playing and modelling (demonstration and practice of effective and acceptable interpersonal behaviour).

Ross and Ross (1988) implemented this "Reasoning and Rehabilitation" programme in Ottawa, and found (in a randomized experiment) that it led to a large decrease in reoffending for a small sample of adult offenders in a short 9-month follow-up period. Their training was carried out by probation officers, but they believed that it could be carried out by parents or teachers. This programme has been implemented widely in several different countries, and forms the basis of many accredited cognitive-behavioural programmes used in the UK prison and probation services, including the Pathfinder projects (McGuire, 2001).

A similar programme, entitled "Straight thinking on Probation" was implemented in Glamorgan by Raynor and Vanstone (2001; see also Raynor, this volume). Offenders who received skills training were compared with similar offenders who received custodial sentences. After one year, offenders who completed the programme had a lower reconviction rate than control offenders (35% as opposed to 49%), although both had the same predicted reconviction rate of 42%. The benefits of the programme had worn off at the two-year follow-up point, when reconviction rates of experimentals (63%) and controls (65%) were similar to each other and to predicted rates. However, the reconvicted experimentals committed less serious crimes than the reconvicted controls.

Tong and Farrington (2006) completed a systematic review of the effectiveness of “Reasoning and Rehabilitation” in reducing offending. They located 26 comparisons of experimental and control groups in four countries. Their meta-analysis showed that, overall, there was a significant 14% decrease in offending for programme participants compared with controls.

Lösel and Beelman (2006) completed a systematic review of the effectiveness of skills training with children. They located 89 comparisons of experimental and control groups. Their meta-analysis showed that, overall, there was a significant 10% decrease in delinquency in follow-up studies for children who received skills training compared with controls. The greatest effect was for cognitive-behavioural skills training, where there was an average 25% decrease in delinquency in seven follow-up studies.

PARENT EDUCATION

Many types of parent education programmes have been implemented to tackle family risk factors such as poor child-rearing and poor parental supervision. In the most famous intensive home-visiting programme, Olds *et al.* (1986) in Elmira (New York) randomly allocated 400 mothers either to receive home visits from nurses during pregnancy, or to receive visits both during pregnancy and during the first two years of life, or to a control group who received no visits. Each visit lasted about one and a quarter hours, and the mothers were visited on average every two weeks. The home visitors gave advice about prenatal and postnatal care of the child, about infant development, and about the importance of proper nutrition and the avoidance of smoking and drinking during pregnancy.

The results of this experiment showed that the postnatal home visits caused a decrease in recorded child physical abuse and neglect during the first two years of life, especially by poor unmarried teenage mothers; 4% of visited versus 19% of non-visited mothers of this type were guilty of child abuse or neglect. This last result is important

because (as mentioned above) children who are physically abused or neglected tend to become violent offenders later in life. In a 15-year follow-up, the main focus was on lower class unmarried mothers. Among these mothers, those who received prenatal and postnatal home visits had fewer arrests than those who received prenatal visits or no visits (Olds *et al.* 1997). Also, children of these mothers who received prenatal and/or postnatal home visits had less than half as many arrests as children of mothers who received no visits (Olds *et al.*, 1998).

Several economic analyses show that the monetary benefits of this programme outweighed its costs for the lower class unmarried mothers. The most important are by Greenwood *et al.* (2001) and Aos *et al.* (2004). However, both measured only a limited range of benefits. Greenwood and his colleagues measured only benefits to the government or taxpayer (welfare, education, employment, and criminal justice), not benefits to crime victims consequent upon reduced crimes. Aos and his colleagues measured benefits to crime victims (tangible, not intangible) and benefits to the government or taxpayer from savings in criminal justice, welfare, education and unemployment costs. Nevertheless, both reported a benefit:cost ratio greater than 1 for this programme: 4 according to Greenwood *et al.* and 2.9 according to Aos *et al.*

To test the generalizability of the results of the Elmira study, two urban replications are currently under way: one in Memphis, Tennessee (Olds *et al.*, 2004a), and the other in Denver, Colorado (Olds *et al.*, 2004b). Early follow-up results from both replications (four and two years after programme completion, respectively) show improvements on a wide range of outcomes for both nurse-visited mothers and their children compared to their control counterparts.

