



Childhood mental health and life chances in post-war Britain

Insights from three national birth cohort studies

Executive Summary



Key points

Mental health problems in childhood and adolescence are common and they cast a long shadow over our lives. They affect not only our mental health as adults but also our chances of doing well at school and in work, of forming strong families and of becoming good citizens.

We examined the long-term consequences of childhood and adolescent mental health problems, not just for adult mental health but for a wide range of economic and social outcomes. We used a unique resource: three national birth cohorts that have been tracking large representative samples of people born in the UK in 1946, 1958 and 1970.

We found that conduct problems in childhood were strongly associated with a wide range of adverse outcomes in adult life, and more so for severe than for mild problems. Most of these effects could not be accounted for by either socio-economic background or childhood IQ.

- People with mild conduct problems were twice as likely as other people to have no educational qualifications in early adulthood. For those with severe conduct problems, the odds were up to four times.
- Both mild and severe adolescent conduct problems were associated with significantly elevated odds of chronic economic inactivity. And those in work earned up to 30% less.
- Adolescent conduct problems were strongly associated with never marrying (in women), with divorce and with teenage parenthood.
- People with severe adolescent conduct problems were over four times more likely to have been arrested in early adulthood and over three times more likely to have a court conviction.

People with emotional problems in childhood and adolescence were much more likely also to have emotional problems in adult life. But for other outcomes the long-term effects of early emotional problems were generally less pronounced than those for conduct problems. In some cases, in fact, adolescent emotional problems were associated with better adult life outcomes.

The strength, pervasiveness and persistence of the damaging consequences of conduct problems make a powerful case for early intervention. There is good evidence that many early intervention programmes for childhood conduct and emotional problems are highly effective and more than pay for themselves over the long term. We should invest much more in these programmes as a matter of urgency.

Introduction

Nearly 10% of children aged 5-16 years have a clinically diagnosable mental health problem (Green et al., 2005). The prevalence of these problems increased between the 1970s and the 1990s (Collishaw et al., 2004) and there is a high degree of persistence of these problems into adult life (Rutter et al., 2006). Evidence already suggests that these problems have a serious impact on life chances (Fergusson et al., 2005; Colman et al., 2009) and even on life expectancy (Jokela et al., 2009). Identifying and quantifying the lifetime effects of childhood and adolescent mental health problems is therefore an important public health goal, with strong implications for prevention and treatment.

This report summarises the main findings of a research project commissioned by Sainsbury Centre for Mental Health, the Smith Institute and UNISON, and supported by the UK Medical Research Council (MRC). The project analysed the long-term consequences of mental health problems that arise in childhood and adolescence using longitudinal data.

Detailed work on the project was undertaken by Marcus Richards and Rosemary Abbott, supported by a steering group consisting of Guy Collis, Paul Hackett, Matthew Hotopf, Peter Jones, Diana Kuh, Barbara Maughan and Michael Parsonage. This work also benefited from wider discussion at two expert workshops, hosted by Sainsbury Centre in 2008, on the main topics of this project and the best use of the UK birth cohorts to address these. A full report of this project is available at the Sainsbury Centre website (www.scmh.org.uk).

The UK birth cohorts

Analysing the long-term consequences of mental ill health requires longitudinal studies, ideally beginning in early life and continually collecting data through adulthood. Birth cohorts, which recruit large, nationally representative samples, are the most powerful studies of this kind. The UK is richly endowed with four, representing a broad sweep of its population born between the end of World War II and the millennium. This report is based on the first three of these, born in 1946, 1958 and 1970, offering the opportunity to observe whether findings are consistent across fifty years of UK post-war history, during which important changes occurred in educational and employment opportunities, in family and social structures, and in societal norms.

The 1946 cohort, officially known as the MRC National Survey of Health and Development (Wadsworth et al., 2006), was commissioned at the beginning of the modern welfare state. The original survey comprised 13,687 births, 82% of all births occurring in England, Wales and Scotland in a single week. A subsample of 5,362 of these individuals has been continually followed up, most recently at age 53.

The 1958 cohort, titled the National Child Development Study (Power & Elliott, 2005), began as a study of early mortality by recruiting 17,416 births occurring in England, Wales and Scotland in a single week. The first follow-up was at age seven and subsequent follow-ups have been continually conducted, most recently at age 45.

The 1970 cohort is also known as the British Cohort Study (Elliott & Shepherd, 2006), and initially consisted of 16,571 births occurring during in England, Wales and Scotland in a single week. The first follow-up was at age five, and the most recent was at age 34.

The 1958 and 1970 cohorts were augmented by immigrants to the UK to maintain national representativeness.

Previous studies have used these cohorts individually to assess long-term consequences of childhood mental health, but none attempted to conduct a comprehensive study using all three, encompassing a broad range of outcomes. This report summarises the results of our new analyses.

