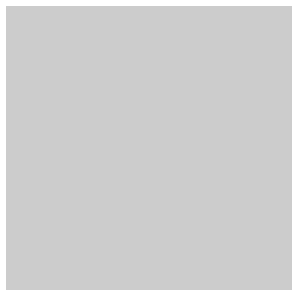


# Delinquency Prevention Using Family-based Interventions

**David P. Farrington**  
Institute of Criminology,  
University of  
Cambridge

**Brandon C. Welsh**  
Department of Criminal  
Justice, University of  
Massachusetts at Lowell



*This paper reviews 24 evaluations of prevention programmes including some kind of family-based intervention (usually parent training or parent education), an outcome measure of offending or disruptive child behaviour, a high quality experimental design and a minimum sample size of 100. Programmes are divided into seven categories according to the context of the intervention: home visiting, day care, pre-school, school, clinic, community or multi-systemic therapy. Most interventions were effective in reducing childhood antisocial behaviour and later delinquency, and in some cases their monetary benefits exceeded their monetary costs. General parent education and more formal parent training are both effective prevention techniques. Research is needed to identify the active ingredients of successful programmes, and to establish why some large-scale programmes were not successful. Copyright © 1999 John Wiley & Sons, Ltd.*

**T**he main aim of this paper is to review evaluations of delinquency prevention programmes including some kind of family-based intervention (usually parent training or parent education). Other criteria for inclusion in our review were as follows:

1. An evaluation of the programme was published in a book or journal.
2. The evaluation included an outcome measure of offending or antisocial/disruptive child behaviour.
3. The evaluation design was of high quality methodologically: either a randomised experiment or an experiment with a matched control group.
4. The initial sample size (treatment and control groups combined) was at least 100 children. (This requirement was relaxed to include two studies each involving 97 children.)

Many intervention studies are multi-modal, making it difficult to disentangle the 'active ingredients' of a programme. Many studies include some kind of family component; those reviewed here were judged the most useful in investigating the effectiveness of family-based interventions. Few early prevention programmes include direct measures of offending,

Correspondence to: David P. Farrington, Institute of Criminology, University of Cambridge, 7 West Road, Cambridge CB3 9DT.

because this would require a long-term follow-up. However, there is considerable continuity between disruptive behaviour in childhood and later offending (see for example, Farrington, 1998). Therefore, programmes that have immediate effects on disruptive child behaviour are also likely to have long-term effects on offending.

In order to locate eligible recent evaluation studies, we searched recent reviews of the literature on family-based interventions (for example, Barlow, 1997; Kazdin, 1997) and on early interventions in general (for example, Tremblay and Craig, 1995; Utting, 1997; Wasserman and Miller, 1998; Tremblay, LeMarquand and Vitaro, 1999). We also searched recent criminology journals and contacted leading researchers to solicit recently published papers. (For helpful responses, we are very grateful to Jeanne Brooks-Gunn, Marion Forgatch, Deborah Gorman-Smith, Adele Harrell, David Hawkins, Scott Henggeler, David Olds, Gerald Patterson, John Reid, Patrick Tolan, Richard Tremblay and Carolyn Webster-Stratton).

Table 1 summarises key features of the 24 evaluation studies meeting our criteria for inclusion. These are divided into seven categories according to the primary context of the intervention: home visiting, day care, pre-school, school, clinic, community or multi-systemic therapy (MST). It was not always easy to assign studies unambiguously to these categories. Because many interventions were multi-modal, treatments were often implemented both in the home and elsewhere. More details about each study are given in the remainder of this paper. The requirement of a minimum initial sample size of 100 led to the elimination of many important experiments, including those by Barth, Hacking and Ash (1988), Szapocznik and others (1989), Bank and others (1991), Spaccarelli, Cotler and Penman (1992), Long and others (1994), Mullin, Quigley and Glanville (1994) and Pepler and others (1995). Adult mentoring programmes are not included as family-based interventions (for example, O'Donnell, Lydgate and Fo, 1979; Baker, Pollack and Kohn, 1995).

## Home visiting programmes

Teenage mothers can be helped, child abuse can be reduced, and problems in pregnancy and infancy can be alleviated by intensive home visiting programmes. In Elmira (New York State), Olds and others (1986) 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 pre-natal and post-natal care of the child, about infant development, and about the importance of proper nutrition and avoiding smoking and drinking during pregnancy. Hence, this is listed as a 'parent education' intervention in Table 1.

The results of this experiment showed that home visits during pregnancy led to teenage mothers having heavier babies. Also, women who had previously smoked decreased their smoking and had fewer pre-term deliveries. In addition, the post-natal 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 per cent of visited versus 19 per cent of non-visited mothers of this type were guilty of child abuse or neglect. This last result is important because of the common observation that being physically abused or neglected as a child predicts later violent offending (Widom, 1989).