PARENT TRAINING

Parent training is also an effective method of preventing offending. Many different types of parent training have been used, but the behavioural parent management training

developed by Patterson (1982) in Oregon is one of the best known approaches. His careful observations of parent-child interaction showed that parents of antisocial children were deficient in their methods of child rearing. These parents failed to tell their children how they were expected to behave, failed to monitor their behaviour to ensure that it was desirable, and failed to enforce rules promptly and unambiguously with appropriate rewards and penalties. The parents of antisocial children used more punishment (such as scolding, shouting, or threatening), but failed to make it contingent on the child's behaviour.

Patterson attempted to train these parents in effective child rearing methods, namely noticing what a child is doing, monitoring behaviour over long periods, clearly stating house rules, making rewards and punishments contingent on behaviour, and negotiating disagreements so that conflicts and crises did not escalate. His treatment was shown to be effective in reducing child stealing and antisocial behaviour over short periods in small-scale studies (Dishion *et al.*, 1992; Patterson *et al.*, 1982, 1992).

Other important parent training programmes that have been used in the United Kingdom include Triple-P (Sanders *et al.*, 2000) and The Incredible Years (Webster-Stratton, 2000). The Webster-Stratton programme was shown to reduce childhood antisocial behaviour in an experiment conducted by Scott *et al.* (2001) in London and Chichester. About 140 mainly poor, disadvantaged children aged 3-8 referred for aggressive and antisocial behaviour were allocated to experimental (parent training) or control (waiting list) groups. The parent training programme, based on videotapes, was given for two hours a week over 13-16 weeks, covering praise and rewards, setting limits, and handling misbehaviour. Follow-up parent interviews and observations showed that the antisocial behaviour of the experimental children decreased significantly compared to that of the controls. Furthermore, after the intervention, experimental parents gave their children far more praise to encourage desirable behaviour, and used more effective

commands to obtain compliance.

The Montreal longitudinal-experimental study used a multi-modal intervention based on child skills training and parent management training. Tremblay *et al.* (1995) identified disruptive (aggressive/hyperactive) boys at age 6, and randomly allocated over 300 of these to experimental or control conditions. Between ages 7 and 9, the experimental group received training designed to foster social skills and self-control. Coaching, peer modelling, role playing, and reinforcement contingencies were used in small group sessions on such topics as 'how to help', 'what to do when you are angry' and 'how to react to teasing'. Also, their parents were trained using the parent management training techniques developed by Patterson (1982). Parents were taught to provide positive reinforcement for desirable behaviour, to use non-punitive and consistent disciplinary practices, and to develop family crisis management techniques.

This prevention programme was quite successful. By age 12, the experimental boys committed less burglary and theft, were less likely to get drunk, and were less likely to be involved in fights than the controls (according to self-reports). Also, the experimental boys had higher school achievements. At every age from 10 to 15, the experimental boys had lower self-reported delinquency scores than the control boys. Interestingly, the differences in antisocial behaviour between experimental and control boys increased as the follow-up progressed. The experimental boys were also less likely to be gang members and to take drugs, but they were not significantly different from the controls in having sexual intercourse by age 15 (Tremblay *et al.*, 1995, 1996). Later analyses have shown differences between experimental and control boys in trajectories of delinquency (Vitaro *et al.*, 2001) and aggression, vandalism, and theft (Lacourse *et al.*, 2002).

PRE-SCHOOL PROGRAMMES

Several pre-school programmes have been designed to enhance cognitive abilities, intelligence and attainment. The most famous pre-school intellectual enrichment

programme is the Perry project carried out in Ypsilanti (Michigan) by Schweinhart and Weikart (1980). This was essentially a "Head Start" programme targeted on disadvantaged African American children, who were allocated to experimental and control groups. The experimental children attended a daily pre-school programme, backed up by weekly home visits, usually lasting two years (covering ages 3-4). The aim of the "plan-do-review" programme was to provide intellectual stimulation, to increase thinking and reasoning abilities, and to increase later school achievement.

This programme had long-term benefits. Berrueta-Clement *et al.* (1984) showed that, at age 19, the experimental group was more likely to be employed, more likely to have graduated from high school, more likely to have received college or vocational training, and less likely to have been arrested. By age 27, the experimental group had accumulated only half as many arrests on average as the controls (Schweinhart *et al.*, 1993). Also, they had significantly higher earnings and were more likely to be home owners. More of the experimental women were married, and fewer of their children were born out of wedlock.