Childhood and adolescent mental health problems

In all cohorts, identification of conduct and emotional problems was based on questions asked of the children's teachers and parents. The 1958 and 1970 cohorts used the Rutter A scale (Rutter et al., 1970; Elander & Rutter, 1996) to identify emotional and conduct problems, while the 1946 cohort used a forerunner of this.

For the 1946 cohort, teachers were asked questions when the children were 13 and 15. Items for conduct problems referred to unpunctuality, restlessness, truancy, daydreaming, indiscipline, disobedience and lying. Items for emotional problems referred to anxiety, timidity, fearfulness, diffidence and avoidance of attention.

For the 1958 and 1970 cohorts parents were questioned at age 5 (1970 only) and 16. Items for conduct problems referred to destroying belongings, fighting with other children, disobedience, lying and bullying (and in the 1970 cohort only, stealing). Items for emotional problems referred to worries, misery, fearfulness, fussiness and solitariness.

Assessing life chances

The statistical analysis used in this report is mostly based on the Odds Ratio (OR). This represents the odds of having a particular outcome given a particular set of circumstances compared to odds of having that outcome without those circumstances. For example, an OR of 1 signifies that a factor makes no difference to a particular outcome; whereas an OR of 2 would mean that the odds of that outcome are twice as high. We also tested whether any OR above or below 1 represents a statistically significant association by estimating whether there is less than a 5% chance that it fell above or below 1 purely randomly.

Because there was a high degree of overlap between conduct and emotional problems in these cohorts, it was important to separate these by adjusting effects of conduct problems for those of emotional problems, and vice versa. The graphs in this report represent the effects of conduct and emotional problems differentiated in this way, in males and females.

Finally, it was also important to assess whether any association between mental health problems and life chances might have ultimately been driven by other factors. Two in particular were considered: socio-economic background, which can simultaneously influence risk of developing childhood mental health problems and achieving poor adult life chances; and childhood cognitive ability, which correlates highly with childhood mental health problems (Maughan & Carroll, 2006) and also influences adult life chances. For this reason further analyses were carried out to adjust for these two factors, socio-economic background represented by whether the father of the survey member was in a manual or non-manual occupation. Effects of these further adjustments are discussed but are not represented in the graphs.

Findings

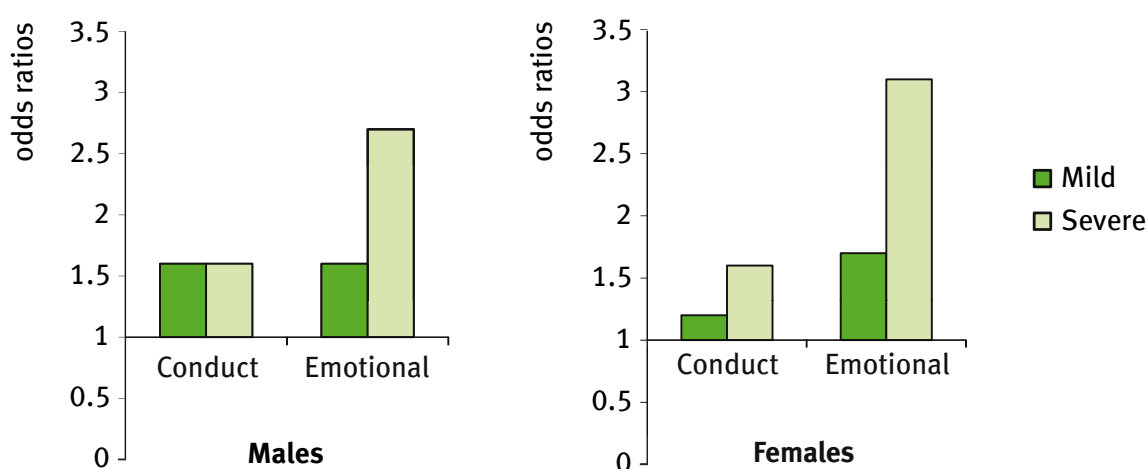
Adult mental health

Continuities and discontinuities in mental health problems between childhood and adulthood have long been recognised (Rutter et al. 2006). In the case of conduct problems, Moffitt (1993) distinguished a relatively small group, mostly male, with severe problems that begin in early childhood, severe adverse experiences, evidence of neurodevelopmental difficulties, and poor adult mental health. In contrast, there is a larger group with conduct problems that emerge during adolescence. These are largely associated with ‘maturity gap’ frustrations and social mimicry, are more open to benefit from turning points such as partnership and labour market attachment, and are associated with milder mental health problems in adulthood. However, there are important exceptions to this picture, and it should be noted that clinical diagnoses of adult antisocial disorders have not been made in the UK birth cohorts.

