REPORT

UCL Institute of Education

Centre for Mental Health

Children of the millennium

Understanding the course of conduct problems during childhood

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E·S·R·C ECONOMIC & SOCIAL RESEARCH COUNCIL

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Executive summary

This report sets out the key findings of a project on children's behaviour or conduct problems undertaken jointly by University College London Institute of Education and Centre for Mental Health, with funding from the Economic and Social Research Council[1].

The focus of the project is on the analysis of pathways or trajectories of conduct problems during childhood using data from the Millennium Cohort Study (MCS), a multi-purpose longitudinal study which is following a large sample of children born in the UK between September 2000 and January 2002.

Conduct disorder, characterised by persistent disobedient, disruptive and antisocial behaviour, is the most common diagnosable mental health condition in childhood, particularly among boys. About 60% of all children with any kind of diagnosable mental health problem have conduct disorder, often in combination with another problem such as hyperactivity/inattention or anxiety.

The overall prevalence of conduct disorder is around 5% among children aged 5-10, rising somewhat during the adolescent years. In addition, a similar number display problems which, while sub-threshold in clinical terms, are sufficiently severe to warrant concern, particularly because of the risk of poor long-term outcomes.

Severe conduct problems are associated with a wide range of adverse long-term outcomes extending into adulthood, including continuing mental health problems, poor performance at school and subsequently in the labour market, substance misuse, involvement in criminal activity, disrupted personal relationships and even a reduction in life expectancy. No other common childhood condition is associated with such far-reaching and pervasive consequences.

This report uses longitudinal data to explore three main topics:

1. Pathways of childhood conduct problems by gender

Existing evidence suggests that children who display severe conduct problems at a very early age are at greater risk of poor long-term outcomes than those whose problems first emerge later on. Statistical modelling of data in the MCS was therefore used, separately for boys and girls, to allocate all children in the sample to distinct groups, depending on the timing and persistence of their conduct problems between the ages of 3 and 11. We found that:

- 54% of boys and 78% of girls have a low risk of severe conduct problems at all ages from 3 to 11.
- About 8% of boys and 5% of girls have a risk of severe conduct problems which is high at age 3 and remains high at all ages through to 11.
- 35% of boys and 10% of girls have a high risk of severe problems at age 3 but a much lower risk at all subsequent ages.
- 3% of boys and 6% of girls have a low risk of severe problems at age 3 but an increasingly higher risk at later ages.

We investigated associations between a range of risks to which children were exposed in infancy and their subsequent likelihood of being on one or other of the different pathways. We found:

- Both boys and girls who develop conduct problems of very early onset are more likely to have been exposed to multiple early risks than those in the low problems group and those whose problems start during their primary school years.
- Boys appear more sensitive than girls to early parent-related risk factors such as single parenthood, low maternal attachment and parental attitudes identified as 'neglectful'.

[1] Research grant ES/L0008211/1. Trajectories of Conduct Problems. PI Leslie Morrison Gutman

- There is also a stronger link in boys between early developmental delay and the development and persistence of conduct problems, whilst among girls a higher likelihood of conduct problems is associated with aspects of infant temperament.
- Comparing children whose early problems persist and those whose problems resolve, the pattern of early risk exposure is broadly similar in terms of the number and type of risk factors involved, but the severity of each individual risk is generally greater, particularly among boys, in the group with persistent problems.
- Although there is little evidence to suggest a direct causal link, maternal smoking during pregnancy emerged as a significant marker for children having a greater chance of being on all of the higher conduct problem pathways.
- Low family income at 9 months was found to be the only individual risk factor common to both boys and girls that is associated with preschool conduct problems that persist rather than resolve.
- Early risk factors appear to shed little light on why children develop conduct problems for the first time when they are at school.

2. Pathways of conduct problems and the impact of multiple risks over time

We extended the analysis for children up to the age of 14 to include evidence of severe conduct problems that emerged after they moved to secondary school.

We found:

- 56% of children have a low risk of severe conduct problems at every age between 3 and 14.
- 8% of children have a high risk of severe conduct problems at every age between 3 and 14.
- 23% of children have a moderate to high risk of severe conduct problems at age 3 which rapidly declines to low risk.
- 13% of children have a low to moderate risk of severe conduct problems from ages 3 to 7 which increases substantially by age 14.

We investigated a range of risks to which children were exposed, persistently or intermittently, throughout childhood and the likelihood of their being on one or other of these different pathways.

The effects of all these risks were calculated separately at child ages 9 months and 3, 5, 7, 11 and 14 years. We found:

- The impact of socio-economic risk (eg poverty and insecure housing) appears to be much greater in the very early years than later on in childhood and adolescence.
- Family risks such as parental physical or mental illness have a modest but significant impact at most ages.
- Looking across the whole age range, child risks such as co-occurring mental health problems and low verbal cognitive ability show a consistently larger impact than any other category or type of risk.
- Children whose problems start early and persist to age 14 show higher chances than all other children of being exposed to both more severe and more persistent risks throughout childhood and early adolescence.
- Children whose problems start early but don't persist show a significantly reduced likelihood of experiencing key risks after the age of 7; indeed, children on this pathway appear to be little different in terms of risk exposure at ages 11 and 14 from their peers in the low problems group.
- Children whose problems first develop during their school years face much higher risks of all types at age 3 than children in the low problems group; in other words, these children are significantly different from the norm from the outset and not just around the time when their severe conduct problems first emerge.
- On the other hand, these later starters show a very substantial increase in child risk at ages 11 and 14.

3. Pathways of conduct problems and co-occurring mental health difficulties

In the light of the importance of co-occurring mental health problems, we analysed pathways for children with multiple mental health difficulties.

Four types of problems are measured in the MCS: conduct problems, hyperactivity/ inattention, emotional problems such as anxiety, and problems with peer relationships. The first two of these can be described as externalising conditions, in which children direct their emotional distress away from themselves, for example via aggression towards others, while the second two can be described as internalising conditions, which involve children channeling their emotional responses internally.

We identified four distinct groups of children depending on the presence or otherwise of co-occurring mental health difficulties between the ages of 3 and 11:

- 52% of children have consistently low levels of all four types of problems at all four time points between the ages of 3 and 11: the 'low problems' group.
- 27% have mild to moderate conduct and hyperactivity problems but low emotional and peer problems at each time point between ages 3 and 11: the 'moderate externalising, low internalising' group.
- 12% have mild to moderate emotional and peer problems but low levels of problems relating to conduct and hyperactivity: the 'moderate internalising, low externalising' group.
- 8% have moderate or severe difficulties across all four problems at all ages: the 'persistent high problems' group.

A wide range of early risk factors, mostly measured at age 9 months, was then analysed to assess the impact of risk exposure.

We found:

- The association with the identified early risk factors is generally stronger for children in the 'persistent high problems' group than for children in any of the other groups.
- The likelihood of a child following the 'persistent high problems' pathway is also associated with multiple risk factors operating in early life, including most measures of socio-economic risk, maternal depression, the quality of the parent-child relationship, developmental delay and low verbal cognitive ability.
- All of these factors apply in broadly equal measure to both boys and girls, although for girls an additional risk is associated with low birth weight.
- Although low income on its own was not found to be significantly associated with the likelihood of a child being in the 'persistent high problems' group, other measures of socio-economic risk were. These include low parental education, having parents in unskilled work and adverse housing conditions.
- For the most part, all of the risk factors just mentioned also apply to the two 'moderate problems' pathways, although in some cases other risks also come into play. For example, living in a single-parent family is associated with boys being on the 'moderate internalising, low externalising' pathway.
- We also found some factors which have the potential to protect against children's chances of developing co-existing mental health difficulties. These include verbal cognitive ability and, to a lesser extent, parental warmth and child regularity (i.e. regularity in terms of sleep, mealtimes etc). Among both boys and girls, minority ethnic status also appears to be protective.

Recommendations

1. **The Government should take concerted action to reduce childhood poverty and housing insecurity:** supporting families to keep out of poverty and find stable, uncrowded housing is likely to protect children against severe and persistent multiple mental health difficulties.

2. **Local authority public health departments**:
   a. **Should work with midwives, health visitors and schools** to improve the identification and reduction of key risk factors affecting children's likelihood of developing early mental health problems;
   b. **Should make routine use of robust screening tools such as the Strengths and Difficulties Questionnaire (SDQ) to assess the mental health needs of children in a timely manner.** These should be included in Joint Strategic Needs Assessments and inform strategies and commissioning plans for delivering support to families and in schools.

3. **The Government and local authorities should expand and invest in SureStart service provision:** this should prioritise the delivery of evidence-based support for families in reducing the risk factors for severe conduct problems.

4. **The Government should invest in evidence-based interventions to support positive parenting:** programmes that have been approved by NICE should be made available across the country through a concerted national expansion programme. All providers should then ensure that these interventions are well implemented and appropriately targeted towards families with the greatest needs.

5. **The Government should pilot and evaluate a whole-population parenting support programme:** building on a recent pilot scheme of a stepped-care programme in the Republic of Ireland which demonstrated widespread benefits.

6. **The Government should ensure that reforms to mental health support in schools prioritise children with multiple risks from a young age:** this should include investing in effective classroom-based programmes to boost healthy behaviour and wellbeing, and offering evidence-based support to children and families.

7. **NHS England should ensure that:**
   a. **School 'mental health support teams' prioritise children with severe conduct problems and multiple mental health difficulties:** this should include helping families access evidence-based interventions and working with school staff and families to build awareness and understanding about how to better support these children.
   b. **Broader child and adolescent mental health clinicians understand the impact of multiple mental health difficulties on children's life chances:** so that they can better recognise and support children presenting with these needs.

8. **NHS England should continue to improve the quality of support available for mothers, fathers and children affected by parental mental illness including**:
   a. Ensuring swift access for parents to proven psychological therapies;
   b. Prioritising a 'think family' approach in both adult and child and adolescent mental health services;
   c. Supporting schools and services to more effectively recognise and support children affected by parental mental health difficulties.

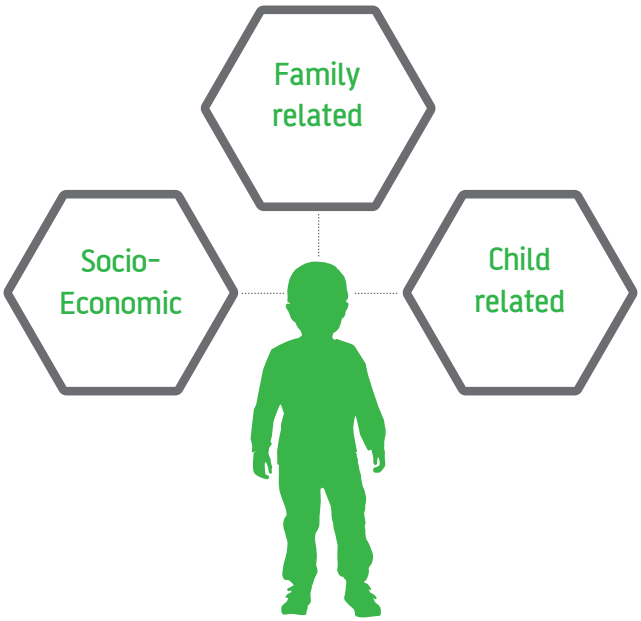
9. **The Department for Education should revise Special Education Needs and Disabilities (SEND) guidelines to prioritise children with multiple mental health difficulties:** this should enable schools and other services to work together to offer improved support for those whose needs may currently not be given a priority yet whose outcomes are often the poorest long-term.

10. **The National Institute for Health and Care Excellence should develop guidance focused on improving understanding of what works for children with multiple mental health difficulties.**

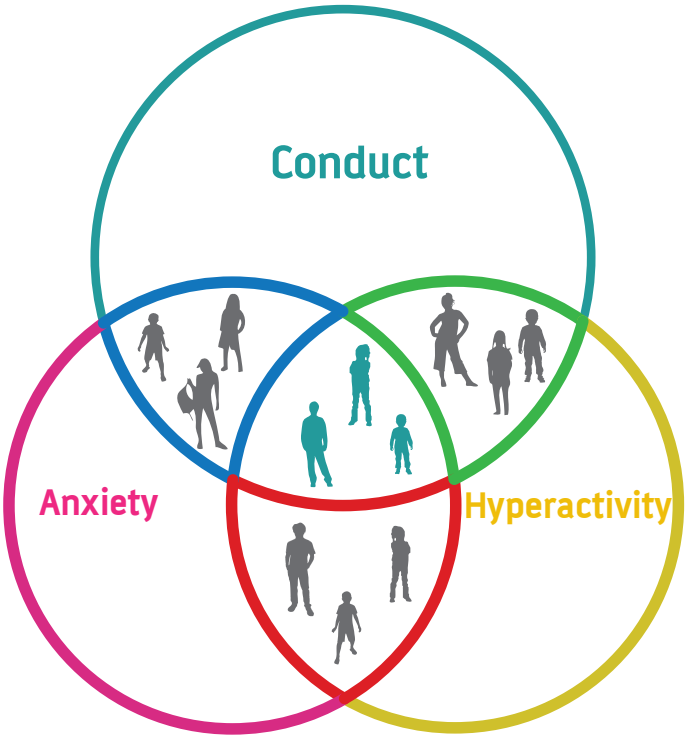
Children of the millennium: Key findings from the report

1 child in **12** has a high risk of **severe conduct problems** at every age between 3 and 14

Children with severe conduct problems are exposed to multiple risks from birth, including: **socio-economic risks** (eg low parental education, poor housing), **family/parental-related risks** (eg maternal mental illness, poor maternal attachment), and **child-related risks** (eg developmental delay, 'difficult' temperament)



Many of the children at high risk of **severe conduct problems** also experience other mental health difficulties at the same time, including hyperactivity, anxiety or depression.



Conduct disorder affects about **5% of children aged 5-10**

Chapter 1: Introduction

This report sets out the key findings of a project on children's conduct problems undertaken jointly by the University College London Institute of Education and Centre for Mental Health, with funding from the Economic and Social Research Council. (It follows an earlier report, *Children of the New Century: mental health findings from the Millennium Cohort Study*, Gutman, *et al.*, 2015).

The focus of the project is on the analysis of pathways or trajectories of conduct problems during childhood using data from the Millennium Cohort Study, a multi-purpose longitudinal study which is following a large sample of children born in the UK between September 2000 and January 2002.

All children behave badly from time to time and indeed occasional acts of disobedience, defiance and other forms of antisocial behaviour are a normal part of healthy child development. In some cases, however, these problems can become so severe, frequent and persistent that they justify a diagnosis of conduct disorder, a mental health condition which impairs a child's own functioning as well as causing significant distress to others.

Conduct disorder is the most common mental health problem in childhood, particularly among boys, and is associated with a wide range of adverse consequences, extending into adolescence and beyond. These include continuing mental health difficulties, poor performance at school and subsequently in the labour market, substance misuse, involvement in criminal activity and even a reduction in life expectancy. These outcomes carry a very heavy cost, not only to the individuals directly affected but also to the public purse and to society more generally.