The most recent follow-up of this programme at age 40 found that it continued to make an important difference in the lives of the participants (Schweinhart *et al.*, 2005). Compared to the control group, those who received the programme had significantly fewer life-time arrests for violent crimes (32% vs. 48%), property crimes (36% vs. 58%), and drug crimes (14% vs. 34%), and they were significantly less likely to be arrested five or more times (36% vs. 55%). Improvements were also recorded in many other important life course outcomes. For example, significantly higher levels of schooling (77% vs. 60% graduating from high school), better records of employment (76% vs. 62%), and higher annual incomes were reported by the programme group compared to the controls.

Several economic analyses show that the monetary benefits of this programme outweighed its costs. The Perry project's own calculation (Barnett, 1993) included crime and non-crime benefits, intangible costs to victims, and projected benefits beyond age 27. This

generated the famous benefit: cost ratio of 7.2 mentioned earlier. Most of the benefits (65%) were derived from savings to crime victims. A cost-benefit analysis at age 40 found that the programme produced just over \$17 in benefits per dollar of cost, with 76% of this accruing to the general public because of savings in crime, education and welfare costs and increased tax revenue, and 24% resulting from benefits to programme participants.

Desirable results were also obtained in evaluations of other pre-school programmes (e.g. Reynolds *et al.*, 2001; Campbell *et al.*, 2002). Also, a large-scale study by Garces *et al.* (2002) found that children who attended Head Start programmes (at ages 3 to 5) were significantly less likely to report being arrested or referred to court for a crime by ages 18 to 30 compared to their siblings who did not attend these programmes.

MULTIPLE-COMPONENT PROGRAMMES

One of the most important school-based prevention experiments was carried out in Seattle by Hawkins *et al.* (1991). This was a multiple-component programme combining parent training, teacher training and child skills training. About 500 first grade children (aged 6) in 21 classes in 8 schools were randomly assigned to be in experimental or control classes. The children in the experimental classes received special treatment at home and school which was designed to increase their attachment to their parents and their bonding to the school. Also, they were trained in interpersonal cognitive problem-solving. Their parents were trained to notice and reinforce socially desirable behaviour in a programme called "Catch them being good". Their teachers were trained in classroom management, for example to provide clear instructions and expectations to children, to reward children for participation in desired behaviour, and to teach children prosocial (socially desirable) methods of solving problems.

This programme had long-term benefits. O'Donnell *et al.* (1995) focussed on children in low income families and reported that, in the sixth grade (age 12), experimental boys were less likely to have initiated delinquency, while experimental girls were less likely

to have initiated drug use. In the latest follow-up, Hawkins *et al.* (1999) found that, at age 18, the full intervention group (receiving the intervention from grades 1-6) admitted less violence, less alcohol abuse and fewer sexual partners than the late intervention group (grades 5-6 only) or the controls. The benefit: cost ratio of this programme according to Aos *et al.* (2001) was 4.3.

In general, multiple-component programmes, including individual, family, school and community interventions, are more effective than programmes with only one of these components (Wasserman and Miller, 1998). Multi-Systemic Therapy (MST) is an increasingly popular multiple-component intervention designed for serious juvenile offenders (Henggeler *et al.*, 1998). The particular type of treatment is chosen according to the needs of the young person, and it may include individual, family, peer, school, and community interventions (including parent training and skills training).

Henggeler *et al.* (1993) completed the first experimental test of MST. This evaluation, with 84 juvenile offenders, showed that (compared with out-of-home placement) MST was followed by fewer arrests (at immediate outcome and at two years post-treatment), lower self-reported delinquency, less peer-oriented aggression, and improvements in the functioning of the family unit as a whole, as measured by the outcome of family cohesion.

There have been five later large-scale experiments on MST. Four of the five trials, all carried out by Henggeler (the originator of this treatment) and his colleagues, found that the intervention was effective in reducing later offending (Borduin *et al.*, 1995; Henggeler *et al.* 1997, 1999, 2002). Borduin and his colleagues (1995) reported that MST caused a 63% reduction in the prevalence of arrests, while the reduction was 56% in the Henggeler *et al.* (2002) study. For two of the programmes (Borduin *et al.*, 1995; Henggeler *et al.*, 1999), improvements were also found in the functioning of the family unit as a whole, as measured by the outcome of family cohesion.