**Table 1:** Summary of prevention programmes

Author, location	Initial sample	Main intervention	Main results
<b>Home visiting</b>			
Olds and others (1998), Elmira (NY)	400 mothers	Parent education	Child arrests at 15(+)
Kitzman and others (1997), Memphis	1139 mothers	Parent education	Child injuries(+)
Larson (1980), Montreal	115 mothers	Parent education	Child injuries(+)
Stone, Bendell and Field (1988), Miami	131 mothers	Parent education	Child behaviour problems at 5-8(0)
<b>Day care</b>			
Johnson and Walker (1987), Houston	458 children age 1	Parent education	Aggression at 8-11(+)
Lally, Mangione and Honig (1988), Syracuse (NY)	182 children age 0	Parent education	Delinquency at 15(+)
McCarton and others (1997), 8 US sites	985 children age 0	Parent education	Child behavior problems at 8(0)
<b>Preschool</b>			
Schweinhart, Barnes and Weikart (1993), Ypsilanti	123 children age 3	Skills training	Arrests at 27(+)
Webster-Stratton (1998), Seattle	426 children age 4	Parent training	Child behaviour problems at 5(+)
Pagani and others (1998), Montreal	404 boys age 4	Skills training	Delinquency at 12(+)
<b>School</b>			
Hawkins and others (1999), Seattle	643 children age 10	Parent/teacher training	Violence at 18(+)
Tremblay and others (1995), Montreal	319 boys age 6	Parent/skills training	Delinquency at 15(+)
Reid and others (1999), Oregon	671 children 7-11	Parent/skills training	Aggression(+)
Kolvin and others (1981), Newcastle (UK)	592 children 7-12	Skills training	Antisocial behaviour at 10-15(+)
<b>Clinic</b>			
Webster-Stratton, Kolpacoff and Hollinsworth (1988), Seattle	114 children age 4	Parent training	Behaviour problems(+)
Webster-Stratton and Hammond (1997), Seattle	97 children age 5	Parent/skills training	Behaviour problems at 6(+)
Kazdin, Siegel and Bass (1992), Pittsburgh	97 children age 10	Parent/skills training	Conduct problems at 11(+)
Strayhorn and Weidman (1991), Pittsburgh	105 children age 3	Parent training	Aggression at 5(+)
<b>Community</b>			
McCord (1978), Boston	650 boys age 10	Counselling	Criminal behaviour at 45(-)
Dishion and others (1992), Eugene	119 children age 12	Parent/skills training	Behaviour problems at 13(0)
Harrell and others (1997), 5 US sites	671 youths age 12	Risk focused	Delinquency(0)
<b>Multi-systemic</b>			
Borduin and others (1995), Missouri	176 youths age 14	MST	Arrest at 18(+)
Schoenwald and others (1996), Charleston (SC)	118 youths age 15	MST	Time in institution at 16(+)
Henggeler and others (1997), 2 US sites	155 youths age 15	MST	Delinquency at 17(+)

Notes: (0) = No significant difference; (+) = desirable intervention effect; (-) = undesirable intervention effect; MST = multi-systemic therapy. Immediate follow-up unless otherwise stated.

Unusually, this experiment had a 15-year follow-up, and the main focus in the follow-up was on lower class unmarried mothers. Among these mothers, those who received pre-natal and post-natal home visits had fewer arrests than those who received pre-natal visits or no visits (Olds and others, 1997). Also, children of these mothers who received pre-natal and/or post-natal home visits had less than half as many arrests as children of mothers who received no visits (Olds and others, 1998).

In Memphis (Tennessee), Kitzman and others (1997) conducted a replication of the Elmira intervention programme. In this, 1,139 African-American mothers (primarily poor and unmarried) were randomly allocated 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. As before, the home visitors gave the mothers advice about child care and avoiding substance use. The initial results showed that the nurse-visited children suffered fewer injuries during their first two years of life.

Similar results were obtained by Larson (1980) in a home visiting experiment in Montreal with 115 lower class mothers. The mothers were randomly allocated to receive either home visits both before and after the child's birth, or home visits only after the child's birth, or no visits. The home visitors (child psychologists) provided advice about taking care of the infant and about infant development. The home visits had beneficial effects, since the children of visited mothers sustained significantly fewer injuries in the first year of life. The children of mothers visited both before and after birth (the category with the best outcome) had only half as many injuries as the children of non-visited mothers. Also, the mothers visited both pre-natally and post-natally were rated by observers as the most skilled in taking care of the child.

In Miami, Field and others (1980) randomly allocated 131 lower class African-American teenage mothers either to receive parent education during the first year of their child's life or to a control group. The parent education focused on infant care, developmental milestones and age-appropriate infant stimulation exercises. Two years after the intervention, the experimental mothers had fewer repeat pregnancies and a higher rate of return to work or school. However, when followed up to age five to eight by Stone, Bendell and Field (1988), the experimental children were not significantly different from the control children in rated behaviour problems. These findings are limited by the fact that only 47 per cent of the original participants could be followed up.

In conclusion, it seems clear from the large-scale, well-designed experiments by Olds and others (1998) and Kitzman and others (1997) that intensive home visiting can help poor unmarried mothers and reduce later delinquency by their children.

## Day care programmes

In Houston (Texas), Johnson and Breckenridge (1982) randomly allocated 458 poor Mexican-American families with one-year-old children to experimental or control groups. The experimental mothers received home visits for one year and attended a child development centre with their child during the second year. The programme focused on advising the mother about child development and parenting skills, helping her develop an affectionate relationship with her child, and fostering the cognitive skills of the child.

Attrition rates from both groups were high. At the end of the programme when the child was aged three, the experimental mothers were rated as more affectionate, as using more praise and less criticism, and as providing a more stimulating home environment. Johnson and Walker (1987) followed up both groups of children to age eight to 11, and found that experimental children were less involved in fights and less impulsive than controls according to their teachers.

One of the very few prevention experiments beginning in pregnancy and collecting outcome data on delinquency was the Syracuse (New York State) Family Development Research Programme of Lally, Mangione and Honig (1988). The researchers began with a sample of pregnant women (mostly poor African-American single mothers) and gave them weekly help with child-rearing, health, nutrition and other problems. In addition, their children received free full-time day care, designed to develop their intellectual abilities, up to age five. This was not a randomised experiment, but a matched control group was chosen when the children were aged three. The treated children had significantly higher intelligence than the controls at age three but were not significantly different at age five. Ten years later, 119 treated and control children were followed up to about age 15. Significantly fewer of the treated children (2 per cent as opposed to 17 per cent) had been referred to the juvenile court for delinquency offences, and the treated girls showed better school attendance and school performance.