In the case of emotional problems there is strong evidence, also reviewed by Rutter et al. (2006), that adolescent-onset depression is associated with recurring depression in adulthood. In the 1946 cohort, 71% of those with evidence of emotional problems in adulthood had also showed evidence of these problems in adolescence, while only 14% of those who showed these problems in adolescence reported no emotional problems in adulthood (Colman et al. 2007). In the 1958 cohort childhood and adolescent emotional problems were associated with approximately double the risk of a clinical depressive episode in adulthood (Clarke et al. 2007).

For our study, adult emotional problems in the 1946 cohort were based on longitudinal mental health profiles up to age 53 years defined by Colman et al. (2007), and on self-reported emotional symptoms at ages 23, 33 and 42 years in the 1958 cohort, and at ages 26 and 30 years in the 1970 cohort. In all three cohorts, adolescent conduct and emotional problems were associated with increasing severity of emotional problems in adulthood, although the effects were stronger for adolescent emotional problems than for conduct problems.

Figure 1: Odds of having worse emotional problems at age 26-30 in relation to adolescent mental health problems: 1970 cohort



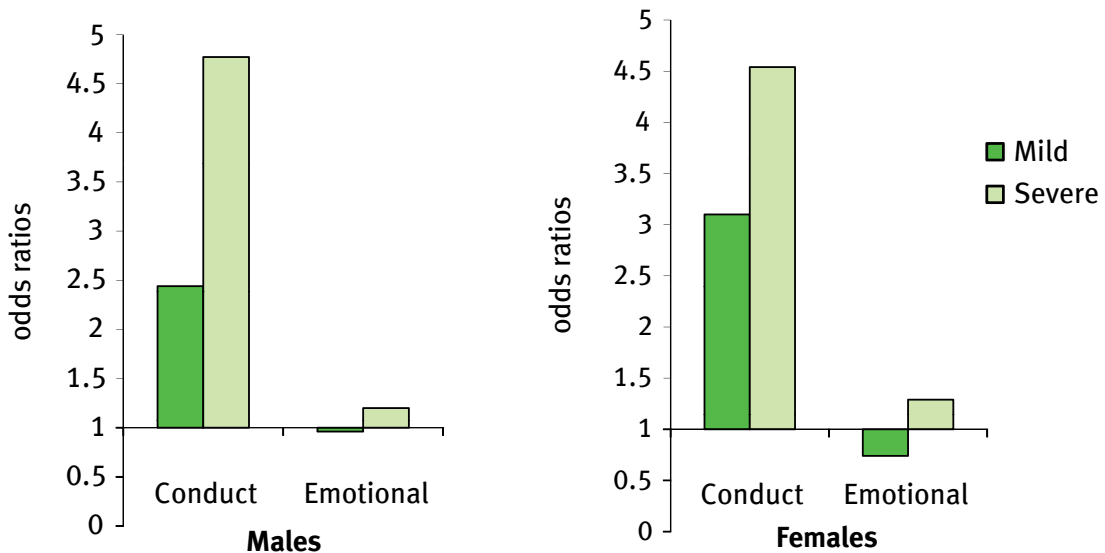
All comparisons are statistically significant.

Figure 1 shows that those in the 1970 cohort with adolescent conduct problems had around one and a half times the odds of worse psychological symptoms than those without adolescent conduct problems. For those with adolescent emotional problems the odds were up to three times higher. With rare exceptions these effects were not accounted for by socio-economic background or by childhood IQ in any cohort.

Education

In all three cohorts the odds of having no educational qualifications in early adulthood among those with adolescent conduct problems were strikingly elevated. Those with mild conduct problems had approximately double the odds, and those with severe conduct problems three to four times the odds of this outcome. This is illustrated for the 1970 cohort in Figure 2.

Figure 2: Odds of no educational qualifications in relation to adolescent mental health problems: 1970 cohort



Statistically significant for mild and severe conduct problems.

By contrast, adolescent emotional problems were not associated at all with this lowest level of educational attainment. This finding was also seen in the 1958 cohort. In the 1946 cohort, those with severe (but not mild) emotional problems had twice the odds of having no qualifications.

Most of these associations with low educational attainment were not accounted for by socio-economic background or by childhood IQ.

Our findings were even more pronounced when we repeated the analyses for advanced educational qualifications, defined as ‘A’ level or equivalent, or higher. This is an important educational milestone because achievement at this level represents the decision to stay in the educational system beyond statutory leaving age, and because ‘A’ levels are the principal gateway into tertiary education. For all cohorts, the odds of obtaining advanced qualifications were strongly reduced in those with adolescent conduct problems, more markedly so in those with severe problems. These effects were not accounted for by socio-economic background or childhood IQ. Even after allowance for these factors, people with mild conduct problems still had only around one half the odds of obtaining advanced qualifications, and in all cases the odds were worse for severe conduct problems.

