PRO BONO ECONOMICS

chance uk

A break-even analysis of the Chance UK mentoring programme

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Foreword

On behalf of Pro Bono Economics, I am delighted to introduce this report for Chance UK. Their mentoring programme with primary school children is designed to help children improve their behaviour and therefore avoid negative outcomes in the longer term. This report looks at the costs associated with on-going conduct difficulties and problems, by combining and updating evidence from previously published studies.

The analysis shows that Chance UK would have to reduce negative outcomes by an average of 2.5 per cent in children who would not have improved without the service, for the benefits of the programme to equal the costs. In common with other PBE reports, this is a conservative estimate.

We are very encouraged that, having made the commitment to rigorous, independent analysis of their work, Chance UK are continuing on this journey by taking part in a randomised control trial. We want to congratulate them on setting such a great example in the sector.

This analysis follows an earlier piece of work by Helen Oginsky, a government economist at DWP, and was undertaken by Daniel Hodges, also a government economist, while working at BIS, and benefited from input from Ken Warwick and a volunteer peer reviewer. We would like to thank all of our volunteers for giving their time and effort to this project.

Andy Haldane
Trustee and co-founder of Pro Bono Economics

Executive Summary

1. Introduction

Chance UK is a London-based charity which delivers one-to-one mentoring to primary school children who have been referred to them due to conduct difficulties. The charity's aim is to help children improve their behaviour over the course of the mentoring, with a view to reducing anti-social behaviour and youth crime in the long term.

Evaluations have found that children who completed the mentoring programme with Chance UK had a statistically significant improvement in their behaviour. In this paper we aim to take that analysis one step further and consider the potential impacts that an improvement in behaviour could have on life outcomes and the value of those improvements.

The report relies on two main sources for cost evidence: the literature which considers life outcomes for people who had conduct problems as children, and survey and administrative data on the use of services such as hospitals and schools, the prevalence of conduct problems and the involvement of different groups in crime.

In all areas the final estimates presented are designed to be conservative but realistic estimates of the monetary value of behavioural problems in childhood. All figures are presented in net present value terms and 2010 prices, and are rounded to the nearest hundred where appropriate. The assumptions and caveats around the estimates are set out in Annex A.

2. The prevalence of conduct problems in young children

A 2004 report carried out by the Office for National Statistics on behalf of the Department of Health surveyed the prevalence of mental disorders in children and young people in the UK. The report shows that conduct disorder is the category of mental disorder most prevalent in both boys and girls in the age range 5-10 years, the most relevant for the work of Chance UK. Between 1999 and 2004 there was a decrease in prevalence of mental disorders for this younger age group but, within that, an increase in the prevalence of conduct disorders from 4.6 per cent to 4.9 per cent.

The paper will refer to children in both more and less severe problem groups as having conduct problems. The term conduct disorder is used in the paper to refer explicitly to the more severe group. Costs arising from conduct problems and conduct disorder are not always separated in the literature. Where costs for both groups are provided, we use the weighted average of both groups.

3. The costs of conduct problems in children

Costs to public services

The available evidence suggests that conduct problems in young children lead directly to an additional £22,000 in costs, per child, between the ages of 10 and 28. A breakdown of these costs is:

Education-related public services - £5,700: these costs arise through additional remedial help at school, being permanently excluded, social workers for truancy, and adult literacy classes.

Increased use of the criminal justice system - £10,200: this is based on the conservative assumption that there are no additional costs incurred past the age of 28.

Public health services - £1,000: between the ages of 10 and 28.
Social care services - £2,800.

Benefit payments - £2,200: we treat benefit payments as a cost to the public purse but a benefit to the individual, so that in the overall calculation they cancel each other out.

Domestic abuse and divorce services - £100: between the ages of 10 and 28.

Costs to individuals
We estimate that the total cost to individuals arising as a result of conduct problems in childhood is £142,800 per child over their lifetime. This breaks down into:

Reduced educational attainment - £12,700.

Additional crime - £90,700: from stolen or damaged property, crime prevention measures and emotional impact.

Benefit payments – (£2,200): benefit to the individuals offset by the cost to the public purse above.
Family costs - £41,600: from damaged property, missed work and additional time needed for household tasks.

4. The effectiveness of mentoring programmes in reducing conduct problems

A range of evidence on the effectiveness of mentoring programmes for young people exists, however, much of this work is focused on programmes in the USA and the findings may not be directly transferable to UK programmes. Evidence from UK programmes is considerably sparser, with the reports that do exist lacking robustness. A New Philanthropy Capital review in 2007 concluded that traditional mentoring programmes with the most chance of success were those that met six key criteria. An overview of the Chance UK programme, showing how it meets these different criteria, is included in Annex B.

Specific evaluations of Chance UK have found that a high proportion of their children leave the programme with improved conduct scores, many of which indicate the children no longer have conduct problems. However, without a control group – to identify outcomes which would have occurred even if the child had not been part of the Chance UK programme (the counterfactual) - and follow up data - to assess the lasting impact - a robust conclusion of the impact of the programme is not possible. For this reason, the approach taken here is to estimate how many children would need to avoid the negative outcomes and costs associated with conduct problems and disorders, as a direct result of Chance UK's mentoring programme, for the avoided costs to equal the cost of delivering the intervention.

Chance UK spends an average of £4,000 per child mentored. Based on this, and on the potential benefits to public services and individuals through avoidance of the costs estimated in section 3, Chance UK would break even in terms of an economic cost-benefit analysis if they were successful in ensuring that one out of every 42 children they mentored avoided the negative outcomes and costs associated with conduct problems, over and above those who would have improved anyway. This is a success rate of less than 2.5 per cent above the counterfactual. An alternative way of putting this is

that Chance UK's work would have to reduce negative outcomes resulting from behavioural problems by an average of 2.5 per cent compared to the counterfactual across all the children it mentored. In order to break even in terms of avoiding costs to public services alone, the success rate would need to be 20 per cent compared to the counterfactual.

5. Conclusions

There is a substantial amount of evidence suggesting that conduct problems in childhood result in negative outcomes in later life at a cost to both public services and individuals. In this paper we have calculated an updated conservative estimate of those costs based on the available literature and data.

In order to confirm the true extent of the benefits of Chance UK's work, we recommend that data is collected to allow an assessment of the lasting impacts of their mentoring programme which can be compared with a control group of children who do not receive that support.

1. Introduction

In 2004, 4.9 per cent of all children in the UK aged 5 to 10 were diagnosed with conduct disorder – the most severe form of conduct problems. Amongst boys, the figure was 6.9 per cent, with 2.8 per cent of girls diagnosed[1]. For 11-16 year olds this figure increased to 11.5 per cent.

There is strong evidence linking conduct problems with social disadvantage including crime, poor health, drug abuse and unemployment or lower-skilled employment. Farrington (1995) found that 40 per cent of eight year olds with conduct disorders went on to be repeatedly convicted of crimes including theft, vandalism and assault in adolescence. A 2006 report found that children with lower social-emotional development received lower grades than students of any other disability group. They were also more likely to drop out of high school and were more likely to be arrested both whilst still at school and after leaving[2].

The cost of these social problems can be high. There is no single UK study which estimates the total cost to society from conduct problems, although several do estimate elements of the impact. Estimates from the US suggest that rescuing a high-risk youth from a typical life path of crime could save in the region of $2m[3]. Another study which utilised UK data found the average cost of a persistent truant was £45K a year, representing a total cost of £800m a year, whilst an excluded child cost society £64K[4]. If a cost effective means of reducing behaviour problems in children was implemented, substantial savings to society could be made.

There is evidence in the literature that mentoring schemes can lead to improved behaviour scores and improved outcomes in terms of, among others, increased academic attendance and attainment, a reduction in problem behaviours and an improvement in employment outcomes[5]. A UK report found that the evidence pointed to a significant but small impact from traditional, one-to-one mentoring programmes, with higher benefits from schemes with trained mentors, structured activities, frequent contact and careful matching of mentors and mentees.[6]

Chance UK is a London-based charity which delivers one-to-one mentoring to primary school children who have been referred to them due to conduct difficulties with the aim of reducing youth crime and anti-social behaviour. Evaluations have found that children who completed the mentoring programme with Chance UK had a statistically significant improvement in their behaviour. In this paper we aim to take that analysis one step further and consider the potential impacts that an improvement in behaviour could have on life outcomes and the value of those improvements.