Conduct problems often become apparent at a very early age, when children are as young as two or three. In some cases these difficulties appear to resolve of their own accord while in others they persist. And, although early onset is common, there are also many children whose problems first emerge at a later stage, including during adolescence. What is it that differentiates the persisters from the desisters and cases of early onset from those of later onset? And what are the key risk factors associated with the development of conduct problems, either in early childhood or later on?

Given the scale of conduct disorder and its very serious long-term consequences, these are important questions. For example, as only a proportion of children with early onset will turn out to have persistent problems, a programme offering support to all children with early difficulties would involve resources being expended unnecessarily on children whose problems will anyway resolve without support. So how can those who would benefit most be reliably identified?

Such questions can only be addressed satisfactorily through the analysis of longitudinal data, tracking the course of conduct problems over time and relating this to the characteristics and circumstances of the children concerned. This report does that, looking at three topics:

(1) Differences between boys and girls in their trajectories of conduct problems and the extent to which these can be linked to risks in the very early years, such as problems with mother-infant attachment or early exposure to child poverty (Chapter 3);

(2) The impact of risks to which children may be exposed, either persistently or intermittently, at any time during the course of childhood up to age 14 (Chapter 4); and

(3) Trajectories for children who have co-occurring mental health difficulties such as conduct problems combined with anxiety or hyperactivity/inattention (Chapter 5).

We also briefly review the available evidence on the importance of conduct problems in terms of their scale, consequences and costs (Chapter 2).

The Millennium Cohort Study

The Millennium Cohort Study (MCS) is a longitudinal study following a sample of children born in all four countries of the United Kingdom between September 2000 and January 2002. Unlike previous national birth cohort studies, which recruited all children born in a particular week, the MCS drew on a sample using a complex clustered and stratified design, with the deliberate over-sampling of children in areas of high child poverty, minority ethnic populations and the three smaller countries of the UK (Plewis, 2007; Joshi and Fitzsimons, 2016). Detailed information is so far available from six rounds of interviews completed with MCS families, carried out when the sampled children were aged 9 months, 3 years, 5 years, 7 years, 11 years and 14 years.

The number of families who have been interviewed at least once is 19,244, which includes 692 families who were not interviewed until the second survey. If these are included, the initial response rate to the survey out of all those eligible was 71%. As is typical of longitudinal studies, there has been some loss to follow-up, or 'attrition'. However, the MCS survey team has developed attrition weights to correct for possible biases due to non-response, together with sample weights which take into account the complex sample design, and these ensure that the child population data used in the statistical analyses in this report are nationally representative in terms of their socio-demographic profile (Hansen, 2014).

The measurement of conduct problems

In all the surveys of the MCS used in this report, children's mental health was measured using the Strengths and Difficulties Questionnaire (SDQ) (Goodman, 1997 and 2001). This is a widely tested and validated screening questionnaire in which parents and teachers report on a child's mental health in the previous six months. (Because all our statistical analyses start at child age 3, for which teachers' reports are not available, use is made throughout of the responses provided by parents.)

The SDQ includes 25 items divided into five groups or subscales relating to:

- Conduct problems (e.g. often has temper tantrums...often fights with other children... steals from home, school or elsewhere)
- Hyperactivity/inattention (e.g. restless, overactive...constantly fidgeting or squirming...easily distracted, concentration wanders)
- Emotional problems (e.g. many worries... often unhappy, downhearted...nervous or clingy in new situations)
- Peer problems (e.g. rather solitary, tends to play alone...picked on or bullied...gets on better with adults than other children)
- Pro-social (e.g. considerate of other people's feelings...shares readily with other children...kind to younger children).

Each item is marked on a three-point scoring system in which 0 = not true, 1 = somewhat true and 2 = very true. The five items in each group or subscale are then added together, giving scores potentially ranging from 0 to 10. A total difficulties (or total problems) score is calculated as the sum of the scores of the conduct, hyperactivity/inattention, emotional and peer problem subscales, with the pro-social subscale not being used in this calculation.

Although SDQ scores can be treated as reflecting a continuum, it is often convenient to categorise or group the scores. The original groupings presented for the SDQ scores were 'normal', 'borderline' and 'abnormal', although in current practice (including in this report) it is common to describe problems in the 'abnormal' range as being 'severe'. These bandings were established using data which had been collected in a separate national survey of children's mental health (Meltzer *et al.*, 2000), attempting to choose cut-off points such that 80% of children's scores were 'normal', 10% were 'borderline' and 10% denoted problems that were 'severe'.

These groupings apply to both the total difficulties score and the individual subscales.

In relation to total difficulties, a score at or above the cut-off is understood to be indicative of a clinically diagnosable mental disorder (Goodman and Goodman, 2009). However, this is not the case for any individual subscale. In other words, a child whose conduct problems are rated as 'severe' on the SDQ scoring system does not necessarily have a clinically diagnosable conduct disorder. Indeed, as will be noted in the following chapter, among children aged 5-10, the actual prevalence of this condition is about 5%, implying that around half of all children in the 'severe' group as classified by the SDQ have problems that, while undoubtedly serious, are sub-threshold from a clinical perspective. All references below to children with 'severe' conduct problems should be interpreted in this light. The numbers include all children whose scores for conduct problems put them at or above the cut-off in the SDQ scoring system.

A note on recommendations: Although the findings in this report are based on a UK study, the recommendations relate to England only.

Chapter 2: The importance of childhood conduct problems

Description

All children behave badly from time to time and indeed occasional acts of disobedience, defiance and other forms of rebellious or antisocial behaviour can be seen as a normal part of healthy child development. However, the extent of such behaviour varies greatly between children and in some cases the problems can become so severe, frequent and persistent as to justify a diagnosis of conduct disorder, a mental health condition recognised in all major illness classification systems, in which the scale of conduct problems is such as to impair a child's own functioning as well as causing significant distress to others. According to the National Clinical Guideline commissioned by NICE, conduct disorder refers to "a persistent pattern of antisocial behaviour in which the individual repeatedly breaks social rules and carries out aggressive acts which upset others" (NCCMH, 2013).

The nature of severe behavioural problems contributing to a diagnosis of conduct disorder is to some extent age-specific. For example, among children aged 3-7, the problems typically include persistent disobedience, angry outbursts and tantrums, provocation, physical aggression towards other children, destruction of property and blaming others. At ages 8-11 the list may also include swearing, lying, stealing, rule-breaking, physical fights, bullying, cruelty to animals and other children, and fire-setting. And at ages 12-17 the problem behaviours may extend to include violence, robbery, vandalism, substance misuse, persistent truanting, running away from home, early sexual activity and teenage pregnancy.

Also important is the age at which serious conduct problems first become apparent and it has been suggested in the published research literature that the overall population of children and young people with conduct disorder can be divided into two main sub-groups, distinguished by age of onset (Moffitt, 1993). In the first sub-group, difficulties start at a relatively early age, i.e. before age 10, with evidence of serious behavioural problems often emerging as young as ages two or three. Early onset is associated with a high degree of persistence, with about half of all cases having serious problems that continue not only into adolescence but also into adult life (NCCMH, 2013). In the second sub-group, conduct disorder begins in adolescence and persists beyond this phase of development in only a small minority of cases. Among all individuals with conduct disorder during adolescence, the most severe problems are usually manifested by those in the early onset sub-group whose problems have persisted into their teenage years.

Prevalence

According to the most recent official survey of mental health in children and young people, carried out in 2004, the prevalence of conduct disorder among children aged 5-10 is 4.9%, equivalent to around 30,000 children in each one-year cohort in this age range in England (Green *et al.*, 2005). This means that conduct disorder is by some margin the most common diagnosable mental health problem in childhood, with the statistics showing that among all children in the 5-10 age range with any kind of diagnosable condition, some 60% present with conduct disorder.

Similar numbers of children display behavioural problems which, while distressing, are insufficiently severe to merit a clinical diagnosis, but it is important not to overlook those with such sub-threshold problems, as the evidence shows very clearly that these problems can still signal an elevated risk of adverse outcomes in later life.

Conduct disorder is much more common among boys than girls, with the 2004 national survey showing prevalence rates of 6.9% among all boys in the 5-10 age range, compared with 2.8% among girls. Conduct disorder also has a strong gradient by socio-economic class, being around three times as common among children from unskilled and workless households

as among those from the professional and managerial groups.

Two further points on prevalence may also be noted. First, according to the 2004 national survey, more than a third of all children with conduct disorder have at least one other diagnosable mental health problem at the same time. Among children with conduct disorder and one other problem, the numbers divide roughly equally between those who have conduct disorder combined with an emotional disorder (most commonly anxiety) and those who have conduct disorder along with attention-deficit hyperactivity disorder (ADHD). These co-existing conditions are often missed when a diagnosis of conduct disorder is being made (NCCMH, 2013).

Finally, there is good evidence that the overall prevalence of conduct problems among children and young people has increased significantly in recent decades, with the most detailed study in this area finding that the proportion of adolescents aged 15-16 with severe conduct problems more than doubled over the 25-year period 1974-1999 (Collishaw *et al.*, 2004).

Outcomes

A substantial body of evidence, derived mainly from birth cohort studies and other sources of longitudinal data, shows that early-onset conduct disorder is a precursor to a very wide range of adverse outcomes, not only in childhood but throughout the life course and even extending into succeeding generations. No other common childhood condition is associated with such far-reaching and pervasive consequences. Moreover, statistical analysis demonstrates that the risk or likelihood of adverse outcomes remains high even when allowance is made for potentially confounding variables such as socio-economic background and cognitive ability, suggesting a causal link between early conduct problems and the outcomes in question.

Drawing on an earlier review of the evidence published by Centre for Mental Health (Parsonage *et al.*, 2014), the major domains of life associated with conduct disorder in childhood are set out in summary form below, along with illustrative examples from the research literature on the quantitative scale of increased risk.

Mental health: continuing mental health difficulties in adolescence and adulthood, including increased rates of depression and anxiety, alcohol and drug abuse, personality disorder, self-harm and suicide.

Uniquely, early-onset conduct disorder is a risk factor for all major adult psychiatric disorders, and it has been estimated that if conduct disorder in childhood could be prevented, the prevalence of mental illness among adults would be reduced by 25-50% (Kim-Cohen *et al.*, 2003).

One study found that males with early-onset conduct disorder are three times more likely than those with no early problems to suffer from depression in their late 20s and early 30s, eight times more likely to have post-traumatic stress disorder, twice as likely to be alcohol dependent, five times more likely to be drug dependent, 19 times more likely to have received inpatient treatment in a psychiatric hospital and 25 times more likely to have attempted suicide (Odgers *et al.*, 2007).

Physical health: increased rates of morbidity, disability and premature mortality, often associated with risky behaviours; high rates of teenage pregnancy.

A Swedish study found that children with severe behavioural problems were 5.5 times more likely to die before age 30 than those with no such problems, from a range of causes including suicide, homicide, drug overdoses and accidental poisoning as well as illness (Kratzer and Hodgins, 1997).

Another study, based on New Zealand birth cohort data, found that children with conduct disorder at ages 7-9 were subsequently nearly three times more likely to become teenage parents than those with no early behavioural problems (Fergusson *et al.*, 2005).

Child protection: high risk of being placed on child protection registers and being taken into care.

A detailed study of child protection registers in West Sussex found that children with conduct disorder were 7.6 times more likely than other children to be registered (Spencer *et al.*, 2005). Separately, a national study carried out in this country in 2002 found that the prevalence of conduct disorder in looked-after children aged 5-10 was 36.5%, which is 7.5 times higher than the prevalence of this condition among children generally (Meltzer *et al.*, 2003a).

Education: high rates of truancy and school exclusion; disruptive behaviour in class, hampering the learning of other children and causing stress for teachers; frequent involvement in bullying as both perpetrator and victim; poor educational attainment.

One study in this country found that having persistent conduct disorder increased the risk of being excluded from school by almost 25 times compared with no disorder, the most common reasons for exclusion being aggressive or violent behaviour, being rude or disrespectful to teachers, stealing, vandalism or general bad behaviour (Meltzer *et al.*, 2003b).

On educational attainment, a New Zealand study found that 31% of children who had conduct disorder at age 8 left secondary school without any qualifications compared with 17% among those with no early behavioural problems (Fergusson and Lynskey, 1998).

Employment: high rates of unemployment; increased likelihood of employment in low-paid jobs and in jobs held for short periods of time; increased dependency on social security benefits.

A study based on British birth cohort data found that individuals with severe conduct problems during their school years were subsequently around 4.5 times more likely than those with no such problems to experience chronic economic inactivity, based on a measure of non-working because of unemployment, permanent or temporary sick leave, or disability. Among those in work, the average earnings of males with severe early conduct problems were around 30% lower at age 34 than among those with no such problems (Abbott and Richards, 2009).

A study using New Zealand birth cohort data found that on average the amount of time spent on social security benefits between the ages of 26 and 38 was 6.5 times higher among those in the sample with persistent early-onset conduct problems than among those with no such problems (Rivenbark *et al.*, 2017).

Crime: high rates of involvement in all types of criminal activity, including violent crime, often starting at an early age.

Evidence from the Cambridge Study in Delinquent Development has shown that 90% of prolific adolescent offenders had conduct disorder at age 8 (Farrington, 1995), while a longitudinal study in New Zealand found that 18% of all those in the sample who had conduct disorder at ages 7-9 received a court conviction for any offence during the 12-month period from age 17 to 18, a proportion which was nearly seven times as high as among those who had no behavioural problems in childhood (Fergusson and Lynskey, 1998).

Concerning crime in adult life, it has been found in one study that people who had conduct disorder at ages 7-9 were 3.2 times more likely than those with no early problems to engage in property-related offending at ages 21-25, 4.1 times more likely to engage in violent offending and no less than 19 times more likely to have served a prison sentence (Fergusson *et al.*, 2005). Another study based on birth cohort data found that the 10% of males in the sample who had severe behavioural problems in childhood accounted for 72% of the total time spent in prison up to age 32 by all members of the sample combined (Odgers *et al.*, 2007).

Homelessness: substantially increased risk of experiencing homelessness.

One study found that 20% of all men with early-onset conduct disorder had some experience of homelessness between the ages of 26 and 32, representing a ten-fold increase in the odds of homelessness compared with men who had no early history of behavioural problems (Odgers *et al.*, 2007).

Social networks: few if any friends, whether in childhood or later life; limited involvement in social activities.

The 2004 British national survey of child and adolescent mental health found that children with conduct disorder were around three times more likely than average to have difficulty in making friends and around eight times more likely to have difficulty in keeping them (Green *et al.*, 2005). The same study also found that 20% of children with conduct disorder had no friends or only one, compared with 5% of other children.

Relationships: high rates of involvement in personal relationships which are short-lived and characterised by abuse and violence, including mutual violence.