For adolescent emotional problems the picture was generally less pronounced, although those with evidence of these problems in the 1946 cohort still had lower odds of achieving advanced qualifications, women strikingly so. However, after accounting for socio-economic background and childhood IQ, men in the 1958 and 1970 cohorts with emotional problems had significantly *higher* odds of obtaining advanced qualifications.

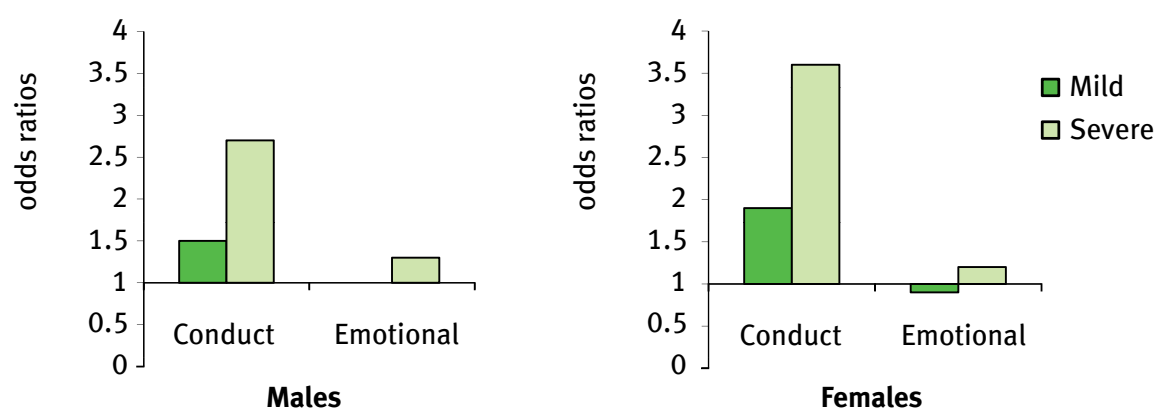
Employment and earnings

Colman et al. (2009) reported that the odds for those in the 1946 cohort with evidence of conduct problems in adolescence being unemployed at least once at ages 36, 43 or 53 years were no greater than those without these problems. Yet for those who were employed in midlife, conduct problems were associated with around double the odds of this being in a manual occupation.

For this report we revisited these outcomes for the 1958 and 1970 cohorts. We examined odds of being among the 10% of the sample with the worst chronic economic inactivity (defined in terms of unemployment, permanent or temporary sick leave, or disability), based on information between ages 16 and 34. Those who were looking after the home or in the education system were not classified as economically inactive by this definition. For those who were employed we then examined if their occupation was predominantly manual.

In both cohorts, mild and severe adolescent conduct problems were associated with significantly elevated odds of chronic economic inactivity in comparison to those without these problems. For men in the 1958 cohort and for men and women in the 1970 cohort these odds were at least one and a half times greater in those with mild conduct problems, and at least double in those with severe problems. Figure 3 illustrates this for the 1970 cohort.

Figure 3: Odds of chronic economic inactivity in relation to adolescent mental health problems: 1970 cohort



Statistically significant for all conduct comparisons but not for any emotional.

The only exception to this trend was for women in the 1958 cohort, where the effects were weaker. Allowing for this exception, none of the effects were explained by socio-economic background or childhood IQ. Nor were they attributable to poor educational attainment, since they persisted even after additional adjustment was made for this.

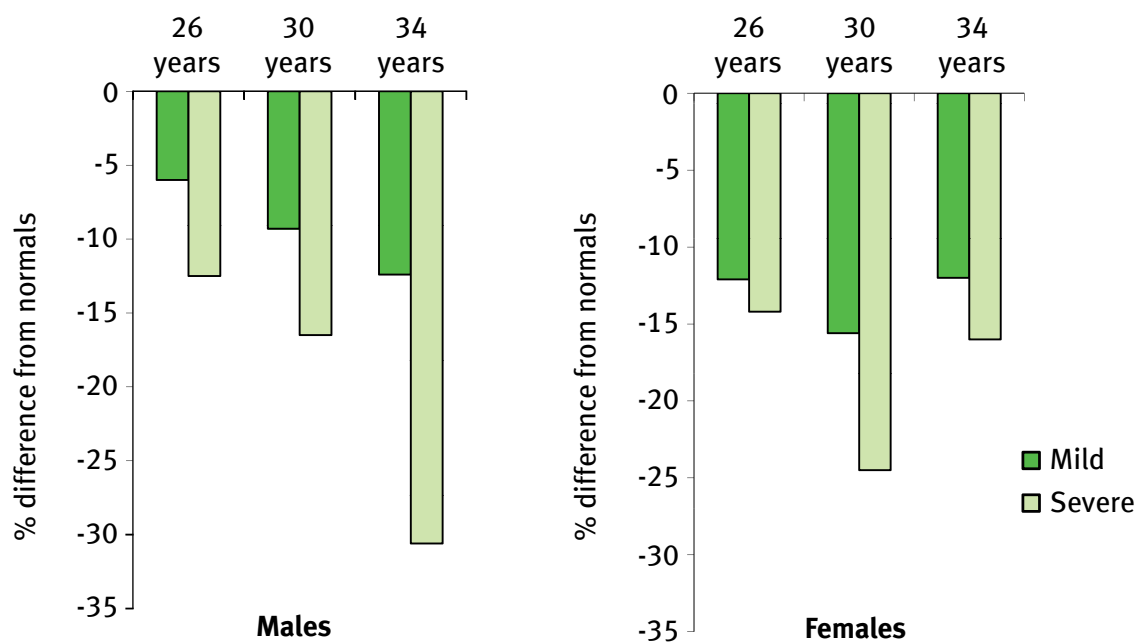
Those in employment with mild adolescent conduct problems had approximately double the odds of

