

Longitudinal analysis of the Offending, Crime and Justice Survey 2003–06

By Jon Hales, Camilla Nevill, Steve Pudney and Sarah Tipping

Key implications

- This report presents longitudinal analysis of self reported data on offending, drug use and anti-social behaviour amongst young people (initially aged 10 to 25) from the Offending, Crime and Justice Survey, which was carried out annually between 2003 and 2006.
- The analysis identifies a small group of young people described here as ‘prolific offenders’, who accounted for a disproportionate number of offences, including serious offences. This group should be a key target for policy intervention on youth crime. Youth crime policy needs to engage with this group at an early stage as the analysis shows that this group starts to offend earlier compared with others.
- Looking at the transitions that young people make into and out of offending behaviour, the analysis suggests that anti-social behaviour can be a precursor to offending for some young people. In some cases, early intervention that targets young people involved in anti-social behaviour may help to reduce the likelihood of offending later on.
- In order to intervene effectively at an early stage to prevent offending, awareness of risk factors is important to target interventions at those most likely to go on to offend. The analysis reported here highlights family, peer group and school factors as important influences on the behaviour trajectories of young people during their teenage years.
- Current youth crime policy, as set out in the Youth Crime Action Plan, already contains an emphasis on early intervention with families through programmes such as Family Intervention Projects. In addition, young people excluded from school are already likely to be involved in assessments of their needs.
- Further consideration could be given to enhancing schools’ disciplinary policies, given this report’s finding that weak school discipline is related to an increased likelihood of offending and drug use.
- The significance of peer groups, whether siblings or friends, as an influence supports previous findings emphasising co-offending as a feature of youth crime and raises the question of whether it would be possible to intervene to disrupt the spread of offending between peers.
- Further research and analysis on factors related to desistance is required to support policies to reduce re-offending among existing offenders.

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Keywords

Young people
Offenders
Anti-social behaviour
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The Offending, Crime and Justice Survey (OCJS) was a self-report offending survey carried out annually between 2003 and 2006. Self-report offending surveys include coverage of incidents that did not come to the attention of the police or other agencies of the criminal justice system. The interviews also covered anti-social behaviour (ASB) and use of drugs.

This longitudinal analysis of the OCJS aims to describe the levels of change in offending behaviour, ASB and drug use within individuals. Although the first wave of the OCJS had a representative sample of those aged 10 to 65 living in private households in England and Wales, the longitudinal study focused on those aged 10 to 25, who were interviewed up to four times.

Prevalence of offending

These analyses build on a series of annual reports that have looked at each year's data in turn. The 2006 report (Roe and Ashe, 2008) showed that around 22 per cent of those aged 10 to 25 admitted committing one or more offences in the previous 12 months. Over a period of four years, more than twice as many sample members (49%) had committed at least one offence.

The percentage of sample members who committed offences each year was linked to their age. The likelihood of offending generally increased during the early teens, reaching a peak between the ages of 14 and 16 before declining. The decline could be sharp or more gradual depending on the behaviour. The four types of anti-social behaviour covered in the OCJS showed two quite distinct patterns: while graffiti and noisy and rude behaviour had an early peak and declined sharply in prevalence, nuisance

to neighbours and racist abuse were more persistent into later ages.

Over a period of four years, the very numerous sample members (82% of 10- to 25-year-olds) with a low propensity to offend accounted for around one-third (36%) of all offences. This is about the same proportion of all offending as that admitted by the small group (4% of 10- to 25-year-olds) described here as 'prolific offenders'¹ who committed a disproportionately large amount of offences (responsible for 32% of all offences).

Onset of offending

Onset of delinquent behaviour occurs at a relatively young age, often before the age at which such behaviour peaks in the population as a whole. For example, for theft from school the onset risk was highest from ages 13 to 15, after which it fell sharply but the peak of offending of this type occurred at age 15. On the whole, policies to divert young people from offending need to engage with people who are several years younger than those at the age when they are most likely to commit offences.

A key point about the group of 'prolific offenders' mentioned above is that they had a relatively younger age of onset of offending compared to other groups. This group of 'prolific offenders' is the target of policy measures aiming to ensure that 'early intervention' occurs with the young people who have the highest propensity to commit offences.

¹ The OCJS sample is likely to exclude the most serious or prolific offenders in the population, although this is unlikely to have a significant impact on overall offending or drug use estimates.

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The shape of the trend of increasing *onset risk* varies for different behaviours, such as the use of different types of drug. For example, risk of first-time use of cocaine, ecstasy and LSD peaked at age 19 while risk of first-time cannabis consumption peaked at age 16.

Changes in offending rates over time

The wide range of ages in the OCJS sample has been used to group together the sample members who were born over a period of several years into separate birth cohorts. Those at a particular age in Waves 1 or 2 of the OCJS (in 2003 and 2004) are compared with those who reached that age in Waves 3 or 4 (in 2005 and 2006). If the estimates of offending differ between the cohorts, this may show that there has been a change in the aggregate level of this type of crime.

For a number of types of crime, the OCJS suggests a decrease in levels of offending. For example, there was a reduction in the rate of committing deliberate damage to property apparent when comparing members of the sample born between 1992 and 1996 and those born between 1989 and 1991 when they each reached the ages of 12 or 13.

In the case of drug use, there was evidence that younger-age cohorts were less likely to use cannabis. On the other hand, cocaine showed no sign of a shift in the relationship between birth cohorts in the likelihood of usage. This reflects other cross-sectional survey evidence on trends in drug use.