One of the largest early prevention projects was the Infant Health and Development Program, which was carried out with 985 low-birth-weight infants in eight sites across the United States (US) (Infant Health and Development Program, 1990; Brooks-Gunn and others, 1993). Children were selected at birth and randomly allocated to experimental or control groups. The experimental families received about three home visits per month up to age three, providing family support and information about health and development. Also, the experimental infants received a free day care programme (attendance at a child development centre) in their second and third years, backed up by parent group meetings. The day care was for an average of 267 days per year, and the average programme cost was \$15 000 per child per year. This treatment had immediate beneficial effects, since the experimental infants had higher intelligence and fewer behaviour problems at ages two and three. However, at age eight, the experimental and control children were not significantly different in behaviour problems, according to parent ratings on the Child Behaviour Checklist (McCarton and others, 1997).

In conclusion, the results in Houston and Syracuse show that an intensive day care programme can reduce childhood antisocial behaviour and delinquency. It will be important to follow up the children in the Infant Health and Development Program to see if delinquency is also reduced in this experiment, although this seems unlikely in light of the results at age eight.

### **Pre-school programmes**

One of the most successful delinquency prevention programmes has been the Perry pre-school 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 (approximately at random) to experimental and control

groups. The experimental children attended a daily pre-school programme, backed up by weekly home visits (to involve the mother in the programme), usually lasting two years (covering ages three to four). 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.

About 120 children in the two groups were followed up to age 15, using teacher ratings, parent and youth interviews, and school records. As demonstrated in several other Head Start projects, the experimental group showed gains in intelligence that were rather short-lived. However, they were significantly better in elementary school motivation, school achievement at age 14, teacher ratings of classroom behaviour at six to nine, self-reports of classroom behaviour at 15 and self-reports of offending at 15. Furthermore, a later follow-up of this sample (Berrueta-Clement and others, 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, Barnes and Weikart, 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. Hence, this pre-school intellectual enrichment programme led to decreases in school failure, to decreases in offending, and to decreases in other undesirable outcomes. For every \$1 spent on the programme, \$7 were saved in the long run.

In Seattle, Webster-Stratton (1998) randomly assigned 64 classes in nine Head Start centres to experimental or control conditions; 426 children (average age 4.7) completed base-line assessments, in most cases drawn from families on welfare with single mothers. The main intervention in the experimental group was weekly parent training for eight to nine weeks, covering such topics as how to play with your child, helping your child learn, using praise and encouragement to bring out the best in your child, effective setting of limits and handling misbehaviour.

This programme was quite successful. An immediate evaluation showed that experimental mothers became more consistent and less harsh compared with control mothers. Home observations showed a decrease in child misbehaviour by experimental children, but there were no effects on rated externalising (aggressive or impulsive) behaviour according to mothers and teachers. One year after treatment, experimental mothers maintained their decreases in harsh discipline and experimental children maintained their decreases in observed misbehaviour.

Pagani and others (1998) used a subset of boys involved in the Montreal longitudinal experimental study (described later) to investigate the effect of attending a pre-school programme. Of 404 boys attending 28 schools at age six which had publicly funded pre-school programmes, 117 had attended the pre-school at age four to five and 287 had not. Strictly speaking, this comparison is not an experiment, but this study is included here because of its importance. The two groups were not equivalent, but Pagani and others (1998) carried out regression analyses which controlled for pre-existing differences in maternal age, education and social class. The main aim of the pre-school programme was

to develop skills in oral and written expression, social and personal skills, and problem-solving skills. In addition, teachers worked with parents to promote child development, and parents attended parent-effectiveness workshops on positive child-rearing practices.

Self-reported delinquency measures were obtained at age 12. Pagani and others (1998) found that the results depended on whether children had perinatal complications. For those without complications, the prevalence of extreme delinquency was about half in the pre-school group compared with the control group, but there was no significant difference for those who had experienced complications.

Taken together, these three studies show that pre-school programmes including parenting interventions can lead to decreases in childhood antisocial behaviour and delinquency.

### School programmes

An important school-based prevention experiment was carried out in Seattle by Hawkins and others (1991, 1992). This combined parent training, teacher training and skills training. About 500 first grade children (aged six) in 21 classes in eight 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, on the assumption that offending was inhibited by the strength of social bonds. Also, they were trained in interpersonal cognitive problem solving, based on Spivack, Platt and Shure (1976). 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.

In an evaluation of this programme 18 months later, when the children were in different classes, Hawkins, von Cleve and Catalano (1991) found that the boys who received the experimental programme were significantly less aggressive than the control boys, according to teacher ratings. This difference was particularly marked for white boys rather than African-American boys. The experimental girls were not significantly less aggressive, but they were less self-destructive, anxious and depressed.

Later analyses included not only the original first grade children but also children added to the study in the fifth and sixth grades, some of whom received the experimental intervention at this time. Hawkins and others (1992) found that, in the fifth grade (age 11), the experimental children were less likely to have initiated delinquency and substance use (according to self-reports). O'Donnell and others (1995) focused 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 of 643 children studied at age 10, Hawkins and others (1999) found that, at age 18, the full intervention group (receiving the intervention from grades one to six) admitted less violence, less alcohol abuse and fewer sexual partners than the late intervention group (grades five to six only) or the controls.