being predominantly in a manual occupation. For those with severe adolescent conduct problems, the odds were three times greater in the 1958 cohort, and around two and a half times greater in the 1970 cohort. There were no differences between men and women in these respects, and these effects were not accounted for by socio-economic background, childhood IQ or poor educational attainment.

In marked contrast, adolescent emotional problems were not associated with chronic economic inactivity, or manual employment, in men or women in either cohort.

For those who were employed we also examined gross hourly earnings, at ages 23, 36 and 43 years in the 1946 cohort, ages 23, 33 and 42 years in the 1958 cohort, and ages 26, 30 and 34 years in the 1970 cohort. These data are reported with kind permission of Jenny Neuberger (doctoral student at the Institute of Education), who adjusted values for inflation (to 2000 prices) for comparability across the cohorts. In most cases, conduct problems were associated with relatively lower earnings. With the exception of men in the 1946 cohort this was worse for severe than for mild problems. This is illustrated for the 1970 cohort in Figure 4. For this graph, values represent percentage differences, rather than odds, relative to those with no problems. In the worst case, men with severe adolescent conduct problems were earning around 30% less than men without these problems.

Figure 4: Percent differences in gross hourly earnings in relation to adolescent conduct problems: 1970 cohort



All comparisons are statistically significant.

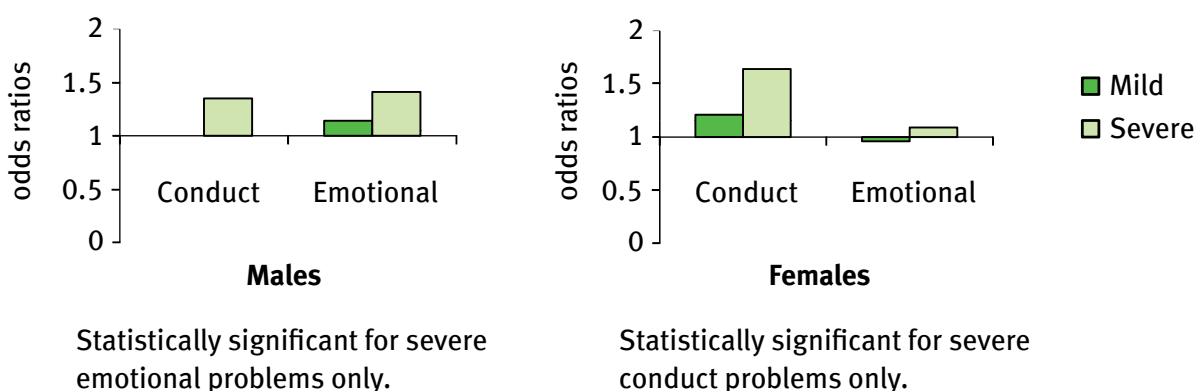
Much of the impact of conduct problems on earnings was accounted for by socio-economic background, childhood IQ and poor educational attainment. However, after allowing for these factors there were still residual negative effects of severe conduct problems on earnings in early midlife.

Adolescent emotional problems were on the whole less predictive of earnings than conduct problems, although we still observed a negative impact of severe emotional problems, particularly in the 1946 cohort, and in men this was less likely to be accounted for by socio-economic background, childhood IQ or poor educational attainment.

Marriage, divorce and parenthood

Adolescent conduct problems were associated with never marrying for women in the 1958 and 1970 cohorts but these were relatively small effects in comparison to those for labour market outcomes, and were not observed at all in the 1946 cohort. Figure 5 shows that, for the 1970 cohort, the odds of women with severe adolescent conduct problems never marrying were approximately one and a half times greater than women without these problems. This was not accounted for by socio-economic background or childhood IQ.