In the following sections this paper brings together a wide range of evidence on the above issues. Section 2 considers the prevalence of conduct problems in primary school children before section 3 examines the likely impact and cost of conduct problems for individuals and society. Section 4 then analyses general evidence around the likely impact of mentoring schemes. Based on the evidence examined, an assessment is made of the success rates necessary for Chance UK to break even in a social cost-benefit context.

[1] Department of Health (2004)
[2] Aviles et al. (2006)
[3] Cohen (1998)
[4] Brookes *et al.* (2007)
[5] Hall (2003)
[6] Sandford *et al.* (2007)

1.1 A note on evidence

Chance UK does not systematically collect data on the children who go through their programme past the end of their year of mentoring, although follow-up evidence has been used in previous research and future data collection is planned. Furthermore, to collect such data which imparted information on children's longer-term outcomes would require decades of collection. As such, it has not been possible in this report to assess the actual changes in life outcomes which occur as a result of their mentoring programme. Instead, we rely on more general evidence and data about the life outcomes of children with conduct problems and the costs of those outcomes before considering the evidence around the effectiveness of mentoring programmes and the evidence on the in-year impact of Chance UK's work.

There are two main potential sources for cost evidence. First, the body of literature which considers life outcomes for people who had conduct problems as children. This literature was written with a range of objectives in mind and, as such, varies greatly in its relevance to this paper. It also varies in the methodologies applied and the robustness and timeliness of the findings. We will clearly indicate where these issues might affect the robustness of the conclusions made here.

The second source of evidence is from admin and survey data on the use of services such as hospitals and schools, the prevalence of conduct problems and the involvement of different groups in crime. There is limited scope in some of this data to directly identify people who had conduct problems as children. As such, at times it is necessary to combine different data sources to calculate impacts. We will clearly set out how figures are derived from this data and, again, any potential limitations which arise as a result.

There are numerous approaches taken in the literature to estimating these impacts. There are also numerous ways this report could have collated the existing evidence and combined it with relevant, up-to-date data. A number of paths have been explored. In some areas, there is a far greater volume of supporting evidence, increasing the confidence in the estimations. In all areas, the final estimates presented here are designed to be conservative but realistic estimates of the monetary value of behavioural problems in childhood. All figures are presented in net present value terms, using a discount rate of 3.5 per cent, in line with Green Book recommendations. All figures are in 2010 prices. Figures are rounded to the nearest hundred where appropriate. Aggregate figures are summed and then rounded.

Where data has been available to break down the impacts to better represent the Chance UK demographic (for example, gender breakdowns), this has been incorporated into the analysis. However, this was generally not the case.

In the case of public services, whilst accurate data relating to children with conduct difficulties was available for some of these services, in many cases it was necessary to combine a range of disparate datasets and to make a number of speculative assumptions.

As such, it was decided that the most robust way forward for calculating the additional cost borne by public services was to use evidence from Scott *et al.* (2001). This paper carried out an economic analysis on the cumulative additional costs of public services used through to adulthood by individuals who had varying levels of conduct issues when they were ten years old. It focuses on 142 individuals from inner London divided into three categories: no problems, conduct problems, and conduct disorder (the most severe category which is found in around seven per cent of children).

The study used follows the children from the age of ten to 28. It used self-reported evidence on the use of a range of public services and combined this with official criminal records. Based on this, it calculated the additional costs incurred by public services for the children in conduct issue categories, over and above that incurred by children with no conduct problems. It then used OLS regression to control for the effects of factors including social class, gender and intelligence. It found that a child with conduct problems incurred an additional £13,100 in costs to public services and a child with conduct disorder incurred an additional £31,400, as a direct result of the problems/disorder. Both figures are the full costs incurred up to the age of 28.

For a child in the conduct problem group, this represents 55 per cent of the total additional cost to public services incurred by that child. For a child in the conduct disorder group, it represents 45 per cent. Here we assume these proportions are consistent across the six domains the study considers, so that for a child with conduct problems, 55 per cent of the total additional cost to each individual domain is attributable to those problems.

Based on the above calculations and assumptions, table 1 presents the total additional cost incurred as a result of conduct issues for each group, up-rated to 2010 prices.

There are a number of caveats around using the figures from this study. These are set out in section 1 of Annex A.

Table 1: Additional costs incurred by public services as a result of conduct problems and conduct disorder (£s)

	Conduct problems	Conduct disorder	Weighted average
Education	5,300	7,300	5,700
Crime	6,000	26,100	10,200
Health	900	1,300	1,000
Foster & residential care	2,400	4,500	2,800
Benefits	2,400	1,700	2,200
Relationships	110	40	100
Total	17,000	40,900	22,000

Source: Author's calculations based on data from Scott *et al.* (2001), prices uprated to 2010 values.

The final column in the table presents the weighted average between the two groups, based on the proportions in each group in the Scott study. These proportions are in line with the majority of the literature which finds around five per cent of the population have conduct disorder and between 15 and 30 per cent have conduct problems[7].

The weighted averages in table 1 are the costs to public services used for this report. In some cases additional calculations are made in this paper to account for limitations in the Scott study. These are explained in more detail in the relevant section of the report.

In addition to these costs to public services, this report also estimates the costs incurred by individuals as a result of their conduct problems. The calculations for these are set out in full in the following sections.

[7] Although, as noted elsewhere, the definitions of the less severe problem group vary from paper to paper.

2. The prevalence of conduct problems in young children

2.1 A note on definitions

Chance UK provides mentoring programmes for children with behavioural difficulties. This paper considers the impact of those behavioural difficulties on society. In order to do this, it is necessary to define what is meant by behavioural difficulties and to explain the related terms we will use in this paper.

Most children will suffer from behavioural problems at some point. They range from nail-biting and sleeplessness to more persistent and sometimes violent behaviours. These low level problems are not the concern of Chance UK who will only have children at the extreme end of the range of conduct problems referred to them. This severe level of behavioural problems is classified as conduct disorders. However, there is no set definition or measurement of conduct disorders or less severe conduct problems. A report by the Royal College of Psychiatrists note that the term generally describes a pattern of repeated and persistent misbehaviour, much worse than would normally be expected in a child of that age[8].

There are a number of other terms used for conduct problems, including behavioural problems or difficulties, antisocial or disobedient behaviour and similar. There are also multiple ways of assessing the extent of behavioural problems, generally through questionnaires of the children, parents and teachers. Chance UK uses the Goodman's Strengths and Difficulties Questionnaire (SDQ) – a valid and widely accepted method.

In this paper we do not restrict ourselves to evidence based on the SDQ methodology of assessing conduct problems. Across all the literature, the proportion of children suffering from conduct disorder is fairly consistent, at around five per cent of the population. Many reports also refer to another group of children as having less severe or less persistent conduct problems. This second group is often not well defined. Costs arising from conduct problems and conduct disorder are also not always separated in these studies and, where they are, there is no robust, consistent way of determining how the different groups match onto the children mentored by Chance UK.

It seems likely that those referred to Chance UK will be in the more severe group of conduct disorder. This is indicated by the very fact that their conduct problems have been severe enough to warrant both the child's teacher and parent(s) to agree to refer them to a charity such as Chance UK. However, without being able to determine the severity of the problem for sure, in instances where costs for both groups are provided, we take the conservative route of using weighted averages of the costs from both groups.

Whilst the terminology used in the literature is not always consistent, it seems that the meaning of the terms used is. This paper will refer to children in both the more and less severe problem groups as having conduct problems. Where the paper refers explicitly to the more severe group, the term conduct disorder is used.