The Montreal longitudinal experimental study, which has already been mentioned, is another important school-based prevention experiment. From an original sample of 1,161 boys, Tremblay and others (1995) identified 366 disruptive (aggressive/hyperactive) boys at age six, and randomly allocated 319 of these to experimental or control conditions. Between the ages of seven and nine, the experimental group received school-based training 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), which focus on promoting the use of consistent and contingent rewards and penalties.

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 achievement. At every age from ten 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.

In Oregon, Reid and others (1999) randomly allocated 12 elementary schools to experimental or control conditions. First and fifth grade children (aged about seven and 11) in experimental schools received skills training in the classroom, backed up by parent training. The immediate impact of the intervention was successful, since the observed physical aggression of children in the playground decreased significantly for the experimental children.

Another important school-based prevention experiment was carried out by Kolvin and others (1981) in Newcastle upon Tyne. They randomly allocated 270 junior school children (age seven to eight) and 322 senior school children (age 11–12) to experimental or control groups. All children had been identified as showing some kind of social or psychiatric disturbance or learning problems (according to teacher and peer ratings). There were three types of experimental programmes: (a) behaviour modification–reinforcement with the seniors, 'nurture work' teaching healthy interactions with the juniors; (b) parent counselling–teacher consultation with both; and (c) group therapy with the seniors, play groups with the juniors.

The programmes were evaluated after 18 months and after three years using clinical ratings of conduct disturbance. Generally, the experimental and control groups were not significantly different for the juniors, although there was some tendency for the nurture work and play group conditions to be superior to the controls at the three-year follow-up. For the seniors, those who received group therapy showed significantly less conduct disturbance at both follow-ups, and there was some tendency for the other two programmes also to be effective at the three-year follow-up.

Taken together, these four experiments in different countries show that school-based interventions focusing on skills training with children, combined with parent training, can be effective in reducing antisocial behaviour and delinquency.

### Clinic-based programmes

In Seattle, Webster-Stratton, Kolpacoff and Hollinsworth (1998) evaluated the effectiveness of three different kinds of parent training with 114 children (average age 4.5) referred to a clinic because of conduct problems. The children's parents were randomly allocated to receive parent training using (a) self-administered video modelling, (b) group discussion-video modelling, (c) group discussion only, or (d) to a control group. Parent reports and home observations showed that behaviour problems of children in the three parent training conditions decreased compared with the controls. There were few significant differences on outcome measures among the three parent training conditions, but there was some indication that the group discussion-video modelling condition was the most effective.

Webster-Stratton and Hammond (1997) evaluated the effectiveness of parent training and child skills training with 97 children (average age 5.7) referred to a clinic because of conduct problems. The children and their parents were randomly allocated to receive (a) parent training, (b) child skills training, (c) both parent and child training, or (d) to a control group. The skills training aimed to foster prosocial behaviour and interpersonal skills using video modelling, while the parent training involved weekly meetings between parents and therapists for 22–24 weeks. Parent reports and home observations showed that children in all three experimental conditions showed fewer behaviour problems than control children, both in an immediate and in a one-year follow-up. There was little difference between the three experimental conditions, although the combined parent and child training condition produced the most significant improvements in child behaviour at the one-year follow-up.

Kazdin, Siegel and Bass (1992) carried out a somewhat similar experiment in Pittsburgh, evaluating the effectiveness of parent training and child skills training with 97 children (average age 10.3) referred to a clinic because of severe antisocial or aggressive behaviour. The children and their parents were randomly assigned to (a) parent training, (b) problem-solving skills training, or (c) the combined condition. There was no control group, but the effects of the three treatment conditions were inferred from comparisons before and after treatment. The problem-solving skills training was based on Spivack, Platt and Shure (1976) and involved 25 weekly sessions using modelling, role playing and reinforcement. The parent training was based on Patterson (1982) and involved 16 weekly sessions.

Teacher and parent reports of child problem behaviour and the child's own self-reported delinquency showed that the child's behaviour improved in all three conditions. Furthermore, this improvement was maintained in a one-year follow-up. Kazdin, Siegel and Bass (1992) concluded that combined parent and child training produced the greatest improvements in parent and child functioning.

Also in Pittsburgh, Strayhorn and Weidman (1991) randomly assigned 105 pre-school children (average age 3.8) and their parents to experimental or control groups. The children were referred because they had at least one behavioural or emotional problem. The experimental group received parent training designed to increase the child's prosocial behaviour. A follow-up at age five showed that, according to teacher ratings, the experimental children had improved significantly on hyperactivity and (non-significantly) on hostile-aggressive behaviour.

Taking these four studies together, they suggest that parent training and child skills training are both effective in reducing child antisocial behaviour. The main problem with these studies is small sample size; randomly allocating about 100 children to four conditions does not ensure that children in all conditions are equivalent before the intervention and makes it difficult to detect effects of different interventions.

## Community programmes

In the famous Cambridge–Somerville youth study, 650 Boston boys (median age ten) who were rated as difficult or average in behaviour were randomly allocated to experimental or control conditions. The experimental boys received regular friendly attention from counsellors for an average of five years, and whatever medical and educational services were needed. The counsellors talked to the boys, took them on trips and to recreational activities, tutored them in reading and arithmetic, played games with them at the project's centre, encouraged them to attend church, and visited their families to give advice and general support (McCord and McCord, 1959). Family problems were the focus of attention for approximately one third of the experimental group.

The men in both groups were followed up to age 45, 30 years after the programme had ended. Unfortunately, the results were disappointing. Generally, there was little difference between the experimental and control groups in recorded crimes, but significantly more of the experimental group had committed two or more crimes. Similarly, there was little difference between the groups in the prevalence of mental illness, but significantly more of the experimental group showed signs of alcoholism and more had died early. Nevertheless, two thirds of the experimental men thought that the programme had helped them. McCord (1978) speculated that the negative results could have been caused by the programme generating high expectations which may later have been dashed when the programme was terminated.