One study found that adults who had conduct disorder at ages 7-9 were twice as likely as those with no early problems to have multiple (ten or more) sexual partners at ages 21-25 and more than three times as likely to have been involved in inter-partner violence in the 12 months up to age 25 (Fergusson *et al.*, 2005). Another study found that at age 32, men with persistent early-onset conduct problems were ten times more likely than those with no such problems to inflict controlling abuse on their partners, while relative to their numbers in the sample these men accounted for six times their share of convictions for rape and violence against women (Moffitt *et al.*, 2002).

Finally, there is a good deal of evidence to suggest that children with conduct disorder are likely in their turn to become the parents of children who themselves display the same severe behavioural problems (Jaffée *et al.*, 2006; Pajer, 1998). Among the possible reasons for this are that parents with a history of behavioural problems tend to be more hostile and harsh in their parenting styles (Bosquet and Egeland, 2000) and are also more likely to abuse their own children (Verona and Sachs-Ericsson, 2005), both of which are major risk factors for the early development of conduct disorder in children.

Costs

The evidence summarised above shows very clearly that the consequences of early-onset conduct disorder are both wide-ranging and long-lasting. One way of highlighting the overall scale of these adverse outcomes is to express as many of them as possible in monetary terms and then to combine these into a single estimate of lifetime costs. Various studies have produced cost figures, usually within specific age ranges rather than across the full life course and often focusing on costs to the public purse rather society as a whole, but all of these are likely to under-estimate the true costs by a substantial margin.

The main reason for this is that many of the adverse outcomes of conduct disorder are difficult to quantify, let alone value in monetary terms. A specific example might be classroom disruption in schools and its impact on teachers and other pupils, but this is merely one instance of many of a wide range of antisocial behaviours which in one way or another cause distress or unhappiness in others. And individuals with conduct disorder may themselves suffer significant distress because of the consequences of their behaviour, such as poor personal relationships and social isolation. Such impacts on wellbeing and quality of life are inherently hard to measure and value.

In addition, there are some effects of antisocial behaviour which can be quantified but which are rarely if ever included in the estimated costs of conduct disorder. For example, bullying is a common behaviour by people with severe conduct problems, particularly – but not only – in childhood. Evidence from longitudinal studies shows that being bullied can have serious long-term economic consequences, with one study estimating that after taking into account a range of other influences, the lifetime earnings of a victim of serious bullying are reduced by around £50,000 on average (Hummel *et al.*, 2009, drawing on data in Brown and Taylor, 2008). Some of this is clearly an attributable cost of conduct disorder, but not one which features in any published estimate of overall costs.

Costs in childhood

Three British studies provide estimates of the costs of conduct disorder in childhood (Knapp *et al.*, 1999; Romeo *et al.*, 2006; and Snell *et al.*, 2013). All of these give figures for the costs borne by public services (mainly health, social services and education), while the first two also include estimates of the quantifiable costs falling on families such as time off work. For comparison, costs in all three studies have been converted to a common 2017/18 price base, with costs in earlier years assumed to rise in line with general inflation.

The two studies giving figures for costs falling on families give broadly similar estimates, suggesting that on average any family which includes a child with conduct disorder faces extra costs amounting to around £7,000 a year in 2017/18 prices. In the case of public services, a simple average of the three studies suggests an annual cost of conduct disorder of around £5,500 a year, with 60% of this falling on the education sector (including both the costs associated with special educational needs and extra costs falling on frontline education services such as extra teaching assistants), 28% falling on the NHS and 12% on social services.

Costs in adolescence and early adulthood

The most detailed estimates of the costs of early-onset conduct disorder in adolescence and early adulthood are those given in a study by Scott *et al.* (2001), which provides figures for public sector costs incurred by a sample of children followed up between ages 10 and 28. The sample is divided into three groups, covering those with conduct disorder at age 10, those with sub-threshold conduct problems at the same age and those with no such problems.

Measured in 2017/18 prices, the average cumulative cost of public services used by individuals over the period from ages 10 to 28 was as follows:

- Individuals with conduct disorder at age 10: £100,267 per head
- Those with sub-threshold conduct problems at age 10: £34,832 per head
- Those with no conduct problems at age 10: £10,630 per head.

Measured on a net basis, i.e. over and above the costs incurred by someone with no conduct problems at age 10, the aggregate public sector cost of conduct disorder up to age 28 works out at £89,637, or £4,980 a year, while the equivalent cost of sub-threshold conduct problems is £24,202, or £1,345 a year. Disaggregation of the total cost for conduct disorder shows that 67% of the extra costs fall on the criminal justice system, reflecting the very strong links between conduct disorder and offending, 18% on the education sector and 13% on health and social services.

It can be calculated from the above that the additional costs of conduct disorder which fall on the criminal justice system (police, courts, prisons etc.) amount to an estimated £3,367 a year. High as this figure is, it represents only a fraction of the overall costs of crime. Comprehensive estimates of the total costs of crime were first published by the Home Office in 2000 (Brand and Price, 2000) and updated five years later (Dubourg *et al.*, 2005). These show that only 20% of the aggregate cost of crime was incurred by the criminal justice system, with most of the remainder falling on the victims of crime, including the value of stolen or damaged property, losses in earnings resulting from crime-related injuries and an imputed monetary value of the emotional and physical impact of crime on victims. The estimate of £3,367 a year for costs falling on the criminal justice system should therefore be grossed up to £16,835 a year for the aggregate societal cost of crime committed up to age 28 by an average individual who had conduct disorder at age 10.

Lifetime costs

A broad-based estimate of the lifetime societal costs of conduct disorder, covering not only crime but also adverse outcomes in adult life relating to mental illness, drug misuse, smoking and unemployment, is given by Friedli and Parsonage (2007). This combines information on adult outcomes derived from birth cohort studies with costings based on relevant sources such as the Home Office figures for the costs of crime. The study estimates that the overall lifetime cost of the identified adverse outcomes among people who had early conduct disorder is around £280,000 per case in 2017/18 prices, while the lifetime cost among those who had sub-threshold behavioural problems is put at around £90,000 per case. In each case the point of comparison is given by the outcomes in adult life experienced by people who had no conduct problems in childhood. Of the overall lifetime costs of conduct disorder, 71% are attributable to costs relating to crime, 13% to costs associated with adult illness and 7% to the costs of adverse labour market outcomes.

The lifetime costs of conduct disorder are so high that even modest improvements in outcomes are likely to produce a positive return on investment in early intervention, and the value-for-money case for such investment is further strengthened by the fact that most evidence-based interventions in this area are relatively low cost, e.g. only around £1,500 per child for a group parenting programme such as Triple P or Incredible Years.

Chapter 3: Pathways of childhood conduct problems by gender[2]

Introduction

It has long been known that the prevalence of conduct problems is significantly higher among boys than girls. At the same time, there is also a substantial research literature showing that the age at which these problems first become apparent is an important determinant of later outcomes. In particular, children who develop conduct problems during early childhood tend to be at much greater risk of continuing difficulties throughout middle childhood, adolescence and adulthood than those who first exhibit problems at a later age, with markedly poorer outcomes in many different areas of psychosocial functioning. In other words, pathways or trajectories of conduct problems differ significantly according to their age of onset.

There are, however, a number of important gaps in the published literature in this area. First, most studies have modelled developmental trajectories for conduct problems solely for boys, no doubt reflecting the much higher prevalence of problems in this group. Moreover, on the few occasions when separate pathways for boys and girls have been the subject of investigation, studies have not tracked problems from the earliest point that difficulties may first emerge (i.e. during the preschool years) or for long enough to provide a clear picture of any similarities or differences in the trajectories experienced by girls as opposed to boys. And there is also limited evidence from large representative samples on the early predictors of gender-specific conduct problem pathways starting in the preschool years. In short, we lack reliable information analysed on a gender-specific basis on both the pathways of conduct problems from early childhood and the early risk factors that are associated with the development, persistence and resolution of such problems.

To address these limitations, analysis has been undertaken using data from the Millennium Cohort Study which (a) identifies patterns and variations in the development of conduct problems over time separately for boys and girls from ages 3 to 11, and (b) examines early precursors of these different pathways or trajectories (Gutman *et al.*, 2018). Key findings are set out below, together with a discussion of their possible implications for policy and service provision.

Pathways

A useful starting point for the analysis of pathways is to provide background information on the age- and gender-specific prevalence of severe conduct problems in the MCS sample, based on the SDQ cut-offs described in Chapter 1. This is shown in Table 3.1 below.

Table 3.1: prevalence of severe conduct problems by age and gender

	Boys	Girls
Age 3	22%	19%
Age 5	13%	8%
Age 7	13%	8%
Age 11	14%	9%

[2] This chapter is based on Gutman, L.M, Joshi, H., Parsonage, M. and Schoon, I. (2018) Gender-specific trajectories of conduct problems from ages 3 to 11. *Journal of Abnormal Child Psychology*, **46**(7), 1467-1480

As can be seen, the prevalence of severe problems varies significantly by both age and gender. In line with the evidence from other studies, prevalence is higher among boys than girls at all ages in early to mid-childhood, with the highest rates being observed at age 3 (22% for boys and 19% for girls) when the gap between them is narrowest. Between ages 5 and 7 the average prevalence rates level off at 13% for boys and 8% for girls, each rising by one percentage point at age 11, to 14% and 9% respectively.

As further background, data from the MCS can be analysed to show how many children were assessed as having severe conduct problems at one or more of the four sweeps of the survey undertaken at child ages 3, 5, 7 and 11. The relevant numbers are as follows:

- At one age only: 17.6% of boys and 16.1% of girls;
- At two ages: 8.5% of boys and 6.0% of girls;
- At three ages: 4.5% of boys and 2.6% of girls;
- At all four ages: 2.7% of boys and 1.2% of girls.

As can be seen, among those children with the most persistent problems, boys outnumber girls by a factor of more than two to one.

To analyse these and other differences in more detail, gender-specific pathways have been identified using a statistical technique known as group-based trajectory modelling (Nagin, 2005; Jones and Nagin, 2013). In broad terms, the aim of this approach is to sort the members of a sample into groups of individuals based on their developmental trajectories such that those in any one group are similar to each other in terms of their development but different from those in any of the other groups.

On this basis, we identify four distinct groups or clusters of conduct problem trajectories. (We have given these the same labels for boys and girls, although there are differences by gender in prevalence rates and shapes of the trajectories.) These are:

- 'Low risk of conduct problems', covering children with a low risk of severe problems at all ages from 3 to 11. Around 54% of all boys in the sample fall into this group, compared with 78% of girls.
- 'Persistent - preschool onset', including children with a risk of severe conduct problems which is high at age 3 and remains high at all time points through to 11. About 8% of boys and 5% of girls fall into this group.
- 'Desisting - preschool onset', including children with a high risk of severe conduct problems at age 3 but a much lower risk at all subsequent surveys. As many as 35% of boys are in this group compared with 10% of girls.
- 'Later onset', including children with a low risk of severe problems at age 3 but an increasingly higher risk at later ages. Only 3% of boys are in this group compared with 6% of girls.

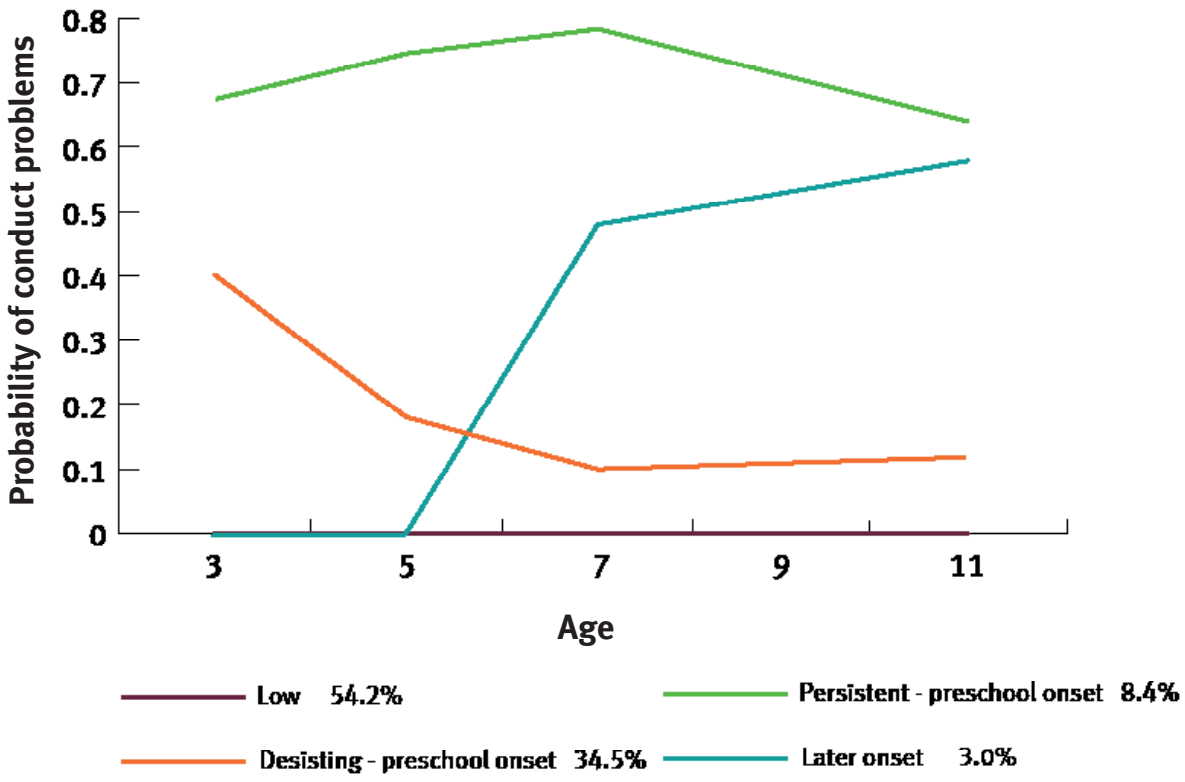
These findings are summarised in Table 3.2 below.

Table 3.2: numbers of boys and girls in conduct problem groupings

Conduct problem groupings	Boys	Girls
Low risk of conduct problems	54%	78%
Persistent - preschool onset	8%	5%
Desisting - preschool onset	35%	10%
Later onset	3%	6%

Further information on these groups is given in Figures 3.1. and 3.2 below, which show estimated trajectories relating to the probability of severe conduct problems occurring among the children in each group between the ages of 3 and 11, separately for boys (Figure 3.1) and girls (Figure 3.2).