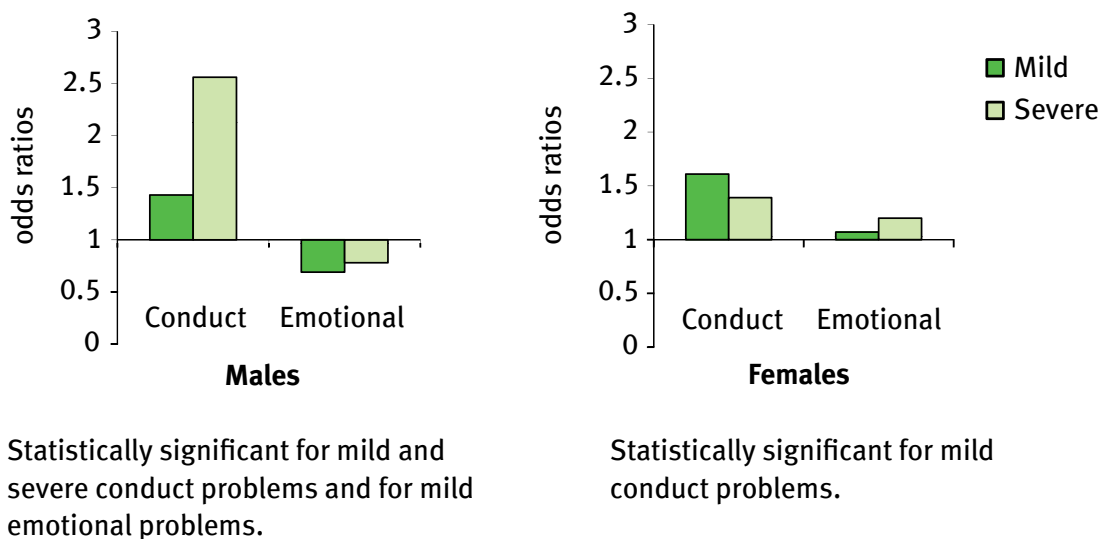
Figure 5: Odds of never marrying (by age 34 years) in relation to adolescent mental health problems: 1970 cohort



In contrast, adolescent emotional problems were more predictive of never marrying in men with severe emotional problems, even after allowing for socio-economic background and childhood IQ.

Adolescent conduct problems were more likely to be associated with divorce than adolescent emotional problems. In the worst case, men with severe adolescent conduct problems in the 1970 cohort had two and a half times the odds of divorce than men without these problems, as illustrated in Figure 6.

Figure 6: Odds of divorce (by age 34 years) in relation to adolescent mental health problems: 1970 cohort



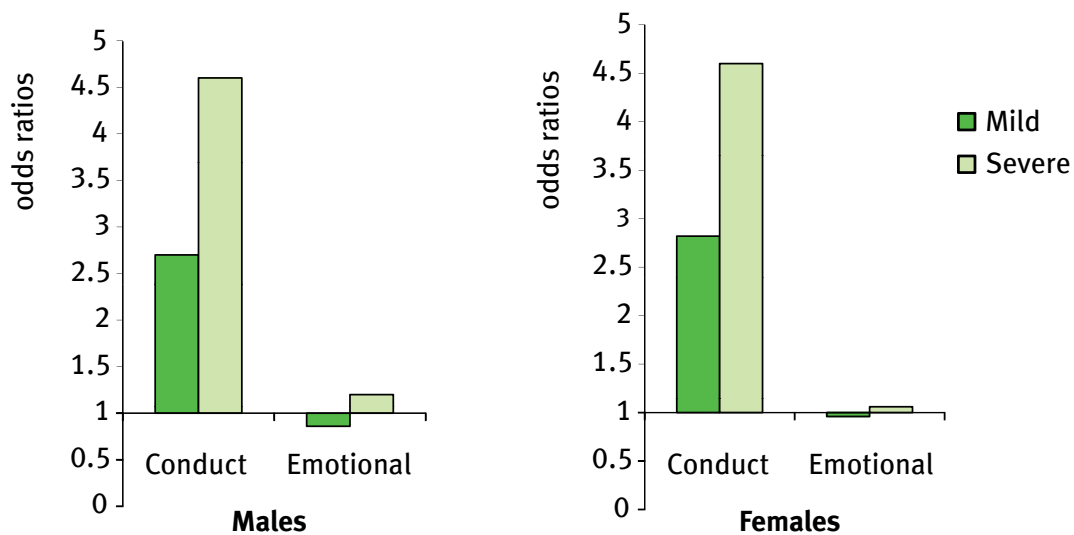
The effects of adolescent conduct problems frequently persisted after taking account of socio-economic background and childhood IQ, especially for women.

Adolescent emotional problems, by contrast, were almost entirely unrelated to divorce, with the single exception of men in the 1970 cohort with mild problems, who had almost 40% lower odds of divorce (see Figure 6).