In Eugene (Oregon), Dishion, Patterson and Kavanagh (1992) randomly assigned 119 high-risk children (average age 12) to (a) parent training, (b) skills training, (c) the combination, or (d) a control condition. The parent and child programmes both involved 12 weekly sessions and were delivered in groups. Unfortunately, the results were rather disappointing. At both the immediate post-test and the one-year follow-up, there was little change in externalising behaviour as rated by parents or teachers. The most impressive result was that the antisocial behaviour of the parent training group halved between the baseline and the immediate post-test, but this improvement was not maintained at the follow-up (Dishion and Andrews, 1995).

More recently, the large-scale *Children at Risk* programme (Harrell and others, 1997) targeted high-risk youths (average age 12.4) in poor neighbourhoods of five cities across the US. Eligible youths were identified in schools, and randomly assigned to experimental or control groups. In addition, there was a quasi-experimental control condition to investigate neighbourhood effects. The programme was a comprehensive community-based prevention strategy targeting risk factors for delinquency, including family skills training and counselling, tutoring, mentoring, after-school activities and community policing. The programme was different in each neighbourhood.

The results of this ambitious programme were disappointing. Immediately after the programme, experimental youths showed no significant improvements in self-reported delinquency, police arrests, drug use or other problem behaviour (for example, school problems). Furthermore, experimental youths were more likely to be involved in gangs than control youths, although this difference was not significant. Few risk factors were improved, although punitive discipline was lower and family cohesion was higher for experimental youths. The disappointing results might possibly have been related to the low participation of parents in parent training and of youths in mentoring and tutoring (Harrell and others, 1997, p. 87). In other words, there were problems in implementing this programme.

None of these community-based programmes was successful. Other community-based programmes have been more successful, such as the Ottawa intervention focusing on non-academic skill development in a housing complex (Jones and Offord, 1989).

### **Multi-systemic therapy**

MST is a multiple component treatment programme conducted in families, schools and communities (Henggeler and others, 1998). The particular type of treatment is chosen according to the particular needs of the youth; therefore, the nature of the treatment is different for each person. The treatment may include individual, family, peer, school and community interventions, including parent training and skills training. An early evaluation of MST with 84 juvenile offenders (not included in Table 1) showed that, compared with out-of-home placement, it was followed by fewer arrests, lower self-reported delinquency and less peer-oriented aggression (Henggeler and others, 1992, 1993).

In Missouri, Borduin and others (1995) randomly assigned 176 juvenile offenders (mean age 14.8) either to MST or to individual therapy focusing on personal, family and academic issues. Immediately after the treatment, mother reported behaviour problems decreased for the MST completers and increased for the individual therapy completers. Four years later, only 29 per cent of the MST offenders (completers and non-completers) had been rearrested, compared with 74 per cent of the individual therapy group.

In Charleston (South Carolina), Schoenwald and others (1996) randomly assigned 118 substance-using offenders (average age 15.7) to MST or to the usual outpatient services, typically involving weekly attendance at adolescent group meetings. They found that MST youths were incarcerated 46 per cent less than control youths in the one year following treatment. They concluded that the incremental costs of MST were nearly offset by the savings from fewer days of out-of-home placement during the first year.

The results were somewhat less favourable in a real world implementation of MST using therapists recruited and trained in each of two sites. Previous experiments had been implemented and closely monitored by MST experts. Henggeler and others (1997) randomly allocated 155 chronic and violent juvenile offenders (average age 15.2) either to MST or to the usual services (which in this case mainly involved probation and restitution). MST led to a decrease in arrests, self-reported delinquency and antisocial behaviour in a 20-month follow-up period, but only when treatment fidelity was high. They concluded that, in real world applications, therapist adherence to MST principles was a crucial factor.

Overall, it can be concluded that MST is an effective method of treating juvenile offenders. However, the relative effectiveness of its components is unclear.

### Monetary costs and benefits

Discussions of the monetary costs and benefits of delinquency prevention programmes can be very persuasive and have gained wide appeal in political, policy, and academic settings. However, because relatively little is known about the costs and benefits of preventing crime (Welsh and Farrington, 1999), there is a need for caution in making general claims of 'cost savings' or 'cost-effectiveness'. Of the 24 programmes reviewed in this paper, only two (Olds and others, 1997; Schweinhart, Barnes and Weikart, 1993) carried out an economic evaluation which allowed for an assessment of monetary costs and benefits. Two other programmes (Lally, Mangione and Honig, 1988; Schoenwald and others, 1996) presented limited monetary data from which a partial assessment of cost savings can be made.

A benefit–cost analysis of the Perry pre-school project (Barnett, 1993), when the sample was 27 years of age, found that for every dollar spent on the project over seven dollars was saved to taxpayers and crime victims, for a benefit:cost ratio of 7.16. Savings from reduced crime accounted for the majority (80 per cent) of the benefits. The other benefits produced by the programme included higher educational output and reduced schooling costs, revenue generated from taxes on increased earnings, and reduced social service usage costs. A benefit:cost analysis of the Elmira home visiting programme (Olds and others, 1993), two years after the programme ended, found that, for the higher risk mothers, programme benefits just outweighed costs, for a benefit:cost ratio of 1.06. However, for the whole sample (higher and lower risk mothers) programme costs exceeded benefits, producing an undesirable benefit–cost ratio of 0.51.