However, the one large-scale independent evaluation of MST, by Leschied and Cunningham (2002) in Canada, did not find that it was effective in reducing later convictions (compared with the usual community services, which typically involved probation supervision); the MST group were 10% more likely to be convicted within 12 months. Also, two meta-analyses of the effectiveness of MST came to diametrically opposite conclusions. Curtis *et al.* (2004) found that it was effective, while Littell (2005) concluded that it was not. Nevertheless, MST is a promising intervention technique, and it is being used in the United Kingdom (Jefford and Squire, 2004).

One of the best ways of achieving risk-focussed prevention is through multiple-component community-based programmes including several of the successful interventions listed above, and *Communities That Care* (CTC) has many attractions (Farrington, 1996). Perhaps more than any other programme, it is evidence-based and systematic: the choice of interventions depends on empirical evidence about what are the important risk and protective factors in a particular community and on empirical evidence about "What works". It has been implemented in at least 35 sites in England, Scotland and Wales, and also in the Netherlands and Australia (Communities that Care, 1997; Utting, 1999). Unfortunately, it is difficult to draw any conclusions from the evaluation of three UK CTC projects by Crow *et al.* (2004) because of implementation problems. While the effectiveness of the overall CTC strategy has not yet been demonstrated, the effectiveness of its individual components is clear (Harachi *et al.* 2003).

CONCLUSIONS

RESEARCH IMPLICATIONS

A great deal has been learned in the last 20 years, particularly from prospective longitudinal surveys, about childhood risk factors for offending and other types of

antisocial behaviour. Offenders differ significantly from non-offenders in many respects, including impulsiveness, intelligence, family background and socio-economic deprivation. These differences are often present before, during and after criminal careers. More research is needed to elucidate the causal chains that link these factors with antisocial behaviour, the ways in which these factors have independent, interactive or sequential effects, and developmental sequences leading to persistent offending. Since most is known about risk factors for prevalence and onset, more research is needed on risk factors for frequency, duration, escalation and desistance.

Existing British longitudinal surveys of offending were often conducted many years ago when social conditions were very different, and results are often based on Caucasian males living in cities. New prospective longitudinal surveys are needed to take account of the increasing ethnic diversity of the population, to advance knowledge about risk factors for girls and in non-urban areas, and especially to advance knowledge about protective factors that prevent offending. The new Peterborough longitudinal survey directed by P-O. H. Wikström is particularly welcome. However, new surveys are also required that begin in childhood, preferably under age 5. In addition, it would be highly desirable to collect information about delinquency in an existing survey such as the Avon Longitudinal Study of Parents and Children (e.g. O'Connor *et al.*, 2002). Particular efforts should be made to investigate the effects of life events on the course of development of offending.

Only recently have longitudinal researchers begun to pay sufficient attention to neighbourhood and community factors, and there is still a great need for them to investigate immediate situational influences on offending (Farrington *et al.*, 1993; Wikström *et al.* 1995). Existing research tells us more about the development of criminal potential than about how that potential becomes the actuality of offending in any given situation. Research on immediate situational influences on offending should be included in new longitudinal studies, to link up the developmental and situational approaches.

High quality experimental and quasi-experimental evaluations of the effectiveness of crime reduction programmes are needed in the United Kingdom. Most knowledge about the effectiveness of prevention programmes, such as cognitive-behavioural skills training, parent training and pre-school intellectual enrichment programmes, is based on American research. Ideally, prevention programmes should aim not only to tackle risk factors but also to strengthen protective factors, and both risk and protective factors should be measured and targeted. An important development in recent years has been the increasing use of cost-benefit analysis in evaluating prevention programmes. Cost-benefit analyses of the effectiveness of prevention programmes should be given some priority, and a standard how-to-do-it manual should be developed.

It is hard to evaluate large scale crime reduction strategies, and to answer questions about whether it is better (in terms of crimes saved per £ spent, for example) to invest in risk-focussed early prevention, in physical or situational prevention, in more police officers or in more prison cells. Nevertheless, this question is of vital importance to government policy makers and to the general population. Therefore, research is needed to investigate the cost-effectiveness of risk-focussed prevention in comparison with other general crime reduction strategies.