2.2 Prevalence of conduct problems

[8] Richardson & Joughin (2002)

A 2004 report carried out by the Office for National Statistics on behalf of the Department of Health surveyed the prevalence of mental disorders in children and young people in the UK[9]. Table 2 sets out the prevalence of each category of disorder considered in children aged 5-10. This is the age range most relevant for the work of Chance UK.

Table 2: Prevalence of mental disorders in children in the UK: per cent of children aged 5-10 with the disorder

	Boys	Girls	All
Emotional disorder	2.2	2.5	2.4
Conduct disorder	6.9	2.8	4.9
Hyperkinetic disorder	2.7	0.4	1.6

Source: Department for Health (2004)

The table shows that conduct disorder, the category most relevant to the work of Chance UK, is the category of mental disorder most prevalent in both boys and girls in this age range. The report also found that prevalence rose among children aged 11-16, where total prevalence was 6.6 per cent.

Total prevalence of mental disorders between 1999 and 2004 was fairly consistent at around 9.5 per cent. Looking at the subcategories, however, reveals that there was a decrease in prevalence of mental disorders for the younger age group but, within that, an increase in the prevalence of conduct disorders 4.6 per cent to 4.9 per cent.

[9] Department of Health (2004)

3. The costs of conduct problems in children

The evidence suggests that, where children have conduct disorders, this manifests itself; through poor educational performance and then in later life through continuing mental health issues, poor employment outcomes, marital problems and criminal activity[10].

This section summarises the estimated costs to individuals and wider society arising from conduct problems in young children. Annex A provides a full outline of how these were calculated, an examination of other evidence which exists in each area and a consideration of some costs which couldn't be monetised due to a lack of evidence.

3.1 Costs to public services

As set out in section 1.1, this paper bases all additional costs to public services arising from conduct problems in childhood on the findings of Scott *et al.* (2001), up-rated to 2010 prices and using an average of the costs associated with conduct problems and conduct disorder.

The available evidence suggests that conduct problems in young children lead directly to an additional £22,000 in costs, per child, between the ages of 10 and 28. A breakdown of these costs is provided below.

Education related services

As shown in table 1, **additional costs to education-related public services as a result of conduct problems in children amount to £5,700 per child**. These costs arise through additional remedial help at school, being permanently excluded, social workers for truancy, and adult literacy classes.

Criminal Justice System

There is a large body of literature linking early on-set conduct problems with increased conviction and imprisonment rates in later life. Evidence from New Zealand suggests that individuals with conduct problems in childhood are responsible for over 60 per cent of all crime[11]. There are similar findings in the UK, where one study found that males with early on-set mild conduct problems were twice as likely to be arrested and 20 per cent more likely to be convicted than those with no conduct problems. Males who had severe conduct problems as a child were 3.5 times more likely to be arrested and 40 per cent more likely to be convicted[12].

A higher incidence of crime leads to a greater use of the criminal justice system (CJS). Based on evidence from Scott *et al*. (2001), we estimate that **£10,200 of the additional cost to public services arises from increased use of the CJS**. This is based on the conservative assumption that there are no additional costs incurred past the age of 28. Whilst not directly comparable, this estimate would seem to be considerably lower than that indicated in much of the literature.

Health services

[10] See Sainsbury Centre (2009) as well as the specific references in each of the following sections
[11] Fergusson *et al.* (2005)
[12] Richards & Abbott (2009)

There is consistent evidence that individuals with conduct problems in childhood are more likely use health services at a higher rate than children with no conduct problems.
As above, the cost to public health services is based on the results of the Scott *et al.* (2001) study. This found that by the age of 28, 44 per cent of children with conduct disorder and 30 per cent of children with conduct problems had been a hospital inpatient as a child. This compared to 12 per cent of the control group. As seen in section 1.1, the results imply that **children with conduct problems incur, on average, an additional £1,000 in costs to public health services** between the ages of 10 and 28. Evidence is not available for any difference in costs after that age and so we make the conservative assumption that there are no additional costs to public health services after this point[13]. Compared with the rest of the literature, which suggests conduct problems in childhood lead to much higher rates of hospital attendance, this figure seems relatively low.

Foster and residential care

The prevalence of conduct problems in foster children and children in residential care is considerably higher than in children living with their biological families[14]. A review by the Government Office for Science (GO-Science) reported on the prevalence of mental disorders in children in local authority care. It found 37 per cent had clinically significant conduct disorders[15].

Scott *et al.* (1999) found that children with conduct problems were twice as likely to be placed as children with no problems and children with conduct disorders were twice as likely again. In all, around 12 per cent of children with conduct problems entered a foster or residential home, compared to 5 per cent of the control group. These figures are, however, based on relatively small sample sizes.

Despite the potential sample size issues, the Scott *et al.* study has the advantage that it controls for other characteristics and is consistent with the other estimates in this paper. We therefore use the figures calculated in section 1.2, and estimate that **the additional cost to social care services arising as a result of conduct problems in childhood is £2,800.**

State benefits

The Scott *et al.* estimates imply an **additional cost of £2,200 to the public through benefits payments arising from conduct problems in childhood**. Benefit payments represent a transfer of welfare, from non-recipients to recipients. As such, these payments do not alter the welfare of society overall. Here we treat benefit payments as a cost to the public purse but a benefit to the individual, so that they cancel each other out.

Family-related services

The Scott study also identified additional costs to public services arising from less stable family environments leading to **additional costs to domestic abuse and divorce services. We estimate that this amounted to £100** over the eighteen year period.

Total additional cost to public services

[13] This assumption is in line with that of Brookes *et al.* (2007)
[14] Wolkind S, Rushton A. Residential and foster family care. In: Rutter M, Taylor E, Hersov L, eds. Child and adolescent psychiatry. Oxford: Blackwell Scientific Publications, 1994: 252-66.
[15] Meltzer (2008)

Taking all these costs into account, we estimate that the additional cost to public services arising from conduct problems in childhood is £22,000 per child, over the lifetime of a child.

3.2 Costs to individuals

The vast bulk of additional costs arising from conduct problems in childhood fall on individuals, whether they are the individual who suffers from conduct problems, their families, or the victims of crime. This section summarises the costs which fall on those individuals.

Reduced educational attainment and employment outcomes

Richards & Abbott (2009) use a nationally representative birth cohort study to estimate the impact of conduct problems in childhood on educational attainment. Their results suggest that 2.5 per cent of all children mentored by Chance UK would go on to receive no qualifications as a result of their conduct problems[16]. This results in an expected average reduction in lifetime wages per child with conduct problems of £4,800.

The same study also allows us to estimate the impact of conduct problems on attaining advanced (level 3) qualifications. Their report suggests that, in addition to those children who go on to receive no qualifications, a further 11 per cent of all children mentored by Chance UK would fail to attain advanced qualifications as a result of their conduct problems. This results in an expected average reduction in lifetime wages per child with conduct problems of £7,900 in net present value terms and 2010 prices.

Summing the two components, this suggests that the **total cost arising from reduced educational attainment to individuals who suffer from childhood conduct problems is £12,700.**

Crime

We saw in the previous section that conduct problems in childhood lead to increased costs for the CJS. However, public service costs represent a fraction of the total costs of crime, with society facing a much larger burden through factors such as stolen or damaged property, crime prevention measures and emotional impact. Using Home Office data on the cost of crime and the extent of unrecorded crime, we estimate **the total cost to society of additional crime resulting from conduct problems is £90,700**, on top of the cost to the CJS.

State benefits

We saw in the previous section that taxpayers face an increased cost of £2,200 through additional benefits paid to individuals as a result of childhood conduct problems. Here we view these benefits as a direct transfer to individuals and so they are captured here as a **negative cost to individuals of £2,200 through benefits received.**

Family costs

Romeo *et al.* (2006) calculate a range of costs arising from severe antisocial behaviour in children. Unlike Scott *et al.*, who focus on costs to public services, the 2006 study includes costs borne by the

[16] In this case, data on gender was readily available, allowing a weighted cost to be estimated which reflects the gender split of children mentored through Chance UK's programme. This allows for the estimated costs to account for the gender differences in impacts on educational attainment arising from conduct problems. Full details are in Annex A.

families of the children, through damaged property, missed work and additional time needed for household tasks. In total, the study estimated an additional cost to families of £4,637 over the course of one year in 2002/03 prices. The report does not provide any evidence as to how these costs develop as the child ages. If we assume it is an annual cost up to the age of 16, after which no further costs are incurred **the total cost to families, in net present value terms, is £41,600 per child**.