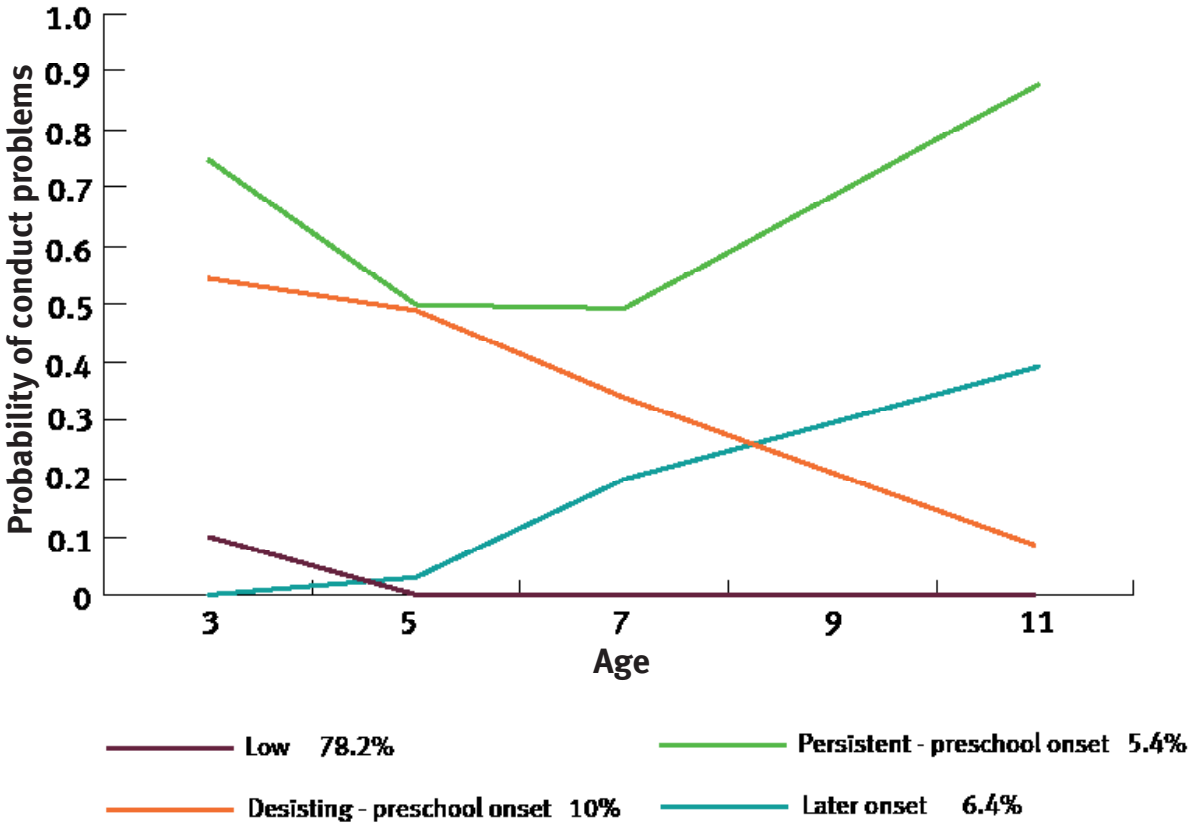
Figure 3.1: conduct problem trajectory groups - boys



Adapted from Gutman, L.M, Joshi, H., Parsonage, M. and Schoon, I. (2018) Gender-specific trajectories of conduct problems from ages 3 to 11. Journal of Abnormal Child Psychology, 46(7), 1467-1480

As can be seen in Figure 3.1, the 'low problems' group of boys shows a stable trajectory, with the probability or risk of severe conduct problems remaining close to zero at all ages. In contrast, the 'persistent - preschool onset' group, accounting for 8% of all boys, follows a high-risk path which peaks slightly at age 7 but with a probability of severe problems which is still over 60% at age 11. The much larger 'desisting - preschool onset' group shows a moderate risk of severe problems at age 3 (around 40%), which then declines significantly by age 5 followed by a low and stable probability of severe problems thereafter of around 10%. Finally, the small 'later onset' group, accounting for only about 3% of boys, shows a low probability of severe problems at ages 3 and 5, rising sharply to nearly 60% at age 11.

Figure 3.2: conduct problem trajectory groups - girls



Adapted from Gutman, L.M, Joshi, H., Parsonage, M. and Schoon, I. (2018) Gender-specific trajectories of conduct problems from ages 3 to 11. Journal of Abnormal Child Psychology, 46(7), 1467-1480

Figure 3.2 shows that girls in the 'low problems' group have a small probability of severe problems at age 3 (around 10%) that decreases to close to zero from aged 5 onwards. As expected, a significantly higher proportion of girls (78%) are on this pathway compared with boys (54%). The relatively small number of girls in the 'persistent - preschool onset' group show a high probability of severe problems at age 3 which declines slightly to age 5 but then increases sharply from age 7 to over 80%. The 'desisting - preschool onset' group shows a high probability of severe problems at age 3 (close to 60%) that declines sharply to around 5% by age 11. The numbers in this group are considerably lower than in the corresponding group of boys. Finally, the 'later onset' group, accounting for 6% of girls, shows a low probability of severe problems at ages 3 and 5 that then gradually increases but only to around 40% at age 11.

Early risk factors

The first sweep of the MCS was undertaken when the children were 9 months old and a wide range of information was collected on family circumstances and early child development. Based on previous findings in the published literature, the following items in the MCS were identified as potential early risk factors for the development of conduct problems:

- Low parental education (one or both parents having no educational qualifications, applying to 17% of cases);
- Low income (net family income in the bottom 20% of the income distribution);
- Single parenthood (15% of cases);
- Teenage mother (10% of cases);
- Mothers who smoked during pregnancy (26% of cases);
- Maternal depression (with scores based on a 9-item version of the Malaise Inventory when the child is 9 months old);
- The quality of mother-infant attachment (with scores based on 6 items from the Condon Maternal Attachment Questionnaire);
- Parental neglectful attitudes (with scores based on adapted questions from the Avon Longitudinal Study of Parents and Children);
- Delayed infant development (with scores based on 8 questions from the Denver Developmental Screening Test assessing social, communication and motor coordination skills);
- Difficult infant temperament (with scores based on 14 questions from the Carey Infant Temperament Scale, covering aspects of adaptability, mood and regularity).

The impact of these various risk factors has been assessed using multiple regression analysis, with all of the risk factors being taken into account at the same time. This allows the unique contribution of each individual risk to be identified in the most reliable way. For example, education is an important determinant of family income, so if income is assessed without reference to this relationship, its impact may be overstated. The effect of income is therefore calculated taking into account the independent effect of education, and of all other variables in the analysis.

Findings are set out in Table 3.3 below, which shows for boys and girls separately the extent to which each of the early risk factors increases the likelihood that a child will be in one of the three high-risk trajectory groups ('persistent - preschool onset', 'desisting - preschool onset' and 'later onset') rather than the 'low problems' group. The information is presented in the form of relative risk ratios, with a ratio of say 1.50 meaning that exposure to the risk factor in question is associated with an increase of 50% in the likelihood that a child will be in one of the high-risk groups relative to the low problems group. It is important to emphasise that such an association does not necessarily imply a direct causal link between the risk factor concerned and the development of severe conduct problems. For example, the risk factor may be acting as a marker for other variables, including those not covered in the analysis, such as violence or substance abuse in the home.

Table 3.3: Relative risk ratios for high-risk conduct problem trajectories compared to the low problems trajectory (ages 3-11)

	Boys			Girls		
Risk Factors	Persistent-preschool onset	Desisting - preschool onset	Later onset	Persistent - preschool onset	Desisting - preschool onset	Later onset
Low parental education	**1.92**	**1.33**	1.69	**2.01**	**1.64**	1.38
Low family income	**1.46**	1.23	1.52	**1.66**	1.09	1.49
Single parenthood	**1.84**	**1.45**	1.12	1.04	1.23	1.36
Teenage mother	1.33	1.12	0.50	1.21	1.42	0.92
Mother Smoked in pregnancy	**2.58**	**1.81**	**2.34**	**2.18**	**1.98**	1.30
Maternal depression	**1.32**	**1.19**	1.02	**1.29**	**1.25**	**1.20**
Maternal detachment	**1.49**	**1.36**	**2.46**	1.25	1.31	1.07
Parental neglectful attitudes	**1.86**	**1.37**	1.56	1.08	1.06	1.05
Delayed infant development	**2.79**	1.14	2.09	1.06	1.34	1.64
Difficult infant temperament	1.09	**1.27**	1.23	**1.50**	**1.63**	1.19

Bold type indicates statistical significance, i.e. at least a 95% chance that the estimate is different from 1.

The figures in Table 3.3 reveal a number of interesting similarities and differences in the relationship between the risk factors observed in this study and the trajectories of conduct problems followed by boys and girls.

One clear conclusion is that the pathway for persistent conduct problems of early (preschool) onset is linked to multiple risk factors operating early in life. This particularly applies to boys, as it can be seen in the table that all but two of the identified risk factors achieve statistical significance, the exceptions being having a teenage mother and difficult infant temperament. (Interestingly, there is no evidence for either boys or girls in this study to suggest an association at any age between a child having a teenage mother and subsequently developing conduct problems, once all other risk factors have been taken into account.)

Among girls, five risk factors are linked to persistent early-onset conduct problems, again indicating the need for a multifactorial explanation of these difficulties. Four of these

five early risk factors are also experienced by boys on the same pathway: low parental education, low family income, maternal depression and maternal smoking during pregnancy. The one risk factor registering a significant association with persistence for girls but not boys is having a 'difficult' infant temperament. Conversely, there are four risk factors for persistent problems of early onset that are significantly associated with persistent problems for boys but not girls, namely single parenthood, low maternal attachment, neglectful parental attitudes and delayed infant development. On this evidence, boys appear to be more sensitive than girls to parent-related risk factors such as neglect in the first year of life, a finding which has been noted in other research in this area (Heckman *et al.*, 2017).

Looking next at the 'desisting - preschool onset' pathway, perhaps the main conclusion to be drawn from Table 3.3 is that the significant early risk factors associated with this trajectory are very much the same as those linked to the pathway for persistent problems of preschool onset. Thus, among boys, six of the seven early risk factors identified as significant for the desisters also apply to the persisters, although it should be noted that in each case the strength of the association is weaker among the desisters. These factors are: low parental education, single parenthood, maternal smoking during pregnancy, maternal depression, low maternal attachment and neglectful parental attitudes, with the one exception being difficult infant temperament which has a stronger association for desisters than persisters. In addition, there are two risk factors which apply to the persisters but not the desisters, namely low family income and delayed infant development.

Among girls on the desisting pathway, all four of the risk factors identified as significant for this group also apply to girls whose problems persist, namely low parental education, maternal smoking during pregnancy, maternal depression and difficult infant temperament. In addition, one risk factor applies to the persisters but not the desisters, namely low family income.

Two points on specific risk factors may be noted at this point. The first relates to maternal smoking during pregnancy, which appears as a significant risk factor among all children on both of the early-onset pathways (and also for boys on the 'later onset' pathway). The clinical guidelines on conduct disorder prepared for NICE note that, although smoking in pregnancy is indeed an important statistical predictor for conduct problems, a direct causal link between the two has yet to be established (NCCMH, 2013). On this basis, smoking during pregnancy is perhaps best seen as a marker for other possible influences.

Second, it is noteworthy that low family income is the only significant early risk factor among both boys and girls which applies just to the persisters and not also to the desisters, suggesting that early exposure to economic deprivation may be particularly salient in relation to continuing difficulties.

More generally, the many similarities in the patterns of risk for both boys and girls in the two early-onset groups suggest that influences other than early risk are needed to answer the important question of what determines whether a child with problems of early onset will become a persister or a desister. Further analysis of this issue is given in the following chapter, which analyses the impact of risk over the whole of childhood up to age 14.

Turning finally to the pathway for children whose problems first develop when they are in primary school, the numbers given in Table 3.3 suggest that the early risks, in infancy, covered in this analysis are of limited importance in explanatory terms. Thus, among boys, only two risk factors are identified as significant, namely maternal smoking during pregnancy and low maternal attachment at child age 9 months, while among girls only one applies, namely maternal depression, again at age 9 months. The early risk factors assessed in this chapter thus appear to be of major importance in helping to explain why conduct problems develop very early in childhood, but much less so when it comes to analysing problems which first become apparent during primary school. Again, this issue is considered further in the next chapter.

Key findings

This chapter has provided insight into the different patterns of conduct problems experienced by boys and girls between the ages of 3 and 11. Four distinct pathways or trajectories have been identified, depending on the age at which problems first emerge and whether or not they persist over time. These groupings apply equally to boys and girls, but there are also significant gender-related differences, particularly in the relative numbers on each of the pathways:

- Over three-quarters of all girls are on the 'low problems' pathway, implying a low risk of severe conduct problems at any time during childhood, compared with just over half of all boys.
- Levels of conduct problems are at their highest for both boys and girls during their preschool years, but a very large proportion of these problems appear to resolve as children begin school. This is particularly true among boys, with the number of boys on the desisting pathway being more than three times the corresponding number of girls.

The analysis also investigated associations between a range of risks to which children were exposed in infancy and their subsequent likelihood of being on one or other of the different pathways. Findings suggest that:

- Children developing conduct problems during their preschool years are likely to have been exposed to more severe multiple early risks compared to those in the 'low problems' group and those whose problems start during their primary school years.
- Boys appear more sensitive than girls to early parent-related risk factors (e.g. single parenthood, low maternal attachment, neglectful parental attitudes).
- There is also a stronger link in boys than girls between early developmental delay and the development and persistence of conduct problems, whilst girls show a higher likelihood of conduct problems if they were identified with a more 'difficult temperament' during infancy.
- When considering exposure to these early risks, there is relatively little to differentiate the general pattern of exposure between children whose problems resolve and those whose problems persist. This suggests that factors other than exposure to early risk may contribute to a child's likelihood of experiencing persistent problems as opposed to difficulties that resolve with time.
- Although there is little evidence to suggest a direct causal link, maternal smoking during pregnancy emerged as a significant marker for children having a greater chance of being on all of the higher conduct problem pathways.
- Low family income at 9 months was found to be the only risk factor common to both boys and girls that is associated with persistence rather than resolution of preschool conduct problems. This may suggest that persistent conduct problems are more closely linked to early and entrenched exposure to poverty.
- Early risk factors appear to shed little light on why children develop problems for the first time after starting school, indicating that we need to look for wider explanatory factors than risks in infancy.

Implications

Adopting gender sensitive approaches to understanding and supporting conduct problems: findings suggest the need to adopt a more gender-sensitive and aware approach both to understanding the different patterns of conduct problems experienced by boys and girls, and to identifying and addressing early risk factors which appear to increase the chance of girls and boys persisting with these difficulties during childhood. Learning should inform training and development and strengthen the children's and family workforce, helping practitioners better identify gender-specific risk and protective factors and support children in more gender-sensitive ways. Research funders should also invest more in tracking gender-specific pathways in mental health problems across time.