A recent study by the RAND Corporation (Karoly and others, 1998) reanalysed the benefit:cost findings of the Perry programme (at 22 years post-intervention) and Elmira programme (at 13 years post-intervention) to investigate how the monetary costs of the programmes compared with savings accrued to the government over time. Savings to the government—in the form of reduced criminal justice costs and healthcare and social service usage costs—were found to exceed programme costs for the Perry programme and for the higher risk sample of mothers in the Elmira programme by two and four times, respectively, but not for Elmira's lower risk mothers. It was estimated that savings to the government would continue to accumulate for a long period of time after the interventions had ended.

Further benefit:cost research on delinquency and crime prevention programmes has been carried out by the Washington State Institute for Public Policy (Aos, Barnoski and Lieb, 1998). Evaluation studies of prevention programmes, some including a family component, were re-analysed—from the perspectives of the government or the taxpayer and crime victim—using a rigorous benefit:cost model. Of the 24 programmes reviewed in this paper, Aos, Barnoski and Lieb (1998) provided economic information about two additional programmes (Hawkins and others, 1999; Lally, Mangione and Honig, 1988). The Seattle programme by Hawkins and others (1999) produced a desirable benefit:cost ratio of 2.09, while the Syracuse programme by Lally, Mangione and Honig (1988) produced an

undesirable benefit:cost ratio of 0.43, meaning that savings from reduced crime failed to pay back programme costs.

On the basis of only a handful of studies, it is difficult to draw any firm conclusions about the monetary value of family-based interventions in preventing delinquency. However, it is clear that some programmes (for example, Perry) are notably successful. Future research on the effectiveness of family-based interventions should include economic evaluations, preferably benefit:cost analyses.

## Conclusions

Our review of 24 important family-based prevention programmes shows that many programmes are effective in reducing childhood antisocial behaviour and later delinquency. General parent education, in the context of home visiting or day care, and more formal parent management training, are both effective. Many other intervention programmes are also effective, including interpersonal and/or academic skills training and MST. In some cases, the monetary benefits of programmes exceed their monetary costs. Thus, we can recommend that more of these kinds of programmes should be mounted and evaluated in different countries, and especially in the United Kingdom.

On the other hand, it must be pointed out that several large-scale, well-designed programmes, notably the Infant Health and Development Program and *Children at Risk*, were not effective. Also many programmes showed desirable effects with some outcomes but not with others. Research is needed on why some programmes work and others do not. There may be different effects with different kinds of people (for example, children of different ages, boys versus girls) or in different families; for example, children living in high crime areas or in lone-parent families may be harder to change. Research is needed on the effects of the programmes on family risk factors such as poor parental supervision or inconsistent discipline, which presumably intervene between the family intervention and the antisocial behaviour. It may be harder to implement large-scale wide-ranging multi-site interventions successfully than smaller scale, more focused interventions conducted at one site.

Research is needed to identify the active ingredients of successful and promising family-based prevention programmes. Most programmes are multi-modal, making it difficult to isolate the independent effects of the different components. Future experiments are needed which attempt to disentangle the effects of different elements of successful programmes, especially:

- a. the home visiting programme of Olds and others (1998);
- b. the pre-school programme of Schweinhart, Barnes and Weikart (1993);
- c. the parent/skills training programme of Tremblay and others (1995);
- d. the parent/teacher training programme of Hawkins and others (1999).

A programme of replication and follow-up experiments should lead to cumulative knowledge about what are the most effective elements of family-based delinquency prevention programmes, and in turn should advance knowledge about the causes of delinquency and child antisocial behaviour.

## Acknowledgements

Funding for this research was provided by the Crime Prevention Effectiveness Program of the University of Maryland's Department of Criminology and Criminal Justice. We are grateful to Lawrence Sherman for his support.

## References

- Aos, S, Barnoski, R and Lieb, R (1998) 'Preventive programs for young offenders effective and cost-effective', *Overcrowded Times*, **9**, 2, 1, 7–11
- Baker, K, Pollack, M and Kohn, I (1995) 'Violence prevention through informal socialization: an evaluation of the South Baltimore Youth Center', *Studies on Crime and Crime Prevention*, **4**, 61–85
- Bank, L and others (1991) 'A comparative evaluation of parent-training interventions for families of chronic delinquents', *Journal of Abnormal Child Psychology*, **19**, 15–33
- Barlow, J (1997) *Systematic Review of the Effectiveness of Parent-Training Programmes in Improving Behaviour Problems in Children Aged 3–10 Years: a Review of the Literature on Parent-Training Programmes and Child Behaviour Outcome Measures*. Oxford: Health Services Research Unit, Department of Public Health, University of Oxford
- Barnett, WS 'Cost-benefit analysis', in Schweinhart, LJ, Barnes, HV and Weikart, DP (1993) *Significant Benefits: the High/Scope Perry Preschool Study Through Age 27*, Ypsilanti, Michigan, High/Scope Press
- Barth, RP, Hacking, S and Ash, JR (1988) 'Preventing child abuse: an experimental evaluation of the Child Parent Enrichment Project', *Journal of Primary Prevention*, **8**, 201–217
- Berrueta-Clement, JR and others (1984) *Changed Lives: the Effects of the Perry Preschool Program on Youths Through Age 19*, Ypsilanti, Michigan, High/Scope Press
- Borduino, CM and others (1995) 'Multisystemic treatment of serious juvenile offenders: long-term prevention of criminality and violence', *Journal of Consulting and Clinical Psychology*, **63**, 569–587
- Brooks-Gunn, J and others (1993) 'Enhancing the development of low-birthweight, premature infants: changes in cognition and behavior over the first three years', *Child Development*, **64**, 736–753
- Dishion, TJ and Andrews, DW (1995) 'Preventing escalation in problem behaviors with high-risk young adolescents: immediate and 1-year outcomes', *Journal of Consulting and Clinical Psychology*, **63**, 538–548
- Dishion, TJ, Patterson, GR and Kavanagh, K 'An experimental test of the coercion model: linking theory, measurement and intervention', in McCord, J and Tremblay, R eds (1992) *Preventing Antisocial Behavior: Interventions from Birth through Adolescence*, New York, Guilford
- Farrington, DP 'Youth crime and antisocial behaviour', in Campbell, A and Muncer, S eds (1998) *The Social Child*, Hove, East Sussex, UK, Psychology Press
- Field, TM and others (1980) 'Teenage, lower-class black mothers and their preterm infants: an intervention and developmental follow-up', *Child Development*, **51**, 426–436
- Harrell, AV and others (1997) *Impact of the Children At Risk Program: Comprehensive Final Report*, Vol. 1, Washington, D.C., The Urban Institute
- Hawkins, JD, von Cleve, E and Catalano, RF (1991) 'Reducing early childhood aggression: results of a primary prevention program', *Journal of the American Academy of Child and Adolescent Psychiatry*, **30**, 208–217
- Hawkins, JD and others 'The Seattle Social Development Project: effects of the first four years on protective factors and problem behaviors', in McCord, J and Tremblay, RE eds (1992) *Preventing Antisocial Behavior: Interventions from Birth through Adolescence*, New York, Guilford
- Hawkins, JD and others (1999) 'Preventing adolescent health risk behaviors by strengthening protection during childhood', *Archives of Pediatrics and Adolescent Medicine*, **153**, 226–234