The Scott study implies that behavioural problems in childhood lead to increased incidence of domestic abuse and divorce in later life. It is likely there would be significant additional costs to individuals arising from these but data does not exist for us to monetise them here.

Total cost to individuals

Taking all these costs into account, we estimate that the **total cost to individuals arising as a result of conduct problems in childhood is £142,800** over the lifetime of the child.

Therefore, we estimate that the **total additional cost to society of conduct problems in childhood amounts to an average of £164,800 per child**. This is based on conservative assumptions and does not account for a range of costs which it has not been possible to monetise.

Table 3 provides a summary of all costs by domain and the group they fall on.

Table 3: Summary of costs arising from childhood conduct problems, £s in 2010 prices

	Public services	Individuals
Education	5,700	12,700
Health	1,000	-
Foster & residential care	2,800	-
Relationships	100	-
State benefits	2,200	-2,200 (benefit to individuals)
Crime	10,200	90,700
Family	-	41,600
Total	**22,000**	**142,800**

Notes: Cells marked "-" represent areas in which we have not been able to quantify the impact. Totals may differ due to rounding.

4. The effectiveness of mentoring programmes in reducing conduct problems

In order to assess the likely impact of Chance UK's work, this chapter considers the evidence around the benefits of similar programmes.

Past evidence on the effectiveness of Chance UK's mentoring

A range of evidence on the effectiveness of mentoring programmes for young people exists, including evaluations of specific programmes and more general literature reviews. As Hall (2003) notes, however, much of this work is focused on programmes in the United States of America and, as such, the findings may not be directly transferable to UK programmes due to the differing social and historical contexts.

The US evidence does, however, include robust evaluation evidence of long-running mentoring programmes. As a result, whilst we do not attempt to transfer any quantified elements of these evaluations, we do consider the general findings to be of relevance to this study.

Hall's 2003 literature review of mentoring programmes for young people found that there was evidence of a small but significant positive impact on problem behaviours, academic outcomes and career outcomes. Hall also noted another review of US mentoring programmes which found mentored children went on to have better attendance at school, were less violent and had better attitudes to school, the elderly and to helping others.

Evidence from UK programmes is considerably sparser. Hall concluded that whilst the reports which do exist make claims for the positive benefits of mentoring, the evidence behind them lacked robustness. An updated review of the evidence in 2006[17] found mixed results with some volunteer one-to-one mentoring programmes not showing any significant benefits whilst others did.

With a mixed evidence base as to the effectiveness of one-to-one mentoring programmes in the UK, it is worthwhile to assess the evidence around aspects of mentoring programmes which make successful outcomes more likely. A 2007 New Philanthropy Capital (NPC) review of mentoring for young people summarised the research evidence in this area[18].

The review concluded that traditional mentoring programmes with the most chance of success were those that met six key criteria;

- respond to young people's needs, rather than imposing their own goals;
- invest in training and support;
- monitor the impact of their work;
- foster regular contact and long relationships
- provide structured activities for mentors and young people; and
- support or involve families.

The report also noted a number of additional programme attributes which tended to be associated with higher success rates. These including programmes offering training and ongoing support for mentors, good monitoring and evaluation techniques, frequent contact between mentors and

[17] Liabo & Lucas (2006)
[18] Sandford *et at.* (2007)

mentees, the use of structured activities to build relationships, good mentor selection, the involvement of families in programmes, and programmes that are driven by the needs and interests of mentees.

An overview of the Chance UK programme, showing how it meets these different criteria, can be found in Annex B.

There is evidence that mentoring programmes for young children with conduct problems can have a positive impact. Specific evaluations of Chance UK have found that a high proportion of their children leave the programme with improved conduct scores, many of which indicate the children no longer have conduct problems. However, without a control group – to identify outcomes which would have occurred even if the child had not been part of the Chance programme (the counterfactual) - and follow up data - to assess the lasting impact - a robust conclusion of the impact of the programme is not possible. For this reason, the approach taken here is to estimate how many children would need to avoid the negative outcomes and costs associated with conduct problems and disorders, as a direct result of Chance UK's mentoring programme, for the avoided costs to equal the cost of delivering the intervention, i.e. for the charity to break even.

The previous section provided estimates of the costs to society resulting from conduct problems in childhood. These provide the potential for avoided costs from children removed from conduct problems through mentoring programmes. A summary of these is provided in table 3. Chance UK spends an average of £4,000 per child mentored[19].

Based on this, and on the potential benefits to public services and individuals through avoidance of the costs estimated in section 3, Chance UK would break even in terms of an economic cost-benefit analysis if they were successful in ensuring that one out of every 42 children they mentored avoided the negative outcomes and costs associate with conduct problems, over and above those who would have improved anyway. This is a success rate of less than 2.5 per cent above the counterfactual. An alternative way of putting this is that Chance UK's work would have to reduce negative outcomes resulting from behavioural problems by an average of 2.5 per cent compared to the counterfactual across all the children it mentored. In order to break even in terms of avoiding costs to public services alone, the success rate would need to be 20 per cent compared to the counterfactual.

5. Conclusions

There is a substantial amount of evidence suggesting that conduct problems in childhood result in negative outcomes in later life at a cost to both public services and individuals. In this paper we have calculated an updated conservative estimate of those costs based on the available literature and data. Whilst it is not possible to estimate the precise value of the benefits arising from the work of Chance UK, the evidence suggests that their activities follow best practice in the area and are achieving positive results. Assessments of similar mentoring programmes in the US and UK suggest that they can be successful in improving conduct problems and, as a result, create benefits for society. Chance UK has to achieve a success rate of less than 2.5 per cent above the counterfactual in order to break, even when comparing the cost of delivering the programme with the costs avoided by public services and individuals.

[19] Figure provided by Chance UK

In order to confirm the true extent of the benefits of Chance UK's work, we recommend that data is collected to allow an assessment of the lasting impacts of their mentoring programme which can be compared with a control group of children who do not receive that support.

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Annex A

This annex sets out in detail the calculations behind the cost estimates in section 3. For each area, where appropriate, it also sets out related evidence from the literature. Where possible, for areas where there is evidence in the literature that further costs exists but cannot be monetised, a brief discussion is included.

1. Additional costs to education-related public services

As shown in table 1, additional costs to education-related public services as a result of conduct problems in children amount to £5,687 per child. These costs arise through additional remedial help at school, being permanently excluded, social workers for truancy, and adult literacy classes.

These costs are calculated from the Scott *et al.* study, for which a number of caveats apply. Whilst the data focus on a relevant group of children, from inner London, there are taken from 1998 and so may not reflect the circumstances facing children and parents today. This is an issue common across much of the literature, especially (inevitably) that based on a longitudinal study. A further issue is that it only measures costs up to the age of 28 – in many cases the costs are likely to manifest for several years after that age. Where possible, the analysis has been supplemented with additional evidence to, in part, account for this underestimate. Where supplementary evidence is not available, we take the conservative assumption that there were no additional costs.

A final point to note is that the figures are calculated on the basis of regression analysis. This captures correlation, not causality. It is possible that some elements of the costs are not fully directly attributable to the conduct problems. The study does attempt to mitigate this by controlling for parental social class and the child's reading age. However, it is likely that other factors are also influential which may mean the costs are overestimated.

2. Costs from reduced educational attainment

To calculate the costs which manifest through reduced performance in school and, therefore, employment, it is necessary to estimate how conduct problems impact on the qualifications children achieve in school and the impact reduced attainment levels have on earnings. Earnings are affected through two channels for those who receive lower educational attainment; lower wages and lower employment rates. This analysis accounts for both these channels.