Identifying very high-risk groups for early support

- ***Children facing multiple risks:*** given the links found in this study between exposure to multiple risk at age 9 months and the likelihood of experiencing persistent conduct problems, there is a case for improving identification of those children who are exposed to many early risks. Early identification should be followed up with evidence- and gender-informed interventions to reduce specific risk factors (such as maternal mental health difficulties), promote protective factors (such as strengthening parenting and attachment for boys) and resolve early conduct problems (e.g. through NICE-compliant positive parenting support).
- ***Low income:*** living in a low-income family at age 9 months increased the chances of a child developing persistent conduct problems. These children merit more proactive early recognition and help during preschool years to promote protective positive parenting approaches (for example through health visitor activity and through access to well targeted SureStart early years support).
- Furthermore, given the importance of low income as an early risk factor for persistent conduct problems, there is also a case for more consistently tracking the scale of child poverty across the UK. Since the abolition of Child Poverty Act 2010 targets in England in 2015, we lack a consistent means of tracking UK-wide trends in child poverty. A recent publication by the Social Metrics Commission has proposed a new measure for poverty for the UK (Social Metrics Commission, 2018).
- ***Maternal smoking:*** maternal smoking during pregnancy is associated with children having a higher chance of developing conduct problems during both preschool and primary school years. Although no direct causal link has yet been found between maternal smoking during pregnancy and conduct problems, it is an important marker to help those in contact with children to identify who may be at higher chance of developing conduct problems.

Watch and wait: this study also highlighted a sizeable number of children who presented with conduct problems at the preschool stage but whose problems resolved as they began school. For this much larger group of children, subjected to more moderate levels of early risk, a 'watch and wait' approach might be advisable. Any such approach should be delivered in a compassionate manner to parents/carers who may require reassurance that most children will grow out of these early problems and that simple self-help advice on strategies can help increase the chances of children resolving their problems (for example, similar to the level 2 and 3 Triple P parenting programme approaches) (Sanders *et al.*, 2014).

There may also be some merit in the Government piloting and evaluating a whole-population parenting-programme approach, tested initially in the US to reduce maltreatment (Prinz, 2009) and more recently in Ireland with promising sustained effects on children's conduct problems (Fives *et al.*, 2014). In Ireland, this trial suggested that parents self-selected the right intensity of support to meet the severity of their child's needs.

The importance of support for maternal mental health: given the link in this study between exposure to poor maternal mental health at 9 months and children's higher risk of developing conduct problems, mothers affected by mental health problems should also get swift access to NICE-compliant support.

Implications for primary schools: this study suggests that a significant number of children will start school with serious ongoing conduct problems and that others will develop such problems in increasing numbers as they go through their time at primary school.

- As part of their mental health and wellbeing strategies, schools should regularly measure children's mental health using a tool such as the Strengths and Difficulties Questionnaire. This tool will not only help schools track whole-school mental health

and wellbeing trends, it will also help identify which children may be experiencing conduct problems and other mental health difficulties and who may benefit from additional help.

- Most parents of a child with conduct disorder approach schools for advice (Green, 2005), but only about a quarter get help that is likely to be effective. Schools should use regular parent engagement opportunities to check children's behavioural health with parents and to work in partnership to signpost and support parents to help resolve problems.
- The Government's response to the Green Paper 'Transforming Children and Young People's Mental Health' (2018) plans to establish in-house mental health teams in a proportion of pilot schools around the country. It will be essential that these teams prioritise helping schools develop robust pathways to local NICE-compliant support for children and families facing early starting conduct problems.

Chapter 4: Pathways of childhood conduct problems and the impact of multiple risks over time[3]

Introduction

The analysis set out in the previous chapter suggested that while exposure to multiple risks at a very early stage in life can go some way towards explaining severe conduct problems of early onset, it provides less traction in answering the question of why these problems persist in some cases but not others, or in explaining severe conduct problems which are of later onset. We therefore need to look into patterns of risk exposure and their impact at successively later ages as well as in the early years.

Such an analysis will also help to fill a number of gaps in the published research. First, although there is now a sizeable body of evidence exploring the impact of multiple risk factors on the likelihood of children developing conduct problems (see for example: Rutter, 1979; Sameroff, 2000; and Appleyard *et al.*, 2005), most previous studies have measured the effects at a single point in time, with relatively few tracking the impact of accumulated risk exposure over the course of childhood.

Second, studies in this field tend to cluster all risks together, rather than differentiating between types of risk, for example those operating at an individual child level, at a family level and at a socio-economic level. Finally, there is a need for greater understanding of the extent to which there may be critical developmental windows in time when children are particularly sensitive to exposure to different types of risk.

Against this background, the aims of the analysis described in this chapter are: (a) to identify and describe trajectories or pathways of conduct problems which extend from early childhood through to age 14, rather than age 11 as in the previous chapter; (b) to examine the prevalence of a wide range of risk factors at all of the time points covered by the MCS up to age 14; and (c) to analyse the impact of these risks with particular reference to both their timing and their persistence.

Pathways

To meet the first of these aims, the statistical modelling of trajectories as described in the previous chapter has been re-run with two main changes. First, the analysis extends to age 14, meaning that it now includes evidence of severe conduct problems that first became apparent after children moved to secondary school. And second, to help contain the proliferation of effects to be estimated, the modelling was undertaken for all children combined, rather than for boys and girls separately.

As before, four distinct trajectories have been identified:

- 'Low risk of conduct problems': children with a low risk of severe conduct problems at every age between 3 and 14 (56% of the sample);
- 'Persistent - preschool onset': children with a high risk of severe conduct problems at every age between 3 and 14 (8%);
- 'Desisting - preschool onset': children with a moderate to high risk of severe conduct problems at age 3, rapidly declining to low risk (23% of the sample);
- 'Later onset': children at low to moderate risk of severe conduct problems from ages 3 to 7, increasing substantially thereafter (13%).

A comparison with the trajectories for children up to age 11 given in the previous chapter shows that extension of the analysis up to age 14 results in a more clearly defined 'later onset' group, with a substantial increase in the relative numbers of children in this group.

[3] This chapter is based on Gutman, L.M., Joshi, H., and Schoon, I. (in press) Developmental Trajectories of Conduct Problems and Cumulative Risk from Early Childhood to Adolescence. *Journal of Youth and Adolescence.*

Risk factors

The risk factors included in this analysis are of two main types, depending on whether or not they vary over time. In turn, those risks which do vary over time fall into three sub-groups, depending on whether they are child-related, family-related or socio-economic.

The fixed, or 'time-invariant', risk factors are:

- Teenage mother;
- Mother smoked during pregnancy;
- Low birthweight.

The risk factors which vary over time are:

Child-related

- Severe co-occurring emotional problems (based on the SDQ cut-off which identifies the level of emotional problems to be classified as severe);
- Severe co-occurring peer problems (also based on the relevant SDQ cut-off);
- Severe co-occurring hyperactivity problems (also based on the relevant SDQ cut-off);
- Low verbal cognitive ability (based on the British Ability Scale and other test scores, depending on the child's age).

Family-related

- Non-intact families (children living in single- and step-parent families);
- Large family size (children living in families with three or more children);
- Parental depression (one or both parents living with depression, based on the Kessler Scale);
- Parental physical ill health (one or both parents living with a longstanding physical health condition).

Socio-economic

- Low parental education (one or both parents with no educational qualifications);
- Low family income (family income in the bottom quintile);
- Parental worklessness (households with no employed parent);
- Social housing (families currently renting from local authorities or housing associations).

In addition to the risk factors, we also examined two demographic factors: child gender and ethnicity.

All of the time-varying risk factors were measured at each of the six waves of the MCS between the child ages of 9 months and 14 years, with the exception of the child-related risk factors and parental depression which start at child age 3. Also, for the purposes of statistical analysis, all of these risk factors were measured in a 'yes/no' way and scored accordingly (e.g. family income in bottom quintile = 1, family income in any other quintile = 0), meaning that a cumulative score is added up separately for each of the three risk groupings (child risk, family risk and socio-economic risk) at each age.

The prevalence of risk in the trajectory groups

Analysis of the prevalence of the identified risk factors in the four trajectory groups highlights a number of broad patterns.

Children in the 'low problems' group are less likely than those in all the other groups to be male and also less likely to be exposed to every type of risk at every age.

Children in the 'persistent - preschool onset' group conversely have a higher prevalence of nearly every type of risk at every age. In other words, these children are exposed to multiple persistent risks.

The prevalence of risk factors in the other two groups ('desisting - preschool onset' and 'later onset') is at an intermediate level and, for the most part, not greatly different up to age 7. However, at age 9 months, the cumulative score

for socio-economic risk is actually higher in the 'later onset' group than in the 'desisting - preschool onset' group, suggesting here that there are early markers for the later onset group. As we might expect, family, socio-economic and especially child risk are higher for the later starters than for the desisters at ages 11 and 14. Thus, at age 7 the cumulative risk scores for child risk are broadly the same in the two groups. But by age 14 the picture looks very different, with the child risk score for the desisters having fallen by about 20%, whereas the score for the later starters has nearly doubled. The upshot of this is that by age 14 the scale of child risk is twice as high among the later starters as it is among the desisters, suggesting an important clue to the question of what differentiates these two groups.

Also of interest is a comparison between the 'later onset' group and the 'low problems' group. A reasonable expectation might be that these two groups would be broadly similar in terms of their exposure to risk in the early years, but this is not so. Thus, at age 3, the cumulative scores for both child risk and socio-economic risk are twice as high among children in the 'later onset' group as among those in the 'low problems' group and the score for family risk is also higher, by about 40%. Such evidence suggests that the later starters are significantly different from the normative low problems group from the outset and not just around the time when their severe conduct problems first emerge.

A final comparison to be made is between the 'low problems' group and the 'persistent - preschool onset' group, where the key feature to be noted is the huge gulf in risk exposure between the two. To give some examples, children in the ‘persistent problems’ group are:

- Up to ten times more likely to present with severe hyperactivity problems;
- Up to ten times more likely to have a parent with depression;
- Up to six times more likely to present with severe peer problems;
- Three to four times more likely to have a parent with a longstanding physical health condition;
- Three to four times more likely to present with severe emotional problems;
- Three times more likely to have a mother who smoked in pregnancy;
- Three times more likely to be living in social housing;
- About three times more likely to be in a family with income in the bottom quintile and also in a family with no working parent;
- About three times more likely to have low verbal cognitive ability;
- Two to three times more likely to live in a non-intact family;
- Twice as likely to have one or both parents lacking any educational qualifications.

Living in a large family is the only risk factor out of all those covered in this analysis where the difference at any age is less than twofold.

The impact of multiple risks over time

Statistical modelling along the lines described in the previous chapter was undertaken in order to assess the impact of risk exposure, as measured by the extent to which each type of risk increases the likelihood that a child will be in one or other of the three higher risk groups relative to the 'low problems' group. Because the focus in this chapter is on the impact of risk exposure over time rather than at a single age, a more complex procedure was required and relative risk ratios were therefore calculated at each of the six time points in the analysis (i.e. at child ages 9 months and 3, 5, 7, 11 and 14 years). At any one age the estimated impact of risk exposure is shown both at that age and at earlier ages, taking account of earlier as well as current exposure. The second of these highlights the effects of recent risk exposure, while the first shows the importance or otherwise of the persistence of risk exposure. The findings of the analysis are set out in Table 4.1 overleaf.

Table 4.1: Relative risk ratios for high-risk conduct problem trajectories compared with the low problems trajectory (ages 3-14)

	Trajectory	**Persistent - preschool onset**						**Desisting – preschool onset**						**Later onset**					
	Last age for prediction	*9 m*	*3*	*5*	*7*	*11*	*14*	*9 m*	*3*	*5*	*7*	*11*	*14*	*9 m*	*3*	*5*	*7*	*11*	*14*
Unchanging covariates and risk factors at 9 months	Male	**1.9**	**1.8**	**1.7**	**1.5**	**1.6**	**1.7**	**1.3**	**1.2**	1.1	1.1	1.1	1.1	**1.3**	**1.3**	**1.2**	**1.2**	**1.3**	**1.6**
	White	**1.9**	**2.4**	**2.4**	**2.0**	**2.4**	**2.4**	0.9	1.1	1.2	1.0	1.0	1.0	**1.3**	**1.8**	**1.9**	**2.0**	**1.9**	1.6
	Low birth weight	1.2	0.8	0.7	**0.5**	**0.5**	0.5	0.8	**0.6**	**0.6**	**0.5**	**0.5**	**0.5**	**1.4**	**1.4**	1.4	1.2	1.3	1.5
	Teenage mother	**1.3**	1.2	1.1	1.0	1.1	1.1	**1.5**	**1.5**	**1.6**	**1.5**	**1.6**	1.5	1.2	1.1	1.2	1.0	1.0	1.1
	Smoking in pregnancy	**2.4**	**2.4**	**2.6**	**2.6**	**2.7**	**2.0**	**1.7**	**1.5**	**1.6**	**1.6**	**1.6**	**1.7**	**1.6**	**1.4**	**1.5**	**1.4**	**1.4**	**1.4**
	Family risk 9 mths	**1.2**	0.9	0.9	**0.7**	0.8	0.9	**1.1**	0.9	0.9	0.9	0.9	1.0	1.0	0.8	**0.8**	**0.7**	0.8	0.8
	socio-econ risk 9 mths	**1.6**	**1.2**	1.1	1.1	1.0	1.2	**1.3**	1.0	1.0	0.9	1.0	0.9	**1.5**	**1.3**	**1.3**	**1.4**	**1.4**	**1.4**
At age 3	Family risk		**1.6**	1.2	1.2	1.1	0.9		**1.3**	1.1	1.1	1.1	1.1		**1.3**	1.0	1.0	1.0	1.0
	Socio-econ risk		**1.3**	1.2	1.1	1.2	1.2		**1.3**	**1.2**	**1.2**	1.1	1.2		1.1	1.0	0.9	0.8	**0.7**
	Child risk		**3.1**	**2.2**	**1.8**	**1.8**	**1.7**		**2.5**	**2.0**	**1.8**	**1.9**	**1.9**		**1.9**	**1.7**	**1.5**	**1.5**	**1.4**
At age 5	Family risk			**1.4**	1.1	1.0	1.0			**1.2**	1.1	1.0	1.0			**1.5**	**1.3**	1.3	1.2
	Socio-econ risk			1.1	1.0	1.1	1.1			1.0	0.9	0.9	0.9			1.1	1.1	1.2	1.1
	Child risk			**3.5**	**2.1**	**1.8**	**1.7**			**2.0**	**1.7**	**1.6**	**1.6**			**1.5**	**1.3**	1.0	0.9
At age 7	Family risk				**1.3**	1.0	1.0				1.1	1.2	1.2				**1.3**	1.1	1.0
	Socio-econ risk				1.2	0.9	0.9				**1.2**	1.1	1.1				1.0	0.9	1.0
	Child risk				**2.9**	**2.1**	**1.9**				**1.7**	**1.7**	**1.5**				**1.6**	1.2	1.0
At age 11	Family risk					**1.5**	1.3					1.0	0.9					**1.3**	1.3
	Socio-econ risk					**1.3**	1.2					1.1	1.0					1.2	1.1
	Child risk					**2.2**	**1.9**					1.1	1.2					**2.3**	**1.6**
At age 14	Family risk						1.3						1.1						1.2
	Socio-econ risk						1.0						1.2						1.1
	Child risk						**1.8**						1.1						**2.4**

KEY

- >2.5-
- 2.0-
- 1.5-
- 1.0-
- Not significant
- <1

Bold type indicates statistical significance, i.e. at least a 95% chance that the estimate is different from 1.