POLICY IMPLICATIONS

Consideration should be given to implementing a multiple component risk-focussed prevention programme such as CTC more widely throughout Great Britain. This programme could be implemented by existing Crime and Disorder Partnerships. However, they would need resources and technical assistance to conduct youth surveys and household surveys to identify key risk and protective factors for both people and places. They would also need resources and technical assistance to measure risk and protective factors, to choose effective intervention methods, and to carry out high quality evaluations of the effectiveness of programmes in reducing crime and disorder.

The focus should be on primary prevention -- offering the programme to all families living in specified areas -- not on secondary prevention -- targeting the programme on individuals identified as at risk. Ideally, the programme should be presented positively, as fostering safe and healthy communities by strengthening protective factors, rather than as a crime prevention programme targeting risk factors.

Nationally and locally, there is no agency whose main mandate is the primary prevention of crime. A national prevention agency could provide technical assistance, skills and knowledge to local agencies in implementing prevention programmes, could provide funding for such programmes, and could ensure continuity, co-ordination and monitoring of local programmes. It could provide training in prevention science for people in local agencies, and could maintain high standards for evaluation research. It could also act as a centre for the discussion of how policy initiatives of different government agencies influence crime and associated social problems. It could set a national and local agenda for research and practice in the prevention of crime, drug and alcohol abuse, mental health problems and associated social problems. National crime prevention agencies have been established in other countries, such as Sweden (Andersson, 2005) and Canada (Sansfacon and Waller, 2001).

A national agency could also maintain a computerized register of evaluation research and, like the National Institute of Clinical Excellence, advise the government about effective and cost-effective crime prevention programmes. Medical advice is often based on systematic reviews of the effectiveness of health care interventions organized by the Cochrane Collaboration and funded by the National Health Service. Systematic reviews of the evaluation literature on the effectiveness of criminological interventions, possibly organized by the Campbell Collaboration (Farrington and Petrosino, 2001), should be commissioned and funded by government agencies.

Crime prevention also needs to be organised locally. In each area, a local agency

should be established to take the lead in organising risk-focussed crime prevention. In Sweden, 80% of municipalities had local crime prevention councils in 2005 (Andersson, 2005). The local prevention agency could take the lead in measuring risk factors and social problems in local areas, using archival records and local household and school surveys. It could then assess available resources and develop a plan of prevention strategies. With specialist technical assistance, prevention programmes could be chosen from a menu of strategies that have been proved to be effective in reducing crime in well-designed evaluation research. This would be a good example of evidence-based practice.

Recent promising developments in the UK, such as “Sure Start” and *Every Child Matters* (Chief Secretary to the Treasury, 2003) have clearly been influenced by recent research on childhood risk factors and risk-focussed intervention strategies. The time is ripe to expand these experimental programmes into a large-scale evidence-based integrated national strategy for the reduction of crime and associated social problems, including rigorous evaluation requirements.