The evidence behind these calculations

Data for the impact of conduct problems on educational attainment is taken from Richards & Abbott (2009) – a study of three national, representative birth cohort surveys covering post war Britain. One cohort asked questions for children aged five years, allowing analysis of whether the impacts on life chances were greater or worse for younger children. Whilst this analysis was only carried out for one cohort, here we assume that the advantages gained from the fact that it looks more specifically at younger children outweigh the reduction in robustness that this smaller sample size results in. As a nationally representative birth cohort survey which controls for socio-economic background and cognitive ability, this study is one of the strongest pieces of evidence in this area.

However, the data is not without its problems. Most critically, the questions only allow for us to conclude the impact of conduct problems on two levels of attainment (rather than across all levels). Furthermore, the impact of this on wages and employment had to be drawn from other data sources. When interpreting the results, it will be important to remember that the subjects of this

study were five years old in 1975 and, as such, circumstances for them may be different to those who are five years old now[20].

Figures on employment rates and hourly wages are National Statistics, both of which are available by level of educational attainment. These enable us to calculate earnings gaps for people with different levels of educational attainment. However, to gross up to annual wage gaps, it is necessary to make an assumption about the average hours worked as this data is not readily available by attainment level.

Data on weekly hours worked is available from the Annual Survey of Hours and Earnings (ASHE) broken down by occupation. Weekly hours worked did not show an obvious pattern between higher and lower skilled occupations[21] and so here a very general assumption that people with all levels of educational attainment worked the national median of 37 hours per week. If people with lower attainment levels worked significantly more or fewer hours than those with higher attainment levels, this would impact upon the results.

Calculations

Table A1 shows the impact of mild and severe early on-set conduct problems on attainment outcomes, once adjusted for socio-economic background and IQ. Figures show the fold-increase in probability as compared to children with no conduct problems.

Table A1: Adjusted odds ratios for educational outcomes in relation to early childhood conduct problems

		No conduct problems	Mild conduct problems	Severe conduct problems
No qualifications	Male	1	1.2*	1.6
	Female	1	1.3*	2.2
A-Level equivalent qualifications	Male	1	0.7	0.5
	Female	1	0.7	0.4

Source: Richards (2009)

Notes: Odds ratios give the probability of obtaining that level of attainment based on their conduct: this is normalised against the control group, which therefore has an odds ratio of 1 for all attainment levels. A ratio above one indicates that group is more likely than the control group to obtain that level. For example, an odds ratio of 1.2 indicates that group is 20 per cent more likely to obtain that level compared to the control group.

** Not significant with a 95 per cent confidence interval – these would be significant with a 90 per cent confidence interval*

Taking weighted averages across the conduct problem severities, using the proportion in each group from the cohort study, suggests that males with conduct issues have an average odds ratio of 1.3 whilst for females the equivalent figure is 1.5.

[20] For example, later in this paper we consider why smoking prevalence for this group could be expected to be lower among the current generation.

[21] Some low-skilled occupations had average hours both much higher than the median whilst some were much lower – the same was true for high-skilled occupations

The national cohort study also provided the percentage of each group that achieved no qualifications – the base for the odds ratios. For males and females with no conduct issues, this was 7.5 per cent and 6.2 per cent respectively.

Accounting for the individuals who would not have achieved any qualifications anyway, by adjusting the weighted averages, implies that 2.3 per cent of all males with conduct issues receive no qualifications solely as a result of those issues. The equivalent for females is 3.4 per cent.

Data from Chance UK shows that 80 per cent of children who are mentored through them are male. Using this to obtain a weighted average across genders suggests **2.5 per cent of all children mentored by Chance UK would go on to receive no qualifications as a result of their conduct problems**.

This enhanced likelihood of obtaining no qualifications has a knock on impact on earnings. Lower attainment tends to reduce earnings due to lower wages and employment rates.

In 2008 the employment rate for those with no qualifications was 48 per cent, a figure which had been falling over the course of the decade[22]. Employment rates naturally fluctuate depending on economic conditions and to use one year's figures could be misleading. For our calculations here we use the eight year averages between 2001 and 2008. This represents the most recent available data. Whilst this time period may not be representative of employment rates in the recession, as we are primarily concerned with the relative differences between different levels of qualification, the absolute rates are of less importance. Furthermore, as we are looking at a group who are not expected to enter the labour force for at least another six years, a recessionary period may not provide a more accurate estimate.

Table A2: Wages by qualification

	Median hourly wage (£)	Average employment rate (2001 – 2008 average)
Degree	16.10	-
Higher education	12.60	-
A Levels	10.00	77.8
GCSE grades A*-C	8.68	75.4
Other qualifications/Below level 2*	8.07	72.6
No qualification	6.93	49.4

Source: Wages from ONS; earnings by qualification in the UK, 2011. Employment rates from ONS; Labour Force Survey/Annual Population Survey Supplementary table 6.
** The two data sources have different attainment levels. The earnings data uses 'other qualifications' whilst the employment data use 'below level 2'. These are not a direct match; whilst 'other qualifications' includes below level 2 qualifications it also includes other qualifications which do not fit in the usual levels. As such, the wage data may not exactly match the employment data. It is, however, the closest proxy available.*

The median wage for people with no qualifications who were in work was £6.93 (October-December 2010), 86 per cent of the £8.07 earned by those who achieved 'other qualifications. The latter is the group closest in earnings to those with no qualifications. The employment data shows that people

[22] ONS – Labour Force Survey/Annual Population Survey – supplementary table 6: Employment rates by highest qualification of population aged 16-59/64 (2001-2008)

with no qualifications have an employment rate which is 68 per cent of that of people with below level 2 qualifications; the group closest to those with 'other qualifications'.

Combining these figures implies that someone with no qualifications, accounting for those in and out of employment, would earn 58.5 per cent of that earned by people whose qualifications are one level higher[23]. This assumes that all those who attain no qualifications as a result of behaviour problems would only have received one level higher attainment if they had no conduct problems – a conservative assumption.

Based on these figures, those with no qualifications will earn an average of £120 less per week, and £6,400 less per year, than those with below level 2 qualifications, assuming both groups work the national median of 37 hours per week. Assuming this is the average earnings gap from the age of 22 to 68[24], the ages to which the earnings data is relevant, this implies that the average increase in earnings that can be achieved through a reduction in people obtaining no qualifications by removing a child from the conduct problems group is £162 per year from age 22 to 68.

Data from the Annual Survey of Hours and Earnings (ASHE)[25] shows that between 2004 and 2011, annual wages for people aged 18-21 were, on average, between 53 and 55 per cent of those aged 22 and up, with little year-on-year fluctuation and no marked change during the recession.

Annual wage data for 16-17 year olds is unreliable and only available from that dataset for three years of that period. Hourly wage data shows that 16-17 year olds earned between 62 and 73 per cent of that earned by 18-21 year olds. The lowest figure was 2010, when the lowest age bracket earned 62 per cent of the average wage 18-21 year olds, with the youngest age group seemingly hardest hit by the recession.

In lieu of better data, here we assume that for the ages of 18-21, the earnings gap is half of the figure for 22-68 year old whilst from the ages of 16-17 it is two-thirds of 18-21 year olds[26]. It is further assumed that all people attaining either no qualifications or other qualifications leave school at age 16.

Based on these assumptions, calculating the difference in wages between the age of 16 and 64, children who do not attain any qualifications as a result of conduct order earn; £54 a week less than average when aged 16-17; £81 per week from 18-21, and; £162 per week from 21-64, in net present value terms and in 2010 prices,

Using these estimates, **the expected reduction in lifetime wages for children who do not attain any qualifications as a result of conduct problems is £4,800 in net present value terms and 2010 prices.**

Table A1 also presents the reduced probability of children not attaining "advanced qualifications" – those at A-level or equivalent (level 3 qualifications). Applying the same methodology as above, we calculate that 13.5 per cent of people who had conduct problems as a child go on to fail to achieve advanced qualifications as a result of those conduct problems.