Going through each time point in turn, looking down the columns, we see that at age 9 months (when child risk was not measured) male gender, maternal smoking in pregnancy and socio-economic risk all significantly increase the chances of children being on any of the three conduct problem trajectories. In this column, teenage motherhood and family risk are also significant for the two preschool onset groups, as is low birthweight for later onset. Minority ethnic status is associated with a lower likelihood of being a persister and – to a lesser extent – in the 'later onset' group.

At age 3 (the second panel in each column, representing the second MCS survey), concurrent family risk, child risk and socio-economic risk are all significant predictors in relation to all three of the problem trajectories, except in the case of socio-economic risk for the 'later onset' group. However, past socio-economic risk (i.e. experienced at age 9 months) does remain significant for the later onset group, as it also does for the persisters.

At age 5 (the third column in each panel), concurrent family risk and child risk are significant factors for all three problem trajectories, as is child risk as experienced at age 3. The impact of concurrent child risk at age 5 is particularly large for the persisters. In addition, socio-economic risk at 9 months remains significant for the 'later onset' group and at age 3 for the desisting group.

At age 7 (the fourth column), concurrent child risk is significant for all three problem trajectories, as is previous child risk as experienced at ages 3 and 5. For both the persisters and the later starters, concurrent family risk is also significant. Family risk as experienced at age 5 remains significant for later onset. Concurrent socio-economic risk, as well as this risk experienced at age 3, are significant for the desisters, and socio-economic risk at 9 months remains significant for later onset.

At age 11 (the fifth MCS survey and the fifth column in each panel), concurrent child and family risk are statistically significant for both the persisters and the later starters, as well as concurrent socio-economic risk for the persistent group. For the desisters, no type of concurrent risk is of statistical significance, suggesting an important turning point around this age for the children on this pathway. Previous child risk as experienced at ages 3, 5 and 7 remains a significant predictor for the desisting and persisting group, as do previous child risk at age 3 and socio-economic risk at 9 months for later onset.

Finally, at age 14 (the sixth column), the only concurrent risk of statistical significance is child risk in relation to the persistent and later onset pathways. It is no longer significant for the desisters. Previous child risk remains significant for all three groups: at ages 3, 5, 7 and 11 for the persisters; at ages 3, 5 and 7 for the desisters; and at ages 3 and 11 for the later starters. For the latter, socio-economic risk at age 9 months also remains significant, i.e. early disadvantage casts a long shadow. Concerning the time-invariant risks, maternal smoking during pregnancy remains significant for all three paths, as does male gender for the persisters and the later starters but not for the desisters. Minority ethnic status continues to be associated with a lower likelihood of being in the persister group. In other words, this group overwhelmingly consists of White British boys.

Some key points arising from this rather complicated picture may be summarised as follows:

- Maternal smoking during pregnancy and male gender are strongly associated with the likelihood of children being on one or other of the two pathways with severe conduct problems at age 14, particularly the 'persistent - preschool onset' group.
- The impact of socio-economic risk appears to be much greater in the early (preschool) years than later on in childhood and adolescence. Interestingly, this applies across all three of the problem trajectories, including children on the' later onset' pathway whose risk of having severe conduct problems is greatest at ages 11 and 14.
- Concurrent family risk has a modest but significant impact at all ages except 14 for

the 'persistent' and 'later-onset' paths, but only up to age 7 for the 'desisting' path.

- Looking across the whole age range covered by the analysis, child risk – which includes co-occurring mental health problems and low verbal cognitive ability – has a consistently larger impact than any other category or type of risk (although child risk itself may have been influenced by earlier family and socio-economic risks). Further analysis of the interrelationships between conduct problems and other childhood mental health problems is given in the following chapter.

Finally, a particularly important finding is that for children on the 'desisting - preschool onset' pathway, the impact of all categories of risk reduces to non-significance by age 11, whereas among those in the 'persistent' and 'later onset' groups the impact of both child and family risk continues at this age. Put another way, in terms of concurrent risk, 11-year-old children in the desisting group look little different from their peers on the 'low problems' pathway, while 11-year-olds in 'later onset' group continue to be similar to their peers with persistent problems of early onset.

Key findings

This chapter analyses associations between children's experiences, between the ages of 9 months and 14 years, of socio-economic, family and child-based risks, both concurrently and over time, and their likelihood of being on a higher risk conduct problems pathway.

We considered key differences between children with preschool persistent conduct problems, those with preschool problems that resolved and those with difficulties that emerged for the first time once children started school.

Analysis of the patterns of risk exposure highlighted the following key messages:

- The association between socioeconomic risk and developing conduct problems was greater earlier on in life than later.
- Overall, children on the persistent preschool pathway had higher chances of being exposed both to more severe and more continuing risks throughout childhood and early adolescence. This was very strongly the case when comparisons were made with those on the low conduct problems pathway but was also generally the case when compared with those on the desisting preschool pathway or those whose problems developed for the first time at school.
- Desisters had a lower likelihood, after the age of 7, of experiencing key risks in comparison with the other two high-risk groups.

Children whose behavioural difficulties emerged for the first time during school years seem to experience a rather different pattern of risk exposure to those children whose problems emerged earlier. At age 9 months, they are overall as likely to be exposed to socio-economic risks as those from the two preschool starting groups. At each age after 9 months, concurrent socio-economic risk then adds little to other information about these children. On the other hand, moderate concurrent family and child risks remain relatively consistently predictive from the age of 3 years onwards. However, it is at the age of 11 and 14 years that we begin to see a substantial rise in child-based risks (e.g. emotional problems, hyperactivity, verbal difficulties etc) in this group. At this age, child-based risk even supersedes that experienced by preschool persisters. In this instance, it may be that early risk exposure lies dormant for a while but is exacerbated by persistent and moderate family-based risks with distress later surfacing through later child-based difficulties and behavioural problems.

In contrast to socio-economic and family risk, child-based risk remains important all ages – whether concurrently or in terms of previous risk. This highlights the enduring impact of co-existing mental health problems and, to a lesser extent, low verbal cognitive ability on children with conduct problems.

All the findings in this analysis confirm that severe conduct problems are much more common in boys than in girls, particularly among white boys.

An association was found between maternal smoking during pregnancy and a child's likelihood of developing conduct problems at every age up to 14 years. Since the MCS began, overall smoking rates have continued on a long-standing downward path. However, there is evidence of the highest continued smoking rates among those with no qualifications or in low skilled jobs or with no employment (NHS Digital, 2018).

Implications

Socio-economic risks: Government should take into account findings on the damaging effects to children's mental health of early exposure to a range of socio-economic risks when framing policies and strategies relating to benefits, taxation and housing.

Addressing malleable family-based risks: maternal depression has already been highlighted in earlier chapters as a key issue benefitting from priority intervention during pregnancy and in the year after birth to reduce the likelihood of children developing conduct problems. Findings from this chapter reinforce the need to focus more broadly on poor parental mental health and particularly on its importance as a continuing risk factor associated with the development and persistence of child conduct problems. This has a number of implications for practice:

- All those in contact with children and families (e.g midwives, health visitors, GPs etc) should be vigilant to parental distress and child mental health difficulties and to important inter-relationships between the two. For example, if a parent with poor mental health consults a GP or accesses a mental health service, attention and support should equally be given to the wellbeing of children in the family.
- Midwives, health visitors, practice nurses and other early years practitioners also have an important opportunity to track and support key developmental milestones such as developmental delay and verbal skills.
- Equally, if a child accesses school counselling, sensitive support should also be offered to parents with accessible help being made available to support their own mental health wellbeing. By way of example, Place2Be have been piloting school-based parent counselling which can be offered to families as part of their wider efforts to support children's mental health outcomes in the school. Similarly, those in adult mental health services should make efforts to mobilise support for children.

Investment in good quality early intervention services: Important messages emerge from our findings on the importance and potential cost effectiveness of early intervention to reduce the persistence of malleable risks, confirming recommendations from other key evidence reviews (Heckman, 2006). Yet, the Institute for Fiscal Studies (2018) reported in a review for the Children's Commissioner this year that spending on preventative interventions such as SureStart and young people's services had been cut between 2009/10 and 2016/17 by 60%.

Given the economic burden of conduct problems on multiple budgets and systems, Government should invest in expanding engaging, high quality, well targeted and implemented Sure Start support for families.

Identification: our findings point to the importance of holistic screening during infancy, at the time of the Healthy Child two-year review, ready for school readiness reviews and during school years to track, pick up and support children and families facing multiple risks who may benefit from early help. A common approach should be adopted by early years, children's services, school and mental health workforces. From 3 onwards we see merit in regular multi-agency use of a tool such as the Strengths and Difficulties Questionnaire (SDQ).

Early help pathways should also include:

- Access to NICE-compliant parenting programmes to strengthen family based protective factors – these programmes also have the double benefit of improving parental mental health (NCCMH, 2013);
- NICE-compliant support to address anxiety, depression and hyperactivity which may

simultaneously affect children with conduct problems;

- Supporting health visitors, the broader early years workforce and schools to promote activity to increase a child's verbal ability, such as encouraging parents and/or older siblings, pre-school and primary school teachers to read to a child (Hart and Risley, 2003; Fernald *et al.*, 2013) and to support language development.

Mental health teams in schools: new school-based mental health teams, being piloted as part of the Government's response to the Green Paper 'Transforming Children and Young People's Mental Health', should be alert to child conduct problems as well as to parental mental health and should have in place robust pathways to identify and support these children and their families at an early stage.

Good quality school-based social and emotional programmes supporting healthy behaviour: The Good Behaviour Game is an example of a simple whole-school programme which has a very good record of being able to reduce conduct problems and related costs. For every pound invested in this programme, high quality evidence reviews indicate that around £72 is saved in terms of later costs to the wider system (WSIPP, 2018). Cuts to school budgets have meant that many schools no longer purchase evidence based whole school social and emotional programmes of this type which might benefit children at risk of conduct problems. We recommend that these be piloted with long-term follow up of impact in areas of high deprivation.

Transitions: among children with conduct problems of later onset, the impact of child-based risks, and to a lesser extent family risk, is particularly strong around the age of 11, which coincides with the transition to secondary school. Primary and secondary schools should therefore have partnerships and strategies in place to support children with conduct, family and child-based difficulties transition effectively to secondary school.

Chapter 5: Pathways of childhood conduct problems and co-occurring mental health difficulties[4]

Introduction

Child and adolescent mental health problems broadly manifest themselves in two ways, both of which involve difficulties in managing and regulating emotional distress. On the one hand, externalising problems such as conduct disorder generally involve children directing emotional responses away from themselves, via aggression, deception, rule-breaking, bullying etc. On the other, internalising problems such as anxiety and depression involve children channelling emotional responses internally (Bask, 2014). On the whole, boys more commonly tend to direct their distress externally, whilst girls are more likely to internalise their emotions (Broidy *et al.*, 2003).

However, externalising and internalising responses rarely develop independently of each other and studies suggest that attempts to classify children by means of single diagnostic categories can be unhelpful. Thus, it is not uncommon for children with one mental health difficulty to simultaneously meet the criteria for another diagnosis (Ollendick *et al.*, 2008). Children often present with more than one externalising condition at the same time (for example, conduct problems and hyperactivity), or with more than one internalising problem at the same time (for example, anxiety and depression), or with combinations of both types of problem. When children experience multiple mental health difficulties, symptoms have been noted to be more severe and outcomes to be poorer (Woolf & Ollendick, 2010).

Approaches that overlook such complexity can undermine a child's chances of successful development. Poor awareness among professionals can result in ineffective early identification, misdiagnosis, missed opportunities for strengthening protective factors, and inappropriate or ineffective interventions. In the face of this evidence, Carragher (2014) has highlighted the need for a more holistic classification system for diagnosable difficulties, recognising the common co-existence of externalising and internalising problems and the frequency of multiple diagnoses.

A further consideration is that we currently lack knowledge on the risk factors associated with the greater likelihood of children experiencing multiple problems and on how children's mental health problems interrelate, persist or improve over time.

Against this background, we have analysed data collected in the MCS on the interrelationships between the four mental health problems covered by the Strengths and Difficulties Questionnaire (SDQ), of which two represent externalising difficulties (conduct problems and hyperactivity) and two correspond to internalising difficulties (emotional problems and peer problems). The aims of the analysis are: (a) to identify distinct trajectories or pathways between the ages of 3 and 11 for children with co-occurring mental health problems; (b) to relate these pathways to early risk factors; and (c) to explore relevant differences by gender.

[4] For further information on the analysis in this chapter please contact Ingrid Schoon at the Department of Social Science, University College London, Institute of Education.

Pathways

For the analysis of pathways based on MCS data, use has been made of statistical modelling techniques similar to those described in the previous two chapters. Once again, we have identified four distinct groups or clusters, one of which is a baseline group at low risk and the other three are all groups at higher risk.

These clusters, here tracking children from age 3 to 11 and applying equally to boys and girls, are as follows:

- A large group of children, covering 52% of the MCS sample, with consistently low levels of all four types of problems at all four time points between the ages of 3 and 11. This is labelled the 'low problems' group.
- A significant group of children (27% of the sample) with mild to moderate conduct and hyperactivity problems but low emotional and peer problems at each time point between ages 3 and 11. Again these trajectories remained relatively stable in comparison to other children at each age. This is described as the 'moderate E, low I' group, where E stands for externalising and I for internalising.
- A group of children, covering 12% of the sample, with mild to moderate emotional and peer problems but low levels of problems relating to conduct and hyperactivity. These children's emotional problems were higher than average for their age, as they started school, and remained roughly stable thereafter up until the age of 11, while their level of peer problems reduced slightly after age 5 but still remained higher than the norm. These children's externalising problems were low across all time points, especially after their preschool years. This is described as the 'moderate I, low E' group.
- A small group of children (8% of the sample) with moderate or severe difficulties across all four types of problems. All four of these difficulties were closely interrelated throughout the childhood years. Initially high levels of externalising problems increased to a peak at age 7 and then remained at this level. Externalising problems were also more severe than internalising problems during the preschool years. However, all interrelationships became very closely linked between the ages of 7 and 11, indicating that these children were experiencing continuing problems across multiple domains. This is described as the 'persistent high problems' group.

In interpreting these figures, it is important to note that the statistical modelling has made use of the full range of SDQ scores (Goodman, 1997) for each of the four types of mental health problem considered in the analysis. This is in contrast to the procedure followed in the previous two chapters, where the analysis was based on the SDQ cut-off points which identify the levels where 10% of children in the population at large are most at risk of severe conduct problems. Use of the full range of SDQ scores enables us to allocate children with co-occurring problems which individually may be at a sub-threshold level to one or other of the three higher risk groups. The justification for this is that the adverse impact of two mental health problems of sub-threshold severity may be just as great as that of one problem which crosses the threshold – and even more so when multiple problems are involved.