For teenage parenthood, results are even clearer cut. Those with mild and severe adolescent conduct problems had significantly raised odds of this outcome in all cohorts, with severe conduct problems associated with over double these odds, and in some cases over fourfold. This is shown in Figure 7 for the 1970 cohort. Few of these associations were accounted for by socio-economic background or childhood IQ.

Adolescent emotional problems played no significant role in determining age at birth of a first child in any of the cohorts.

Figure 7: Odds of teenage parenthood in relation to adolescent mental health problems: 1970 cohort



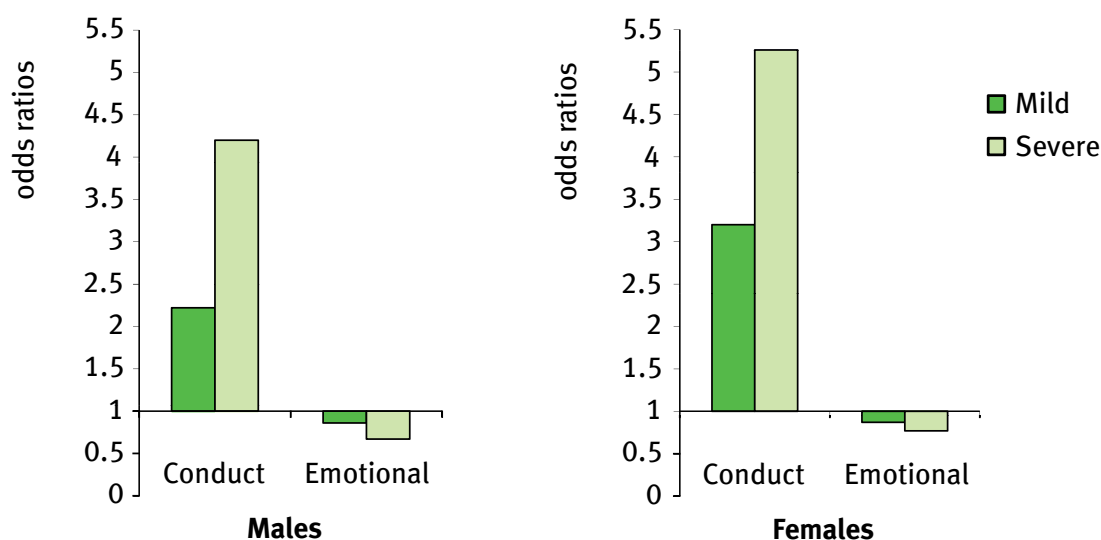
Statistically significant for mild and severe conduct problems.

Criminal justice

Contact with the criminal justice system was self-reported by members of the 1958 and 1970 cohorts. In the former, information was requested at age 42 years, relating to offending over the past decade. Offending rates for women over this age-period were too low for meaningful statistical analysis and are not reported here. For the 1970 cohort, information on offending between ages 16 and 30 was requested. This represents a longer period of time and includes the highest risk period for offending.

In both cohorts we observed significantly raised odds of ever being arrested and ever receiving a court conviction in those with adolescent conduct problems. In all cases these odds were higher for severe than for mild problems. Figure 8 shows that men and women in the 1970 cohort with severe adolescent conduct problems had at least four times the odds of being arrested. In almost no case were these effects accounted for by socio-economic background or childhood IQ.

Figure 8: Offending: odds of being arrested in relation to adolescent mental health problems: 1970 cohort



Statistically significant except for mild emotional problems.

Statistically significant for mild and severe conduct problems.

The picture for offending in relation to adolescent emotional problems is rather different. There is no suggestion that these problems are associated with increased odds of being arrested or receiving a court conviction. Indeed, adolescent emotional problems were associated with lower odds of arrest and court conviction in men in the 1970 cohort. This suggests that emotional problems may be protective against some kinds of outcomes.

Other outcomes

This report summarises a larger study we have undertaken on adult life chances in relation to childhood conduct and emotional problems. Space does not permit us to do justice to the full scope of this study here, so we have selected key life chance outcomes: those with the strongest implications for individual wellbeing and for cost to state and society. Other life chance outcomes were also addressed in the larger study and can be found in the full report. They include smoking and potential alcohol abuse, housing tenure, social contact, social participation (e.g. voting and membership of organisations), and ratings of self efficacy and life satisfaction.

The impact of early childhood mental health

The 1970 cohort offers an additional opportunity to investigate how far back in life the impact of conduct and emotional problems can be traced, since maternal reports of conduct and emotional problems were first asked when members of this survey were aged five.

Other research has suggested that early-onset conduct problems may have more serious consequences than those emerging in adolescence (Moffit, 1993). However, while we found that the associations between early childhood conduct and emotional problems and later life outcomes showed a similar pattern to those for adolescent problems, the effects were generally not as strong.