[23] This is higher than the 44 per cent Friedli found in 2007 and is used here as a more conservative estimate
[24] Under current Government policy, the state pension age children today will be 68.
[25] ONS (2011) *Patterns of pay: 1997-2011 ASHE results*, table 11.
[26] Sensitivity analysis around the earnings gap for 16-17 year olds, using the upper and lower limits witnessed between 2004 and 2010 showed no significant change to the results, with just a £15 NPV difference over an individual's lifetime.

Here we assume the entirety of the children who received no qualifications as a result of conduct issues are part of this 13.5 per cent, and are therefore already accounted for in the above calculations. To avoid double counting we remove those children and continue with an estimate that 11 per cent of all children mentored by Chance UK would not go on to attain advanced qualifications as a result of their conduct problems.

There is no evidence on the level of attainment achieved by these children so here we conservatively assume they all achieved one level below advanced; GCSEs grade A* to C (level 2 qualifications). We also assume that they would not have advanced above level 3 qualifications in the absence of any conduct problems.

The median wage for people in work with level 2 qualifications is £8.68, 87 per cent of the average for people with level 3 qualifications. Employment data shows that people with level 2 qualifications had an eight year average employment rate which was 96.8 per cent of that for people with level 3 qualifications[27]. This implies that the average earnings of this group, accounting for those in and out of employment, would be 84 per cent of the average earnings for those with level three qualifications.

Again assuming an average 37 hour working week across all attainment levels, this implies an average earnings gap of £2,500 per year. Here we assume this is the average earnings gap each year from the age of 22 to 68 (the ages to which the earnings data relates).

Assuming this is the average earnings gap from the age of 22 to 68, the ages to which the earnings data is relevant, this implies that the average increase in earnings that can be achieved through a reduction in people obtaining no qualifications by removing a child from the conduct problems group is £280 per year from age 22 to 68. As above, we assume that the earnings gap is half that value in nominal terms from the ages 18 to 21.

For ages 16 and 17, however, a different approach is needed. Children attaining level 3 qualifications will generally have stayed in education longer, most commonly for two years to complete A-Levels. During these two years, children who do not go on to complete advanced qualifications may enter the workforce and, as such, earn a higher wage for those years. As seen above, average wages for these years (across all qualification levels) tend to be around one third of those for ages 22+. If we assume this holds across all attainment levels, this implies that children with no qualifications who enter the workforce aged 16 will earn £4,400 for those two years, based on a 37 hour working week and the hourly wage data used above. Using the employment rate data above, we assume 49.4 per cent of all children in the 16-17 age bracket enter employment.

Based on these assumptions, **the expected reduction in lifetime wages for children who do not attain advanced qualifications as a result of conduct problems is £7,900 in net present value terms and 2010 prices.**

Comparisons with the literature

Scott *et al.* (2001) did not look directly at attainment, as the study was focused on direct costs to the public sector rather than the individual, but did consider whether children with conduct disorders were more likely to be permanently excluded. The results showed that around five per cent of

[27] The eight year average for people with level 2 qualifications was 75.4 per cent compared to 77.8 per cent for people with level 3 qualifications.

children with conduct problems and disorders were permanently excluded from school, compared to none from their control group.

There is evidence to show that being excluded from school has a negative impact on, among others, attainment, employment, crime and health outcomes. It also has a direct cost to the education system through alternative means of education. It is assumed here that these costs are captured in the above calculations.

Data from the Youth Cohort Study (YCS) shows that by the age of 19, children who had not been excluded were significantly more likely to still be in education and were significantly less likely to be NEET (not in employment, education or training) than those who had been permanently or temporarily excluded – data is shown in table A3.

Table A3: Main activity at age 19 by exclusion status – Figures are percentage for each status in 2010

	Education	Employment	Government Sponsored Training (GST)	NEET
Permanently excluded	8	45	5	41
Suspended	16	49	4	31
Not excluded	47	36	4	13

Source: Youth Cohort Study & Longitudinal Study of Young People in England: The Activities and Experiences of 19 year olds: England 2010

With the exception of females with their own child, individuals who had been permanently excluded were the most likely to be NEET by a considerable margin – much more likely than any ethnic group, parental occupation or educational attainment. The likelihood of children who had been excluded being in education was joint lowest, equal to females who had their own child.

Care must be taken in reading too much into the correlation between exclusion and poor attainment/employment outcomes. Other factors which prevail more commonly among excluded children could also affect this data, with socio-economic background, family structure and different attitudes and motivations some of the factors that could play a part. The birth cohort study, however, did find that this wasn't the case for many of the life chances for children with conduct problems.

It is also commonly suggested that truancy is a symptom of conduct disorders[28]. **However, no studies exist which quantitatively link the prevalence of truancy to conduct problems. Furthermore, there is likely to be some overlap between the benefits estimated above and those made from a reduction in truancy leading to improved attainment. As such, we do not attempt to make that connection here.**

A New Philanthropy Capital study into the costs of truancy and exclusion utilised data from the YCS to calculate qualifications achieved by age 21 for those excluded compared to the average. Assuming that excluded children with a given grade were as likely to remain in education as a non-excluded child with the same level of attainment, NPC found excluded children were almost half as likely to get a degree, and over three times more likely to get no qualifications[29]. A knock on effect was found

[28] See, for example, Loeber *et al.* (1991)
[29] Brookes et al. 2007

in employment, with excluded children facing an unemployment rate two percentage points higher than the national average.

Richards & Abbott (2009) also considered the impact of adolescent and early on-set conduct problems on employment and earnings. For adolescents, they found that those with mild problems were at least one and a half times more likely to be in the worst decile in terms of economic inactivity, whilst those with severe problems were at least twice as likely. None of this impact was found to be attributable to socio-economic background or childhood IQ. Adolescents with mild conduct problems who were in employment were also twice as likely to be in a manual occupation whilst those with severe problems were three times as likely. These employment impacts of conduct problems in early childhood have not been valued here, indicating that there is likely to be a downward bias in the magnitude of the savings estimates.

There is a large body of literature which links conduct problems to reduced educational attainment. A US study found that children with serious emotional disturbance (SED) – a wider problem than conduct disorder but one with some similarities – were, compared to children with other disabilities, more likely to receive lower grades, fail courses and be held back a year. They were less likely to graduate from high school, drop out of education at younger ages and miss more days of school. They were also more likely to be arrested either during or after leaving school[30].

A 2009 study of three national birth cohort studies covering post war Britain found that adolescents who had mild conduct problems were around twice as likely to have no educational qualifications in early adulthood then those with no problems[31]. Adolescents with severe conduct problems were three to four times more likely to have no qualifications. The study examined whether socio-economic background or childhood IQ were behind these results, as they are two factors related to both conduct problems and attainment, but found that most of the association with low attainment was not accounted for by these factors.

The same study considered whether conduct problems impacted on the likelihood of obtaining advanced (A-level equivalent) qualifications, and found that adolescent conduct problems reduced this by a half for those with mild conduct problems after controlling for socio-economic background and IQ. The odds were lower still for those with severe conduct problems.

2.2 – Additional crime-related costs arising from conduct problems

To calculate the cost of crime committed as a result of conduct problems it is necessary to estimate the additional cost to the criminal justice system caused as a result of those problems.

The evidence behind these calculations

The figures used in this section are based on those of the Scott (2001) study. Scott's figures only account for the actual use of public services and as such do not capture any emotional or physical costs of crime or the cost of unreported crime. As such, adjustments are made to include these wider costs.

Whilst the Scott *et al.* study is a fairly small sample it gains an advantage over other studies in some other ways. Firstly, whilst the sample certainly isn't nationally representative, it does cover inner-London primary school children, which is the group most relevant for Chance UK's mentoring

[30] Chesapeake Institute (1994)
[31] Richards & Abbott (2009)

programme. It does control for other influencing factors including socio-economic background and other personal characteristics and, importantly, it has an outcome metric which is relatively straightforward to transfer to this study – percentage of the cost of crime attributable to conduct disorder. Other studies provide information relating to the probability of being arrested or convicted or the proportion of people who commit crimes but these don't offer a way to ascertain the cost of the crime which is committed and in some cases don't offer a control group of children with no conduct problems. As such, we primarily rely on Scott *et al.*'s findings here.