Early risk factors

We looked for factors and circumstances in the child's early years that might affect which of the four pathways they followed, as set out below. Most of these potential risk factors were recorded at the first MCS survey when the children were aged 9 months, some from the survey at age 3.

Socio-economic risks:

- Low parental education (one or both parents having no educational qualifications);
- Parents in an unskilled occupation;
- Low family income (those in the bottom income quintile);
- Lack of home ownership;
- Over-crowding (as measured by persons per room).

Maternal risks:

- Single parenthood;
- Teenage mother;
- Mother smoked during pregnancy;
- Maternal depression (based on an adapted version of the Malaise Inventory).

Parenting risks:

- Child not breast fed;
- Warmth in parent-child relationship (measured as a protective factor using the Pianta scale at child age 3);
- Conflict in parent-child relationship (also measured using the Pianta scale at child age 3).

Child characteristics:

- Ethnicity;
- Low birth weight;
- Infant delayed development (based on the Denver Screening Test assessing social, communication and motor coordination skills);
- Infant temperament (measured as a protective factor using the Carey Infant Temperament Scale including indicators of mood, regularity and adaptability);
- Verbal cognitive ability (measured as a protective factor using the British Ability naming vocabulary scale at child age 3).

Multiple regression analysis was used to assess the association between these factors and a child's likelihood of being in a higher risk group for experiencing co-occurring mental health problems as opposed to being in the low problems group. Use of this technique means that the associations with each individual factor are calculated taking into account the independent associations with all the other variables in the analysis.

Findings

Results are set out in Table 5.1 overleaf in the form of relative risk ratios, separately for boys and girls, showing the extent to which each risk or protective factor goes with a higher or lower likelihood that a child will be in one or other of the three higher risk groups rather than the low risk group. Variables making a statistically significant difference are shown in bold type.

Table 5.1: Relative risk ratios for higher risk trajectories of co-occurring mental health problems compared to the low problems trajectory

	Boys			Girls		
Risk Factors	**High**	**Mod E/ Low I**	**Mod I/ Low E**	**High**	**Mod E/ Low I**	**High I/ Low E**
Socio-economic						
Low parental education	**1.75**	**1.35**	1.26	**1.98**	**1.66**	**1.59**
Unskilled occupation	**1.63**	**1.28**	**1.52**	**1.79**	**1.37**	**1.44**
Low income	1.51	0.87	1.02	1.03	0.80	1.02
No home ownership	**1.66**	1.24	1.06	**2.74**	**1.67**	**1.84**
Crowding	**1.39**	**1.23**	0.93	**1.39**	1.18	1.10
Maternal Risks						
Teen mother	1.24	1.42	1.00	0.84	0.75	0.77
Single parent	1.15	1.37	**1.69**	1.18	1.12	0.76
Mother smoked during pregnancy	1.32	1.33	1.06	1.17	1.28	0.98
Maternal depression	**1.35**	**1.14**	**1.26**	**1.42**	1.07	**1.30**
Parenting						
Not breast fed	1.14	1.19	1.26	1.17	1.17	1.19
Pianta: Warmth	**0.89**	**0.94**	**0.91**	**0.81**	**0.87**	**0.88**
Pianta: Conflict	**1.31**	**1.19**	**1.16**	**1.32**	**1.18**	**1.15**
Child Characteristics						
White	1.64	**1.45**	0.81	**1.93**	**1.61**	0.86
Low birth weight	1.06	1.07	**1.39**	**1.54**	**1.39**	**1.22**
Developmental delay	**1.22**	1.02	**1.17**	**1.20**	1.02	**1.20**
Mood	0.98	0.99	0.98	0.99	0.97	0.96
Adaptability	1.00	**1.03**	**0.92**	0.96	1.03	**0.96**
Regularity	**0.95**	**0.97**	**0.95**	**0.92**	**0.95**	**0.93**
Verbal ability	**0.60**	**0.75**	**0.83**	**0.53**	**0.70**	**0.73**

Bold type indicates a difference significantly different from 1 at the 95% level

A major finding of the analysis is that all three of the problem pathways are linked to multiple early risks. There are, however, a number of differences in the associations with risk, both between the three higher difficulties pathways and between boys and girls. These differences are discussed below in relation to each of the four broad categories of risk or protective factors used in the analysis.

Socio-economic risk factors

There is a strong association between early socio-economic risk and a child's chances of being in one or other of the higher risk groups. For example, children whose parents have low skilled occupation face a greater risk of being in a higher risk group in all cases, i.e. among both boys and girls across all three of these groups. Low parental education also shows a wide-ranging differential, with increased risk in all cases except for boys in relation to the 'moderate I, low E' group.

Concerning the housing variables, lack of home ownership is associated with increased risk for girls across all three of the problem pathways and for boys in relation to the 'persistent high problems' pathway. Overcrowding goes with a higher likelihood of being in the 'persistent high problems' group for both boys and girls, and also for girls in relation to the 'moderate E, low I' group.

Interestingly, low family income shows no statistically significant difference in the likelihood of a child being on any of the higher risk pathways, once the independent effect of all other variables in the analysis has been taken into account.

Maternal risk factors

Maternal depression shows the most consistent difference in this category of risk, increasing the likelihood that a child will be in a higher risk group in all but one case. Conversely, in this analysis, maternal smoking during pregnancy shows no statistically significant difference among either boys or girls, and the same applies to being born to a teenage mother. Finally, being in a single-parent family appears to be a risk among boys in relation to the 'moderate I, low E' group, but otherwise no differences are significant.

Parenting

Of the three variables in this category, not being breast fed has no significant adverse association, while a warm parent-child relationship suggests a modest but statistically significant protective effect in all cases. Conflict between parent and child is associated with a modest but statistically significant increase in risk, again in all cases.

Child characteristics

Boys of White British ethnicity are at increased risk of being on the 'moderate E, low I' pathway, while girls of the same ethnicity are at increased risk of being on both the 'moderate E, low I' and 'persistent problems' pathways. Put another way, children of minority ethnic status are at relatively reduced risk in all three of these cases.

Low birth weight is associated with increased risk among girls of being on any of the three higher risk pathways and among boys of being on the 'moderate I, low E' pathway.

Developmental delay at nine months goes with a higher risk among both boys and girls of being in the 'persistent high problems' group and also the 'moderate I, low E' group.

The three aspects of infant temperament used in this analysis (mood, adaptability and regularity) are all measured as protective factors. Of these, the association with mood, capturing how happy, communicative and calm the infant is said to be, is statistically insignificant in all cases. Regularity, in feeding and sleeping, appears to have a small but significant protective effect in all cases. Adaptability, gauged by how well a baby settles in new situations, shows a mixed but minor pattern of associations with problems. There is a very small but statistically significant adverse effect among boys in relation to the two 'moderate problems' pathways but also a small but significant protective effect among girls in relation to the 'moderate E, low I' pathway.

Finally, the analysis shows that verbal cognitive ability appears to be a powerful protective factor, substantially reducing the likelihood among both boys and girls of being on any of the three higher risk pathways. The effect is particularly marked in relation to the 'persistent high problems' pathway.

Key findings

Based on a high-quality representative longitudinal study, our findings contribute to current knowledge on the scale and ongoing pattern of co-existing mental health difficulties experienced by children between the ages of 3 and 11. It identifies two quite significant groups who, although unlikely to have diagnosable-level problems, nevertheless experience longstanding mild to moderate co-existing difficulties (conduct problems combined with hyperactivity problems in one case and emotional problems combined with peer problems in the other). As yet, it is unclear how these sub-threshold but persistent difficulties affect children's longer-term outcomes and this merits further investigation.

Most importantly, we have identified 8% of children in the MCS sample who experienced severe and persistent multiple mental health difficulties between the ages of 3 and 11. Given what we know about the detrimental impact of co-existing diagnosable problems, such children and their families require early identification, prioritisation and multi-faceted support.

We have also added to existing knowledge on early risk factors (measured at age 9 months) which potentially exacerbate the chances of children developing multiple difficulties and, conversely, those that might mitigate this risk.

We have demonstrated that exposure to multiple early risks can increase the probability of developing persistent co-occurring externalising and internalising mental health problems.

And the likelihood of a child following the 'persistent high problems' pathway is associated with multiple factors operating in early life, including a broad range of socio-economic risks, maternal depression, the quality of the parent-child relationship and developmental delay. All of these factors apply in broadly equal measure to both boys and girls, although for girls, additional risk is associated with low birth weight.

Low income was not found to be significantly associated with a child having multiple and severe co-existing mental health difficulties, in the presence of other information, but a range of other measures of socio-economic risk were. For example, poor housing is strongly implicated as a factor that might exacerbate the risk of multiple difficulties developing in children. To a lesser extent, the same also applies to low parental education and having parents in unskilled work.

We see a similar, albeit less marked, link between the development of co-existing mental health difficulties and both poor maternal mental health and parent-child conflict.

For the most part, the same factors influencing the association with the 'persistent high problems' group also apply to the two 'moderate problems' pathways, although in some cases other risks also come into play. For example, living in a single-parent family is associated with boys being on the 'moderate internalising, low externalising' pathway. It also appears to be the case that socio-economic risk tends to have a smaller impact on boys than girls.

Finally, our study highlighted some factors which have the potential to protect against children's chances of developing co-existing mental health difficulties. Verbal cognitive ability is one such factor and so, to a lesser extent, are parental warmth and child regularity (i.e. regularity in terms of sleep, mealtimes etc). Among both boys and girls, minority ethnic status appears to be protective.

Implications

The early-years, primary care, school, health and broader children's workforce needs to be vigilant for children who present with multiple and severe difficulties. These children and their families require early identification, prioritisation and whole-child-focused multi-agency and integrated care to promote protective factors.

Early-years providers and schools should routinely track children's mental health and wellbeing to pick up these higher risk children, at an early stage, using a tool such as the SDQ.

Children with multiple and severe co-existing difficulties could additionally be more effectively supported through well-implemented Early Years and school activity using legislation relating to children with Special Education Needs and Disabilities (SEND). SEND Education, Health and Care plans could be helpful for families and children in getting whole child centred help to make early developmental and educational progress.

The statutory SEND Code of Practice (Department for Education and Department of Health, 2015) currently identifies a number of priority groups for support in early education and in schools. Based on the findings of this study, the Code and associated legislation should more explicitly identify children likely to go on to experience persistent multiple mental health difficulties as a specific high priority group.

Mental health practitioners, meanwhile, should look beyond the primary presenting condition and routinely use tools that screen for more than one problem at a time. Children with multiple difficulties should be a priority group for support.

Given what we know about the pathways traced by children with moderate or sub-threshold co-existing difficulties, these children may also warrant prioritisation for early support, particularly if they are failing to achieve and thrive.

Most importantly, based on the evidence emerging from this analysis, we would recommend adopting a multi-agency panel approach to help problem solve and coordinate whole-child and family-focused support for children with multiple, severe and persistent needs who fail to make progress, via SEND activity, Children's Services support or clinical routes. This would not be dissimilar to the 'Getting Risk Support' approach advocated as part of the Thrive model for children with complex needs who fail to make progress accessing standard help (Wolpert *et al.*, 2014).

Our findings also, once again, highlight important associations between socio-economic risk factors, particularly those linked to poorer quality or overcrowded housing, and a child's chances of developing multiple problems. Moreover, the housing available to poor families is not likely to have improved since the first decade of the century when these children started out.

Government should therefore ensure that future policies and strategies relating to family housing or family economic stability seek to mitigate and do not further heighten risks faced by children.

This study also highlights the importance of local authorities and public health working in partnership with social housing providers not only to reduce overcrowding but also more actively to support families in unstable social housing. In Centre for Mental Health's publication on the implementation of proven parenting interventions in 2012 (Brown *et al.*, 2012), some arm's length housing providers saw practical and economic benefits from providing these programmes as part of core induction and community development activity.

Once again, having a mother with depression at age 9 months was found to be associated with a small but significant increase in the likelihood of children being in all of the three higher risk groups in nearly all cases. The association was strongest for children with multiple, severe and ongoing problems.

Protective factors: Not all protective factors identified in this analysis are easily amenable to intervention or change. However, improved training for midwives, health visitors and early years practitioners to screen for and support families with key risk factors (including child feeding and sleeping patterns, verbal skills, maternal distress, positive parenting skills and particularly multiple risks) may reduce a child's chances of developing more than one mental health difficulty.

The findings reported in this chapter also point to further areas for research and guidance, including:

- The need for more research to improve our detailed understanding of the pathways traced by children with multiple mental health difficulties.
- We lack clarity on what works for children affected by multiple co-occurring problems. There is a need for the development of NICE guidance on effective interventions for these children and their families.
- Our study revealed a large number of children with persistent co-existing mental health difficulties of mild to moderate severity. More research is needed on the impact of these sub-threshold difficulties on children's longer-term life chances.

Chapter 6: Conclusion and recommendations

The analyses in this report produce a broad picture that at least half of the children being tracked in the Millennium Cohort Study showed good mental health through the years to age 11 or 14, but a significant minority of around 8% showed persistent conduct problems which tend to be associated with other behavioural or emotional problems. From an early age, children in the latter group have faced significant risks and inequalities that undermine their current and future wellbeing. Many of these risks and inequalities are amenable to intervention. And given the very high human and economic costs of childhood mental health problems, particularly conduct problems, there is a persuasive and compelling case for early effective action to prevent or counteract them.

We recommend:

1. **The Government should take concerted action to reduce childhood poverty and housing insecurity:** supporting families to keep out of poverty and find stable, uncrowded housing is likely to protect children against severe and persistent multiple mental health difficulties.
2. **Local authority public health departments**:
   a. **Should work with midwives, health visitors and schools** to improve the identification and reduction of key risk factors affecting children's likelihood of developing early mental health problems;
   b. **Should make routine use of robust screening tools such as the Strengths and Difficulties Questionnaire (SDQ) to assess the mental health needs of children in a timely manner.** These should be included in Joint Strategic Needs Assessments and inform strategies and commissioning plans for delivering support to families and in schools.
3. **The Government and local authorities should expand and invest in SureStart service provision:** this should prioritise the delivery of evidence-based support for families in reducing the risk factors for severe conduct problems.
4. **The Government should invest in evidence-based interventions to support positive parenting:** programmes that have been approved by NICE should be made available across the country through a concerted national expansion programme. All providers should then ensure that these interventions are well implemented and appropriately targeted towards families with the greatest needs.
5. **The Government should pilot and evaluate a whole-population parenting support programme:** building on a recent pilot scheme of a stepped-care programme in the Republic of Ireland which demonstrated widespread benefits.
6. **The Government should ensure that reforms to mental health support in schools prioritise children with multiple risks from a young age:** this should include investing in effective classroom-based programmes to boost healthy behaviour and wellbeing, and offering evidence-based support to children and families.
7. **NHS England should ensure that:**
   a. **School 'mental health support teams' prioritise children with severe conduct problems and multiple mental health difficulties:** this should include helping families access evidence-based interventions and working with school staff and families to build awareness and understanding about how to better support these children.

b. **Broader child and adolescent mental health clinicians understand the impact of multiple mental health difficulties on children's life chances:** so that they can better recognise and support children presenting with these needs.