Nevertheless, those who showed evidence of conduct problems at age five were still at increased risk of poor life chances, particularly of adult emotional problems, lower educational attainment, increased economic inactivity, teenage parenthood (particularly in women), and offending (particularly in men), even after allowing for socio-economic background and childhood IQ.

In contrast, there was little evidence of long-term negative effects of early childhood emotional problems, and if anything men with this early history had higher odds of achieving advanced educational qualifications and lower odds of offending. But early emotional problems did show significant continuities into adulthood.

Concluding comments

Our analyses, based on three adult UK birth cohorts, demonstrate very clearly that mental health problems beginning in early life can have profound long-term consequences.

Early mental health problems affect a wide range of outcomes in later life, including emotional problems in adulthood, poor educational achievement, chronic economic inactivity, lower earnings, marital problems, teenage parenthood and contact with the criminal justice system. All of these outcomes have an adverse impact on individual health, wellbeing and daily functioning, as well as costs to the state and to our wider social cohesion.

This represents a strong contrast with physical health problems. The prevalence of all major physical health conditions shows a pronounced age gradient and the burden of physical ill health is now increasingly concentrated in old age. Mental health problems, on the other hand, frequently start early in life. They can persist over long periods and affect people at crucial stages of life: in the early home environment, during school and through the transition from school into adulthood – into the world of work, self-management, partnership, family formation and citizenship.

It is also now clear that conduct problems in childhood and adolescence are a much more important cause of poor life chances than emotional difficulties. Indeed, there was an indication that individuals with the latter problems showed relatively fewer behavioural problems, including offending. However, we also found that childhood emotional problems are associated with recurrent emotional problems in adulthood. This is important given evidence from the World Health Organisation that depression is now the leading cause of burden of disease in high-income countries (WHO, 2008).

For children and adolescents whose conduct problems were relatively mild, adverse effects on life chances were less pronounced than in those with more severe problems. But it should be noted that the numbers involved are much larger. For the smaller group of children and adolescents whose conduct problems are severe (and so may constitute a clinically significant disorder), the odds of under-achieving at school and in the labour market, of having family problems and of becoming involved in crime are raised several-fold compared with those without conduct problems.

The adverse long-term consequences associated with childhood and adolescent mental health problems impose major costs, both on the individuals concerned and on wider society. The scale of these costs has major implications for public policy.

Early mental health problems have identifiable and, in many cases, preventable risk factors. Effective treatments are available for many disorders, as described in NICE guidelines (NICE, 2005, 2007 & 2008). Some of these interventions have extremely high returns. For example, a recent review published by the US Department of Health and Human Services shows that for seven different prevention and early intervention programmes, ranging from early life skills training to multi-systemic therapy for 11-17 year-olds and nurse-family partnerships for pregnant mothers, measurable benefits exceed the costs of intervention by a substantial margin in every case (US DHHS, 2007).

Despite increasingly strong evidence on the effectiveness of early intervention to prevent and treat childhood disorders, the implementation of these programmes still has a long way to go. A large amount of mental ill health among children and young people goes unrecognised and untreated. Only about a quarter of those with a clinically diagnosable disorder are in touch with specialist mental health services (Meltzer et al., 2003). The lack of appropriate treatments for child and adolescent mental health problems has been highlighted by, among others, the British Medical Association (2006).

Targeted prevention programmes, particularly aimed at preventing early onset conduct problems, are also thin on the ground.

Our analyses also have implications for future research. Some important questions remain unanswered. We do not know the extent to which adolescent conduct problems are associated with multiple adverse outcomes in the same individuals, or whether one subgroup is at particular risk for poor educational and labour market achievement while another is more prone to difficulty with social attachment and intimacy, for example. And even if many with conduct problems have multiple adverse outcomes, it is not clear to what extent this is because the risks for all these outcomes operate simultaneously, or because one adverse outcome leads to another in a cascading series that can be interrupted. We do not yet fully understand the extent to which such a cascading series might be maintained by adult mental health problems that continue from childhood, and we do not fully understand the role that poor life chances themselves play in maintaining this continuity.

Above all, we recognise the greatest challenge in this research. While associations between early mental health problems and later adverse outcomes are strong, they are by no means pre-determined or inevitable. Many individuals escape from risk and some may even flourish in adulthood. Further research to identify the characteristics and experiences (including interventions they may have received) of these individuals may cast important light on protection and on resilience.

Finally, our study demonstrates the power of longitudinal analysis in mental health research, and so we close this report in tribute to the unique richness of the UK birth cohorts, by underscoring the necessity of their maintenance as an invaluable and irreplaceable research resource.

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A full report of this project is available at the Sainsbury Centre website (www.scmh.org.uk).

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