- Henggeler, SW, Melton, GB and Smith, LA (1992) 'Family preservation using multisystemic therapy: an effective alternative to incarcerating serious juvenile offenders', *Journal of Consulting and Clinical Psychology*, **60**, 953–961
- Henggeler, SW and others (1993) 'Family preservation using multisystemic treatment: long-term follow-up to a clinical trial with serious juvenile offenders', *Journal of Child and Family Studies*, **2**, 283–293
- Henggeler, SW and others (1997) 'Multisystemic therapy with violent and chronic juvenile offenders and their families: the role of treatment fidelity in successful dissemination', *Journal of Consulting and Clinical Psychology*, **65**, 821–833
- Henggeler, SW and others (1998) *Multisystemic Treatment of Antisocial Behavior in Children and Adolescents*, New York, Guilford
- Infant Health and Development Program (1990) 'Enhancing the outcomes of low-birth-weight, premature infants: a multi-site, randomized trial', *Journal of the American Medical Association*, **263**, 3035–3042
- Johnson, DL and Breckenridge, JN (1982) 'The Houston Parent–Child Development Center and the primary prevention of behavior problems in young children', *American Journal of Community Psychology*, **10**, 305–316
- Johnson, DL and Walker, T (1987) 'Primary prevention of behavior problems in Mexican-American children', *American Journal of Community Psychology*, **15**, 375–385
- Jones, MB and Offord, DR (1989) 'Reduction of antisocial behaviour in poor children by non-school skill development', *Journal of Child Psychology and Psychiatry*, **30**, 737–750
- Karoly, LA and others (1998) *Investing in Our Children: What We Know and Don't Know about the Costs and Benefits of Early Childhood Interventions*, Santa Monica, California, RAND Corporation
- Kazdin, AE (1997) 'Parent management training: evidence, outcomes, and issues', *Journal of the American Academy of Child and Adolescent Psychiatry*, **36**, 1349–1356
- Kazdin, AE, Siegel, TC and Bass, D (1992) 'Cognitive problem-solving skills training and parent management training in the treatment of antisocial behavior in children', *Journal of Consulting and Clinical Psychology*, **60**, 733–747
- Kitzman, H and others (1997) 'Effect of prenatal and infancy home visitation by nurses on pregnancy outcomes, childhood injuries, and repeated childbearing: a randomized controlled trial', *Journal of the American Medical Association*, **278**, 644–652
- Kolvin, I and others (1981) *Help Starts Here: the Maladjusted Child in the Ordinary School*, London, Tavistock
- Lally, JR, Mangione, PL and Honig, AS 'The Syracuse University Family Development Research Program: long-range impact of an early intervention with low-income children and their families', in Powell, DR ed (1988) *Parent Education as Early Childhood Intervention: Emerging Directions in Theory, Research and Practice*, Norwood, New Jersey, Ablex
- Larson, CP (1980) 'Efficacy of prenatal and postpartum home visits on child health and development', *Pediatrics*, **66**, 191–197
- Long, P and others (1994) 'Does parent training with young noncompliant children have long-term effects?', *Behavior Research and Therapy*, **32**, 101–107
- McCarton, CM and others (1997) 'Results at age 8 years of early intervention for low-birth-weight premature infants: the Infant Health and Development Program', *Journal of the American Medical Association*, **277**, 126–132
- McCord, J (1978) 'A thirty-year follow-up of treatment effects', *American Psychologist*, **33**, 284–289
- McCord, J and McCord, W (1959) 'A follow-up report on the Cambridge–Somerville Youth Study', *Annals of the American Academy of Political and Social Sciences*, **322**, 89–96
- Mullin, E, Quigley, K and Glanville, B (1994) 'A controlled evaluation of the impact of a parent training program on child behavior and mothers' general well-being', *Counseling Psychology Quarterly*, **7**, 167–179
- O'Donnell, CR, Lydgate, T and Fo, WSO (1979) 'The buddy system: review and follow-up', *Child Behavior Therapy*, **1**, 161–169