Calculations

In section 1.1 we calculated the additional cost to the criminal justice system arising as a result of individuals who had conduct problems as a child was £10,205 from the age of 10 up to 28. This figure excludes the cost of non-recorded crime – the Scott data was generally derived from official records – and any costs which fall outside the Criminal Justice Service (CJS). We make adjustments to the Scott figures to account for these wider costs.

Other costs of crime typically include the physical and emotional impact on victims, the value of property stolen or damaged, lost output and expenditure on prevention, insurance and victim services.

The Home Office provides data on the unit costs of crime split across several categories. Table A4 provides the percentage of total crime costs accounted for by each category. CJS costs account for just twenty per cent of the total. Therefore, by implication, the wider (non-CJS) costs are four times this figure. If we assume the same is true for costs incurred as a result of crime committed by individuals who had conduct problems as a child, the total additional cost of reported crime committed by an individual with conduct problems is £51,000.

For unreported crime which makes up 55% of all crime, there would be no additional cost to the CJS; however we assume that the wider costs are still incurred to the same degree[32]. Given this, **the total additional cost of crime committed by an individual with conduct problems is £101K between the ages of 10 and 28.** This accounts for costs of £91K falling on individuals and over £10K on public services.

Table A4: Estimated percentage of total cost of crimes against individuals and households

Category	**Percentage of total cost**
Defensive expenditure	1
Insurance administration	1
Physical and emotional impact	51
Value of property stolen	6
Property damaged/destroyed	3
Property recovered	-1
Victim services	0
Lost output	12
Health services	7
CJS costs	20

Source: Duborg et al. (2005)

[32] It is also likely that there would be other small changes in the wider costs with unreported crime. For instance, insurance administration would not be applicable for the unreported crime, as police reports are generally required to claim insurance. At the same time, it is likely that there would be less property recovered as well. Given the relatively small amounts involved, and to avoid spurious accuracy, here we assume all these other effects balance out.

Given the age profile of reoffending, it is likely that further costs would arise after the age of 28[33]. However, given a lack of direct evidence linking this to behaviour problems in childhood, we conservatively assumes that no further additional costs are incurred after the age of 28.

Evidence from the literature

Richards & Abbott (2009) found that males with early on-set mild conduct problems were twice as likely to be arrested and 20 per cent more likely to be convicted than those with no conduct problems. Males who had severe conduct problems as a child were 3.5 times more likely to be arrested and 40 per cent more likely to be convicted. The results were less strong for females, who had a small sample of arrests and convictions on which to conduct analysis, but a similar pattern was seen. There was no evidence on how many times each individual was arrested or convicted and there was no indication as to the severity of the crimes committed.

Evidence based on data for New Zealand children aged 7-10 found that the 5 per cent of children with conduct disorder went on to commit 30 per cent of total crime, whilst the 15 per cent with moderate problems were responsible for more than a third. Adjusting the figures to control for other risk factors for offending, including socio-economic background and cognitive ability, this 20 per cent of the population accounted for over half of all recorded offences[34].

The Cambridge Study in Delinquent Development followed a panel of 411 London children from the age of 8 to 48, with a particular focus on the development of criminal offending. It concluded that disruptive child behaviour was one of the strongest predictors of future offending, with 40 per cent of 8 year olds with conduct disorder going on to repeatedly be convicted of crimes including theft, vandalism and assault in adolescence, whilst 90 per cent of repeating juvenile offenders had conduct disorder in childhood[35].

2.3 - From conduct problems to health

There is consistent evidence that individuals with conduct problems in childhood are more likely use health services at a higher rate than children with no conduct problems.

As with previous sections, the cost to public services is based on the results of the Scott *et al.* (2001) study. This found that by the age of 28, 44 per cent of children with conduct disorder and 30 per cent of children with conduct problems had been a hospital inpatient as a child. This compared to 12 per cent of the control group. As seen in section 1.2, the results imply that **children with conduct disorders incur, on average, an additional £950 in costs to public health services** between the ages of 10 and 28. Evidence is not available for any difference in costs after that age and so we take the conservative assumption that there are no additional costs to public health services after this point[36].

This figure seems relatively low in comparison to the majority of the literature. A 2006 study by Romeo *et al.* looked specifically at the additional healthcare costs for 3-8 year olds who were in the worst 1 per cent of behaviour problems found an additional cost to the NHS of a child with antisocial behaviour was £490 in a single year.

[33] Brookes *et al.* (2007)
[34] Fergusson *et al.* (2005)
[35] Farrington (1995)
[36] This assumption is in line with that of Brookes *et al.* (2007)

There are a number of potential causes for this difference in the evidence. For example, it could be that children in the top percentile of behaviour problems are far more likely to be admitted to hospital than the "average" child with conduct problems. Alternatively, it could be that the younger age of the 3-8 year old group implies that they are more likely to be involved in an accident connected to their conduct problems than older children and adults (the UK Health Statistics do show that younger children are much more likely to visit a GP than older children). Furthermore, the 2006 study does not include a control group. Whilst it does only attempt to cost those visits attributed directly to the children's conduct problems, it is likely that this is a less robust control group than that of the Scott *et al.* study. It also does not allow for the control of other factors, such as socio-economic background.

Given these issues, we use the more conservative figure from the Scott *et al.* study for the public health services cost arising from children with conduct issues.

Other evidence from the literature

The Scott *et al.* figure is slightly lower than Beecham *et al.* (2011) who estimate savings from school-based social and emotional learning programmes to prevent conduct problems in childhood and find a saving to the NHS of £1,148 over ten years[37].

These figures only account for the cost to public health services – they do not account for any impact on the individual or on the economy through lost output, which tend to account for a larger proportion of the total cost[38]. It has not been possible to calculate the full economic cost of health issues caused by conduct problems.

2.4 - From conduct problems to social care

The prevalence of conduct problems in foster children and children in residential care is considerably higher than in children living with their biological families[39]. A review by the Government Office for Science (GO-Science) reported on the prevalence of mental disorders in children in local authority care. It found 37 per cent had clinically significant conduct disorders[40].

One study found that 28 per cent of children in care in Oxfordshire had conduct disorders compared to zero per cent amongst those children not in care, although this study does not identify whether these behaviours developed before or after entering care[41]. These studies do not, however, address the causality issue of whether the conduct problems made it more likely that a child would be taken into care or whether being taken into care triggered the conduct problems.

For this, we need to look at studies which can tell us whether the children already had conduct problems when they entered care. One such study looked at 5 – 12 year old children at the point of entry into the care system and found that over half had elevated or very elevated levels of conduct

[37] 2009 prices
[38] See, for example, Friedli & Parsonage (2007), in which the health and social care cost of mental illness was just 13 per cent of the total.
[39] Wolkind S, Rushton A. Residential and foster family care. In: Rutter M, Taylor E, Hersov L, eds. Child and adolescent psychiatry. Oxford: Blackwell Scientific Publications, 1994: 252-66.
[40] Meltzer (2008)
[41] McCann *et al.* (1996)

disorder – over a third were in the very elevated category[42], far higher than the prevalence in the general population.

Scott *et al.* (1999) found that children with conduct problems were twice as likely to be placed as children with no problems and children with conduct disorders were twice as likely again. In all, around 12 per cent of children with conduct problems entered a foster or residential home, compared to 5 per cent of the control group. These figures are, however, based on relatively small sample sizes.

Despite the potential sample size issues, the advantages the Scott *et al.* study holds as a result of controlling for other characteristics and consistency with the other estimates in this paper, here we use the figures calculated in section 1.2. As such, we estimate that t**he additional cost to social care services arising as a result of conduct problems in childhood is £2,800.**

2.5 Other costs

There are a range of other costs to society and individuals arising from conduct problems in childhood. This section summarises some of the main costs, quantifying them where possible.