8. **NHS England should continue to improve the quality of support available for mothers, fathers and children affected by parental mental illness including**:
   a. Ensuring swift access for parents to proven psychological therapies;
   b. Prioritising a 'think family' approach in both adult and child and adolescent mental health services;
   c. Supporting schools and services to more effectively recognise and support children affected by parental mental health difficulties.

9. **The Department for Education should revise Special Education Needs and Disabilities (SEND) guidelines to prioritise children with multiple mental health difficulties:** this should enable schools and other services to work together to offer improved support for those whose needs may currently not be given a priority yet whose outcomes are often the poorest long-term.

10. **The National Institute for Health and Care Excellence should develop guidance focused on improving understanding of what works for children with multiple mental health difficulties.**

References

Abbott, R. and Richards, M. (2009) *Childhood mental health and life chances in post-war Britain: insights from three national birth cohort studies*. London: Centre for Mental Health.

Appleyard, K., Egeland, B., van Dulmen, M.H. and Sroufe, L.A. (2005) When more is not better: The role of cumulative risk in child behavior outcomes. *Journal of Child Psychology and Psychiatry*, **46**(3), pp.235-245.

Bask, M. (2015) Externalising and internalising problem behaviour among Swedish adolescent boys and girls. *International Journal of Social Welfare*, **24**(2), pp.182-192.

Bosquet, M. and Egeland, B. (2000) Predicting parenting behaviours from antisocial practices content scale scores of the MMPI-2 administered during pregnancy. *Journal of Personality Assessment*, **74**(1), 146-162.

Brand, S. and Price, R. (2000) *The economic and social costs of crime. Home Office Research Study 217*. London: Home Office.

Broidy, L.M., Nagin, D.S., Tremblay, R.E., Bates, J.E., Brame, B., Dodge, K.A., Fergusson, D., Horwood, J.L., Loeber, R., Laird, R. and Lynam, D.R. (2003) Developmental trajectories of childhood disruptive behaviors and adolescent delinquency: a six-site, cross-national study. *Developmental psychology*, **39**(2), p.222.

Brown, E.R., Khan, L. and Parsonage, M. (2012) *A chance to change*. London: Centre for Mental Health.

Brown, S. and Taylor, K. (2008) Bullying, education and earnings: evidence from the National Child Development Survey. *Economics of Education Review*, 27, 387-401.

Carragher, N., Krueger, R.F., Eaton, N.R. and Slade, T. (2015) Disorders without borders: current and future directions in the meta-structure of mental disorders. *Social psychiatry and psychiatric epidemiology*, **50**(3), pp.339-350.

Collishaw, S., Maughan, B., Goodman, R., and Pickles, A. (2004) Time trends in adolescent mental health. *Journal of Child Psychology and Psychiatry*, **45**(8). 1350-1362.

Department of Health and Social Care and Department for Education (2018) *Government Response to the Consultation on Transforming Children and Young People's Mental Health Provision: a green paper and next steps*. Her Majesty's Stationary Office: London

Dubourg, R., Hamed, J. and Thorns, J. (2005) *The economic and social costs of crime against individuals and households 2003/04. Home Office Online Report 30/05* [Online] Available at: http://webarchive.nationalarchives.gov.uk/20100408132849/http:/www.homeoffice.gov.uk/rds/pdfs05/rdsolr3005.pdf [Accessed 29 October 2018].

Farrington, D. (1995) The development of offending and antisocial behaviour from childhood: key findings from the Cambridge study in delinquent development. *Journal of Child Psychology and Psychiatry*, **360**(6), 929-964.

Fergusson, D. and Lynskey, M. (1998) Conduct problems in childhood and psychosocial outcomes in young adulthood. *Journal of Emotional and Behavioral Disorders*, **6**(1), 2-18.

Fergusson, D., Horwood, J. and Ridder, E. (2005) Show me the child at seven: the consequences of conduct problems in childhood for psychosocial functioning in adulthood. *Journal of Child Psychology and Psychiatry*, **46**(8), 837-849.

Fernald, A., Marchman, V.A. and Weisleder, A. (2013) SES differences in language processing skill and vocabulary are evident at 18 months. *Developmental science*, **16**(2), pp.234-248.

Fives, A., Pursell, L., Heary, C., Nic Gabhainn, S. and Canavan, J. (2014) *Parenting support for every parent: A population-level evaluation of Triple P in Longford Westmeath. Final report*. Athlone, Ireland: Longford Westmeath Parenting Partnership.

Friedli, L. and Parsonage, M. (2007) Building an economic case for mental health promotion. *Journal of Public Mental Health*, **6**(3), 14-23.

Goodman, R. (1997) The Strengths and Difficulties Questionnaire: a research note. *Journal of Child Psychology and Psychiatry*, **38**(5), 581-586.

Goodman, R. (2001) Psychometric properties of the Strengths and Difficulties Questionnaire. *Journal of the American Academy of Child and Adolescent Psychiatry*, **40**(11), 1337-1345.

Goodman, A. and Goodman, R. (2009) Strengths and Difficulties Questionnaire as a dimensional measure of chid mental health. *Journal of the American Academy of Child and Adolescent Psychiatry.* **48**(4), 400-403.

Green, H., McGinnity, A., Meltzer, H., Ford, T. and Goodman, R. (2005) *Mental health of children and young people in Great Britain, 2004*. Basingstoke: Palgrave Macmillan.

Gutman, L., Joshi, H., Parsonage, M. and Schoon, I. (2015) *Children of the new century: Mental health findings from the Millennium Cohort Study.* London: Centre for Mental Health.

Gutman, L.M, Joshi, H., Parsonage, M. and Schoon, I. (2018) Gender-specific trajectories of conduct problems from ages 3 to 11. *Journal of Abnormal Child Psychology*, **46**(7), 1467-1480

Gutman, L.M., Joshi, H., and Schoon, I. (in press) Developmental Trajectories of Conduct Problems and Cumulative Risk from Early Childhood to Adolescence. *Journal of Youth and Adolescence*.

Hansen K. (2014) *Millennium Cohort Study: a guide to the datasets.* London: Institute of Education.

Hart, B. and Risley, T.R. (2003) The early catastrophe: The 30 million word gap by age 3. *American educator*, **27**(1), pp.4-9.

Heckman, J. J., Holland, M. L., Makino, K. K., Pinto, R., & RosalesRieda, M. (2017) An analysis of the Memphis Nurse-Family Partnership Program (No. w23610). *National Bureau of Economic Research.* https://doi.org/10.3386/w23610.

Hughes, C., Daly, I., Foley, S., White, N. and Devine, R.T. (2015) Measuring the foundations of school readiness: Introducing a new questionnaire for teachers–The Brief Early Skills and Support Index (BESSI). *British Journal of Educational Psychology*, **85**(3), pp.332-356.

Hummel, S., Naylor, P., Chilcott, J., Guillaume, L., Wilkinson, A., Blank, L., Baxter, S. and Goyder, L. (2009) *Cost effectiveness of universal interventions which aim to promote emotional and social wellbeing in secondary schools.* Sheffield, UK: University of Sheffield.

Institute for Fiscal Studies (2018) *Public Spending on Children in England: 2000 to 2020.* London: Children's Commissioner.

Jaffee, S.R., Belsky, J., Harrington, H., Caspi, A. and Moffitt, T.E. (2006) When parents have a history of conduct disorder: How is the caregiving environment affected? *Journal of abnormal psychology*, **115**(2), p.309.

Jones, B.L. and Nagin, D.S. (2013) A note on a Stata plugin for estimating group-based trajectory models. *Sociological Methods & Research*, **42**(4), pp.608-613.

Joshi, H. and Fitzsimons, E. (2016) The Millennium Cohort Study: the making of a multi-purpose resource for social science and policy. *Longitudinal and Life Course Studies*, **7**(4), pp.409-430.

Kelly, Y., Kelly, J., & Sacker, A (2013) Time for bed: associations with cognitive performance in 7-year-old children: a longitudinal population-based study. *Journal of Epidemiology and Community Health*, Online First, July 2013. doi:10.1136/jech-2012-202024

Kim-Cohen, J., Caspi, A. *et al.* (2003) Prior juvenile diagnoses in adults with mental disorder. *Archives of General Psychiatry*, 60, 709-717.

Knapp, M., Scott, S. and Davies, J. (1999) The cost of antisocial behaviour in younger children. *Clinical Child Psychology and Psychiatry*, **4**(4), 457-473.

Kratzer, L. and Hodgins, S. (1997) Adult outcomes of childhood conduct problems: a cohort study. *Journal of Abnormal Child Psychology*, **25**(1), 65-81.

Meltzer, H., Gatward, R., Goodman, R. and Ford, T. (2000) *The mental health of children and adolescents in Great Britain.* London: The Stationery Office.

Meltzer, H., Gatward, R., Corbin, T., Goodman, R. and Ford, T. (2003a) *The mental health of young people looked after by local authorities in England.* London: The Stationery Office.

Meltzer, H., Gatward, R., Corbin, T., Goodman, R. and Ford, T. (2003b) *Persistence, onset, risk factors and outcomes of childhood mental disorders.* London: The Stationery Office.

Moffitt, T. (1993) Adolescent-limited versus life-course-persistent antisocial behaviour: a developmental taxonomy. *Psychological Review*, 100, 674-701.

Moffitt, T., Caspi, A, Harrington, H. and Milne, B. (2002) Males on the life-course-persistent and adolescent-limited pathways: follow-up at age 26 years. *Development and Psychopathology*, 14, 179-207.

Moffitt, T. E. (2006) Life-course-persistent versus adolescence-limited antisocial behavior. In D. Cicchetti & D. J. Cohen (Eds.), *Developmental psychopathology: Risk, disorder, and adaptation* (Vol. 3, 2nd ed., pp. 570–598). Hoboken: Wiley.

Nagin, D. (2005) *Group-based modeling of development.* Cambridge: Harvard University Press.

National Collaborating Centre for Mental Health (2013) *Antisocial behaviour and conduct disorders in children and young People: the NICE clinical guideline on recognition, intervention and management* [Online] Available at www.nice.org.uk /cg158 [Accessed 29 October 2018].

NHS Digital (2018) Publication: *Statistics on Smoking – England, 2018.* [PAS] [Online] Available at: https://digital.nhs.uk /data-and-information/publications/statistical/statistics-on-smoking/statistics-on-smoking-england-2018/part-3-smoking-patterns-in-adults [Accessed 14 October 2018].

Odgers, C.L., Caspi, A., Broadbent, J.M., Dickson, N., Hancox, R.J., Harrington, H., Poulton, R., Sears, M.R., Thomson, W.M. and Moffitt, T.E. (2007) Prediction of differential adult health burden by conduct problem subtypes in males. *Archives of General Psychiatry*, **64**(4), pp.476-484.

Ollendick, T.H., Jarrett, M.A., Grills-Taquechel, A.E., Hovey, L.D. and Wolff, J.C., (2008) Comorbidity as a predictor and moderator of treatment outcome in youth with anxiety, affective, attention deficit/hyperactivity disorder, and oppositional/conduct disorders. *Clinical Psychology Review,* **28**(8), pp.1447-1471.

Pajer, K. (1998) What happens to "bad" girls? A review of the adult outcomes of antisocial adolescent girls. *American Journal of Psychiatry*, 155, 862-870.

Parsonage, M., Khan, L. and Saunders, S. (2014) *Building a better future: the lifetime costs of childhood behavioural problems and the benefits of early intervention.* London: Centre for Mental Health.

Plewis, I. (ed.), (2007) *The Millennium Cohort Study: technical report on sampling (4th edition)*. London: Centre for Longitudinal Studies.

Prinz, R.J., Sanders, M.R., Shapiro, C.J., Whitaker, D.J. and Lutzker, J.R. (2009) Population-based prevention of child maltreatment: The US Triple P system population trial. *Prevention science*, **10**(1), pp.1-12

Rivenbark, J.G., Odgers, C.L., Caspi, A., Harrington, H., Hogan, S., Houts, R.M., Poulton, R. and Moffitt, T.E. (2018) The high societal costs of childhood conduct problems: evidence from administrative records up to age 38 in a longitudinal birth cohort. *Journal of Child Psychology and Psychiatry*, **59**(6), pp.703-710.

Romeo, R., Knapp, M. and Scott, S. (2006) Economic cost of severe antisocial behaviour in children – and who pays it. *British Journal of Psychiatry*, 188, 547-553.

Rutter, M. (1979) Protective factors in children's responses to stress and disadvantage. In M. W. Kent & J. E. Rolf (Eds.), *Primary prevention of psychopathology: Vol. 3. Social competence in children* (pp. 49–74). Hanover, NH: University Press of New England.

Sameroff, A.J. and Fiese, B.H. (2000) Transactional regulation: The developmental ecology of early intervention. *Handbook of early childhood intervention*, 2, pp.135-159.

Scott, S., Knapp, M., Henderson, J. and Maughan, B. (2001) Financial cost of social exclusion: follow-up study of antisocial children into adulthood. *BMJ*, 323, 28 July 2001.

Snell, T., Knapp, M., Healey, A., Guglani, S., Evans-Lacko, S., Fernandez, J.L., Meltzer, H. and Ford, T. (2013) Economic impact of childhood psychiatric disorder on public sector services in Britain: estimates from national survey data. *Journal of child psychology and psychiatry*, **54**(9), pp.977-985.

Social Metrics Commission (2018) *A new measure for Poverty in the UK. The final report of the Social Metrics Commission.* London: The Legatum Institute.

Spencer, N., Devereux, E., Wallace, A., Sundrum, R., Shenoy, M., Bacchus, C. and Logan, S. (2005) Disabling conditions and registration for child abuse and neglect: a population-based study. *Pediatrics*, **116**(3), 609-613.

Verona, E. and Sachs-Ericsson, N. (2005) The intergenerational transmission of externalizing behaviors in adult participants: the mediating role of child abuse. *Journal of Consulting and Clinical Psychology,* **73**(6), 1135-1145.

Washington Institute of Public Policy (2018) *Benefit Costs results. Public Health and Prevention* [Online] Available at www.wsipp.wa.gov /BenefitCost/Pdf/9/WSIPP_BenefitCost_Public-Health-Prevention [Accessed October 4th 2018]

Wolpert, M., Harris, R., Jones, M., Hodges, S., Fuggle, P., James, R., Wiener, A., Mckenna, C., Law, D. and Fonagy, P. (2014) *THRIVE: the AFC-Tavistock model for CAMHS.* London: Press CAMHS

Woolf, J.C. and Ollendick, T.H. (2010) Conduct Problems in Youth: Phenomenology, classification, and epidemiology in Murrihy, R.C., Kidman, A.D. and Ollendick, T.H. eds., *Clinical handbook of assessing and treating conduct problems in youth.* New York: Springer Science & Business Media.

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