- O'Donnell, J and others (1995) 'Preventing school failure, drug use, and delinquency among low-income children: long-term intervention in elementary schools', *American Journal of Orthopsychiatry*, **65**, 87–100
- Olds, DL and others (1986) 'Preventing child abuse and neglect: a randomized trial of nurse home visitation', *Pediatrics*, **78**, 65–78
- Olds, DL and others (1993) 'Effects of prenatal and infancy nurse home visitation on government spending', *Medical Care*, **31**, 155–174
- Olds, DL and others (1997) 'Long-term effects of home visitation on maternal life course and child abuse and neglect: fifteen-year follow-up of a randomized trial', *Journal of the American Medical Association*, **278**, 637–643
- Olds, DL and others (1998) 'Long-term effects of nurse home visitation on children's criminal and antisocial behavior: 15-year follow-up of a randomized controlled trial', *Journal of the American Medical Association*, **280**, 1238–1244
- Pagani, L and others (1998) 'Does preschool help prevent delinquency in boys with a history of perinatal complications?', *Criminology*, **36**, 245–267
- Patterson, GR (1982) *Coercive Family Process*, Eugene, Oregon, Castalia
- Pepler, DJ and others (1995) 'The development and evaluation of a multisystem social skills groups training program for aggressive children', *Child and Youth Care Forum*, **24**, 297–313
- Reid, JB and others (1999) 'Description and immediate impacts of a preventive intervention for conduct problems', *American Journal of Community Psychology*, in press
- Schoenwald, SK and others (1996) 'Multisystemic therapy treatment of substance abusing or dependent adolescent offenders: costs of reducing incarceration, inpatient, and residential placement', *Journal of Child and Family Studies*, **5**, 431–444
- Schweinhart, LJ and Weikart, DP (1980) *Young Children Grow Up: the Effects of the Perry Preschool Program on Youths Through Age 15*, Ypsilanti, Michigan, High/Scope Press
- Schweinhart, LJ, Barnes, HV and Weikart, DP (1993) *Significant Benefits: the High/Scope Perry Preschool Study Through Age 27*, Ypsilanti, Michigan, High/Scope Press
- Spaccarelli, S, Cotler, S and Penman, D (1992) 'Problem-solving skills training as a supplement to behavioral parent-training', *Cognitive Therapy and Research*, **16**, 1–18
- Spivack, G, Platt, JJ and Shure, MB (1976) *The Problem Solving Approach to Adjustment*, San Francisco, California, Jossey-Bass
- Stone, WL, Bendell, RD and Field, TM (1988) 'The impact of socioeconomic status on teenage mothers and children who received early intervention', *Journal of Applied Developmental Psychology*, **9**, 391–408
- Strayhorn, JM and Weidman, CS (1991) 'Follow-up one year after parent-child interaction training: effects on behavior of preschool children', *Journal of the American Academy of Child and Adolescent Psychiatry*, **30**, 138–143
- Szapocznik, J and others (1989) 'Structural family versus psychodynamic child therapy for problematic Hispanic boys', *Journal of Consulting and Clinical Psychology*, **57**, 571–578
- Tremblay, RE and Craig, WM 'Developmental crime prevention', in Tonry, M and Farrington, DP eds (1995) *Building a Safer Society: Strategic Approaches to Crime Prevention*, Chicago, Illinois, University of Chicago Press
- Tremblay, RE and others (1995) 'A bimodal preventive intervention for disruptive kindergarten boys: its impact through mid-adolescence', *Journal of Consulting and Clinical Psychology*, **63**, 560–568
- Tremblay, RE, LeMarquand, D and Vitaro, F 'The prevention of Oppositional Defiant Disorder and Conduct Disorder', in Quay, HC and Hogan, AE eds (1999) *Handbook of Disruptive Behavior Disorders*, New York, Plenum
- Utting, D (1997) *Reducing Criminality Among Young People: a Sample of Relevant Programmes in the United Kingdom*, London, Home Office
- Wasserman, GA and Miller, LS 'The prevention of serious and violent juvenile offending', in Loeber, R and Farrington, DP eds (1998) *Serious and Violent Juvenile Offenders: Risk Factors and Successful Interventions*, Thousand Oaks, California, Sage

- Webster-Stratton, C (1998) 'Preventing conduct problems in Head Start children: strengthening parenting competencies', *Journal of Consulting and Clinical Psychology*, **66**, 715–730
- Webster-Stratton, C and Hammond, M (1997) 'Treating children with early-onset conduct problems: a comparison of child and parent training interventions', *Journal of Consulting and Clinical Psychology*, **65**, 93–109
- Webster-Stratton, C, Kolpacoff, M and Hollinsworth, T (1988) 'Self-administered videotape therapy for families with conduct-problem children: comparison with two cost-effective treatments and a control group', *Journal of Consulting and Clinical Psychology*, **56**, 558–566
- Welsh, BC and Farrington, DP 'Monetary costs and benefits of crime prevention programs', in Tonry, M ed (1999) *Crime and Justice: a Review of Research*, Vol. 25, Chicago, Illinois, University of Chicago Press, in press
- Widom, CS (1989) 'The cycle of violence', *Science*, **244**, 160–166

### Contributors' details

**David P. Farrington** is Professor of Psychological Criminology at Cambridge University, UK and Visiting Professor in the Department of Criminology and Criminal Justice, University of Maryland, USA.

**Brandon C. Welsh** is an Assistant Professor in the Department of Criminal Justice, University of Massachusetts at Lowell, USA.

Copyright of Children & Society is the property of National Children's Bureau in UK and its content may not be copied or emailed to multiple sites or posted to a listserv without the copyright holder's express written permission. However, users may print, download, or email articles for individual use.