State benefits

We saw in section 1.2 that the Scott *et al.* paper also allows an estimate of the **additional cost of £2,200 to the public through benefits payments arising from conduct problems in childhood**. Benefit payments represent a transfer of welfare, from society to the recipient. As such, these payments do not alter the net societal welfare. In this paper we will treat benefit payments as a cost to society but a benefit to the individual.

Family costs

Romeo *et al.* (2006) calculate a range of costs arising from severe antisocial behaviour in children. Unlike Scott *et al.*, who focus on costs to public services, the 2006 study includes costs borne by the families of the children, through damaged property, missed work and additional time needed for household tasks. However, a number of caveats should be associated with this report. As with much of the evidence in the literature, it is based on old data, from 1995-99, and when measured they relied on participant's recollection of the scenario. Since that time, the services on offer to parents of children with conduct problems will have changed, as will the patterns of employment and family structures. All this could affect the estimate, although there is no evidence to determine by how much or in which direction. This paper takes the *Romeo et al.* study as the best source of information available in this area.

In total, the study estimated an additional cost to families of £4,600 over the course of one year in 2002/03 prices. The paper does not provide any evidence as to how these costs develop as the child aged. If we assume it is an annual cost up to the age of 16, after which no further costs are incurred **the total cost to families, in net present value terms, is £41,600 per child**. It is possible that the cost per year would decrease as the child's age increases, however lacking any means to estimate this profile, we assume here than any overestimation caused by not reducing the annual cost is balanced out by assuming no additional cost to families past the age of 16.

[42] Dimigen *et al.* (1999)

This figure is relatively high compared to the public service costs outlined in section 2. However, the findings are consistent with Romeo *et al.* (2006), who found the non-service costs to families accounted for 78 per cent of the total. Here, when considering just the family and services cost (as the Romeo study did), the family costs account for 65 per cent of the total.

Smoking

Richards & Abbott (2009) consider whether early on-set conduct problems increase the likelihood of adult mental health problems, alcohol problems or increased smoking prevalence, as measured the proportion of people smoking daily at age 34. Taking a weighted average across conduct problem severity and allowing for the 80 per cent male intake at Chance UK, the results showed that **people who had conduct problems as a child were 90 per cent more likely to be daily smokers at the age of 34[43].** Based on the percentages given in the report, and assuming the sample is half male and half female (which is reasonable given it's a nationally representative sample) this indicates that 19 per cent of the groups with conduct problems went on to become daily smokers as a result of those problems.

Evidence carried out by Oxford University estimated the annual cost to the NHS from smoking related illness to be £5.2bn in 2005-06. It is, however, very difficult to estimate the increased costs incurred through each individual smoker. Furthermore, the prevalence of smoking has been declining rapidly in the UK for a number of years – the attitude towards smoking has changed considerably and so evidence derived from people born in 1970, as the cohort were, may not be relevant for people born in 2000.

It has also been estimated that the health care savings resulting from smoking cessation may be entirely cancelled out by increased costs as ex-smokers start to live longer[44]. As such, **we do not attempt to estimate the additional costs of healthcare arising from the increased risk of smoking resulting from conduct problems,** assuming instead that they have a neutral impact on health care costs.

Increased likelihood of smoking would have a negative impact on the individual in terms of an increased probability of dying younger due to a smoking-related disease. However, given the difficulties in estimating the proportion of children who would go on to be a persistent smoker in future years as a result of conduct problems now, we do not make an attempt to estimate the potential increase in life-years which could result from reducing conduct problems in children.

Other health issues

All groups were also more likely to have alcohol problems but this was only statistically significant for females with mild conduct problems. As such **here we conservatively assume there is no impact on alcohol intake**. All these results were controlled for socio-economic background and childhood IQ.

[43] Males with mild conduct problems were around 70 per cent more likely to be regular smokers in adult life whilst those with severe problems were over twice as likely as those with no problems. For females, the equivalent increases in probability were 90 per cent and 140 per cent. Taking the weighted average across problem severities revealed that males were 80 per cent more likely to be daily smokers whilst females were twice as likely. Taking the 80:20 ratio of males to females and the weighted average odds ratio becomes 1.87.
[44] Barendregt *et al.* (1997)

Richards & Abbott's results also showed that male and females adults who had mild or severe conduct problems as a young child were around 30 per cent more likely to suffer from adult emotional problems[45], again adjusted to account for other influencing factors. Estimates from the World Health Organisation (WHO) show that in 2002 mental illness in the UK accounted for 20 per cent of the total burden of disease – more than any other disease (cardiovascular diseases came in second at 17.2 per cent)[46]. The Centre for Medical Health estimated that the total burden of mental illness in the UK was over £105bn a year in 2009/10[47]. However, **there is insufficient data available to assess what proportion of people who had conduct problems when younger go on to have adult mental health problems, the severity of those problems and the average cost per person arising from this. As such, here we do not put a value on this aspect of conduct problems**. This means it is likely that the estimate of the costs of reduced health outcomes is likely to be an underestimate and possibly a considerable one.

There is evidence to suggest that conduct disorder also makes children more likely to go on to use illegal drugs. A 1999 study of twins in Minnesota found that subjects with conduct disorder were more than six times more likely to go on to use cannabis[48]. Once again, however, the data is not available to confidently assess the proportion of children with conduct disorder who use drugs who would not have otherwise done so and, therefore**, it is not possible to estimate the potential cost savings which could be achieved through a reduction in the use of illegal drugs brought about by improving a young person's conduct problems.**

[45] With the exception of females with mild conduct problems, where the increased probability was 20 per cent but was statistically insignificant.
[46] As reported in Friedli & Parsonage (2007)
[47] Centre for Mental Health (2010) *The economic and social costs of mental health problems in 2009/10*
[48] Disney *et al.* (1999)

OVERVIEW OF THE CHANCE UK PROGRAMME

Annex B

School | Social Care | Other

REFERRAL FORM COMPLETED

Assessment by SPM

ACCEPT

SPM informs Referrer

REJECT

SPM informs Referrer

Signposting?

WAITING LIST ?

SPM allocates case to PM

PM 2nd assess

- PM conducts SCHOOL interview
- PM conducts MAIN CARER and CHILD interviews
- *PM contacts other agencies involved / CAF*
- *PM conducts Social Care interview (if involved)*

Volunteer Assessment

INFORMATION EVENING

- ✓ Application form
- ✓ Valid ID documents for DBS
- ✓ Fully enhanced DBS check
- ✓ 2 valid references

TRAINING DAY 1

TRAINING DAY 2

TRAINING DAY 3

INTERVIEW

Volunteer opt out?

VOLUNTEER ACCEPTANCE

ACCEPT

Mentor informed

REJECT

SPM informs volunteer

MENTOR MATCHING POOL

MATCHING

CONFIDENTIAL SUMMARY TO POTENTIAL MENTOR

ACCEPT MATCH

REJECT MATCH

Volunteer opt out?

INDUCTION

INTRODUCTION

ENGAGEMENT

- 1st SUPERVISION
- 2nd SUPERVISION
- 3rd SUPERVISION
- **3 MONTH REVIEW / GOAL SETTING**
- 5th SUPERVISION
- 6th SUPERVISION
- **6 MONTH CHECK**
- 7th SUPERVISION
- 8th SUPERVISION
- 9th SUPERVISION
- **9 MONTH REVIEW / ENDINGS PLAN**
- 10th SUPERVISION
- 12th SUPERVISION
- FINAL SUPERVISION

ENDINGS

Various Targeted Group Sessions and Workshops

PARENTPLUS MODEL

OPTIONAL PARENT SUPPORT

Multi-Agency and Partnership Working / Appropriate information sharing / Signposting

GRADUATION

PM debrief

- PM conducts SCHOOL debrief
- PM conducts MAIN CARER and CHILD debriefs
- PM conducts MENTOR debrief
- *PM conducts Social Care debrief (if involved)*

PM archives file

KEY

- CHANCE UK
- MENTORS
- Referral Agencies