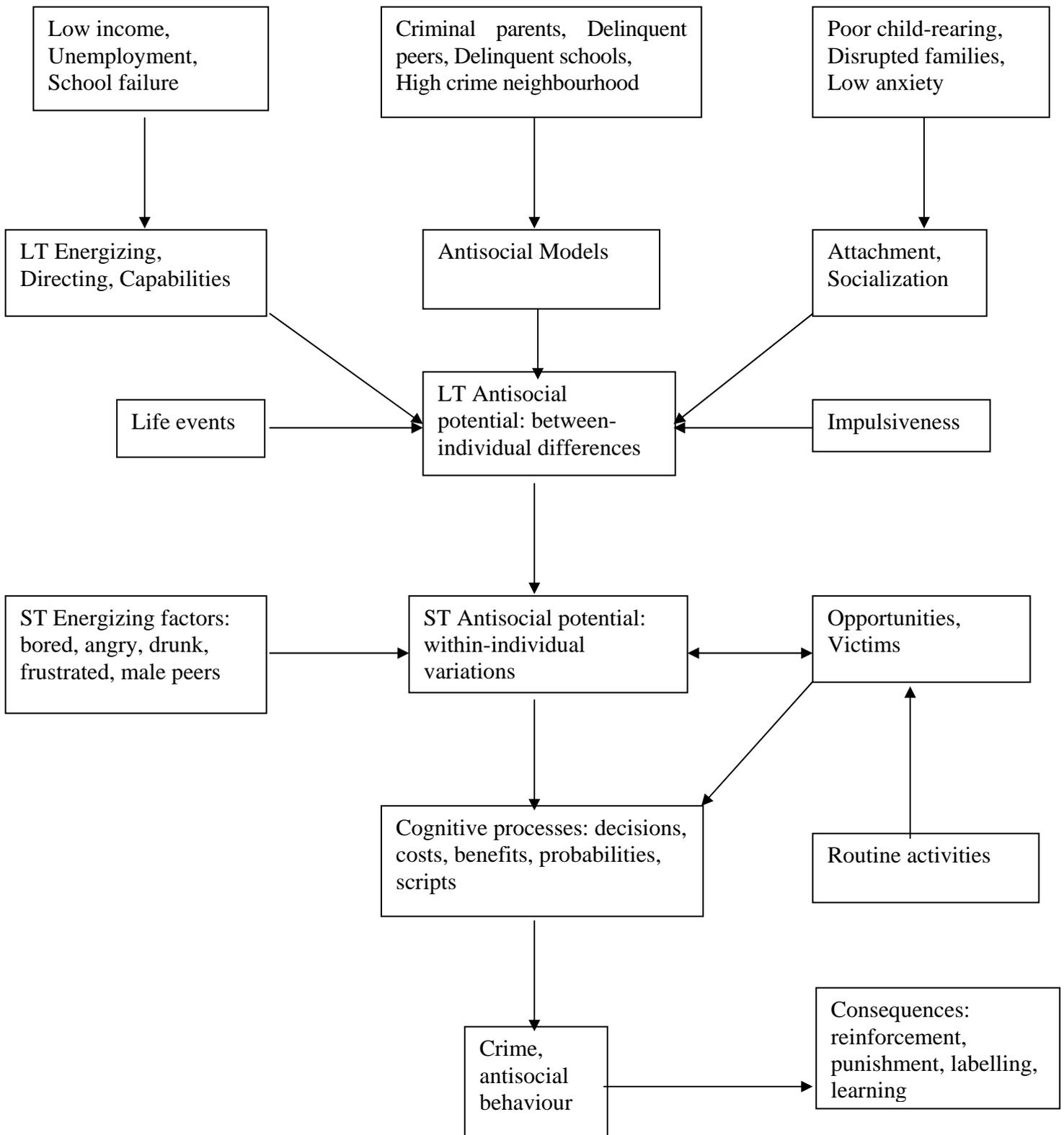
Selected Further Reading

Farrington and Welsh (2007) have completed a book-length review of risk factors and effective interventions, entitled *Saving Children from a Life of Crime* (Oxford University Press). Several of the most important prospective longitudinal surveys are described in detail in *Taking Stock of Delinquency* edited by Thornberry and Krohn (Kluwer/Plenum, 2003). Criminal career research is reviewed in *Key Issues in Criminal Career Research* by Piquero *et al.* (Cambridge University Press, 2007). Developmental criminology and its theories are explained in *Integrated Developmental and Life-course Theories of Offending* edited by Farrington (Transaction, 2005). Wide-ranging reviews of what works to prevent crime can be found in *Evidence-Based Crime Prevention* edited by Sherman *et al.* (Routledge, 2006). More recent systematic reviews of the effectiveness of interventions are presented in *Preventing Crime* edited by Welsh and Farrington (Springer, 2006). Much information about

risk factors and effective interventions can be found in *Serious and Violent Juvenile Offenders* (Sage, 1998) and *Child Delinquents* (Sage, 2001), both edited by Loeber and Farrington. Early prevention techniques in the childhood years are reviewed in *Early Prevention of Adult Antisocial Behaviour* edited by Farrington and Coid (Cambridge University Press, 2003) and *Support from the Start* edited by Sutton *et al.* (DFES, 2004). Cost-benefit analyses are reviewed in *Costs and Benefits of Preventing Crime* edited by Welsh *et al.* (Westview, 2001) and in *Changing Lives* by Greenwood (University of Chicago Press, 2006).

FIGURE 1

The Integrated Cognitive Antisocial Potential (ICAP) Theory



Note: LT = Long-Term; ST = Short-Term

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