Transitions

One of the analyses looked at short-term changes between one year and the next. The likelihood of such changes occurring was different for different groups of sample members. For example, those who did not offend, commit ASB or use drugs in one year were highly likely (78%) to remain in this category in the next year. At the other end of the scale, the 'drug-using offenders' in one year were very likely to continue offending and use of drugs (51%). About a quarter of those who committed ASB or used drugs in the initial year went on to offend (26% and 25% respectively).

Multivariate analysis

Questions were included in the OCJS that reflected previous research on the factors associated with criminality. This information was analysed to identify a series of 'risk factors' correlated with starting to behave in harmful ways and with pathways towards offending and drug use. A multivariate analysis allows the influence of each factor to be assessed independently of the others. Three separate analyses of risk factors are described in the report; however, the findings were consistent and are summarised together.

Among the findings were the following key points.

- Younger sample members were less likely to be offenders, but this reflected a shorter time 'at risk'.
- Female sample members were significantly less likely to have been offenders than males.
- Social class, ethnic group and religious participation were not significantly associated with increased or reduced likelihood of offending, ASB and drug use.

Family, peer group and school factors were found to be very important influences on the pathways of young people (but these data related only to sample members aged up to 16).

- Having a friend or sibling who had been in trouble with the police increased the likelihood of an offending or drug-use trajectory. This reflects previous evidence of the importance of co-offending among young people.
- Living in a family headed by a single parent reduced the likelihood of a non-offending or drug-free trajectory. Living with a parent with a new partner reduced this likelihood even further.
- Both liberal and authoritarian styles of parenting were associated with an increased likelihood of a non-offending or drug-free trajectory among young people, suggesting the key factor was probably consistency of parental influence.
- Finally, young people were asked about violence towards teachers, truanting and standards of behaviour at their school. Decreasing levels of school discipline increased the likelihood of an offending or drug-use trajectory.

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INTRODUCTION TO THE OFFENDING, CRIME AND JUSTICE SURVEY

Aims and objectives

The Offending Crime and Justice Survey (OCJS) 2003–06 was designed to increase knowledge about young people and criminal behaviour. The main aim of the survey was to examine the extent of offending, anti-social behaviour (ASB) and drug use among the household population, particularly young people aged 10 to 25.

This longitudinal analysis of the OCJS aims to describe the levels of change in offending behaviour, ASB and drug use within individuals. It also covers the timing of transitions into and out of offending, ASB and drug use. The analysis intends to:

- identify the most common ages for starting to offend and use illegal drugs, and the ages of desistance;
- help to identify young people who are most at risk of offending and using drugs; and
- explore the patterns of offending and drug use, including uptake and desistance among young people.

The analysis will help inform government policy for early intervention on youth offending and drug use by identifying the key ages when young people are most likely to be making transitions into and out of offending and drug use. It will also increase understanding of the factors that put young people at most risk of starting to offend and use illegal drugs.

Early intervention was emphasised in the most recent statement of official policy on youth crime in England and Wales, the 'Youth Crime Action Plan', which was published by the Home Office in July 2008. This plan identified three linked sets of measures:

- enforcement of punishments for criminal behaviour;
- support for young people who are prepared to engage with services; and
- early intervention when behaviour problems are identified, including measures aimed at parents of young offenders.

Studying criminal careers

A recent book, *Key Issues in Criminal Career Research* by Piquero, Farrington and Blumstein (2007), reviews the development of the literature on 'criminal careers', as well as presenting a series of discussions examining some of the more problematical issues in the field of study. Three issues merit further attention:

- development of offending and anti-social behaviour;
- risk factors at different ages; and
- effects of life events (marriage, steady employment, etc.) on the course of development.

These are also key points for the Home Office and will be addressed in this report, although the emphasis is on the first two, principally because most of the OCJS sample were at an age prior to these major life events that could further influence their behaviour. Previous research on the effect of life events on desistance from offending is available from Laub and Sampson (2003).

In Britain, there is a particularly strong record of academic research on criminal careers, as well as a tradition of life-course studies. The 'Cambridge Study in Delinquent Development'² (led by Professor David Farrington) has tracked a sample of over 400 men in South London from age 8 to 48. Self-reported offending data were

2 Piquero, et al. (2007) provides some of the recent analyses based on this research programme.

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collected from the sample at age 14 and onwards. A counterpart in a Scottish city, the Edinburgh Study of Youth Transitions and Crime, was conducted among young people attending certain schools, starting at the end of the 1990s.³ The Peterborough Adolescent and Young Adult Development Study involved a sample of 700 young people who were interviewed initially at age 12–13 and followed up at 15–16.⁴ These studies have all been based on quantitative data collection using interviews, within a longitudinal design.

In the two decades prior to the OCJS, three major British studies funded by the Home Office have used self-report methods to identify factors associated with offending by young people: Riley and Shaw (1985), Graham and Bowling (1995) and Flood-Page and colleagues (2000). An innovation in the latter study was the use of self-completion questionnaires on laptops for the more sensitive topics, such as the questions about offending. Computer-based interviewing allowed more complex data structures to be used than was possible with paper self-completion questionnaires, which allowed more details to be obtained from the respondents who reported certain behaviours. However, while these studies drew upon existing methods of collecting self-reported offending data, and developed the use of these methods for large-scale quantitative studies, they were not designed as longitudinal studies.

Other studies of criminal careers funded by the Home Office have drawn on official records of convictions (e.g. Soothill *et al.*, 2002). Official data are not subject to attrition in the way that longitudinal surveys carried out in private dwellings tend to be. On the other hand, the chief limitation of official records is that they relate to successful convictions. It is known from self-report studies that much crime is not subject to official sanctions. One of the chief uses for self-reported offending data is to provide estimates of the illegal activities that do not come to the attention of the criminal justice system.

Other relevant self-report studies commissioned by the Home Office included ‘criminality’ studies among convicted offenders, both those on community orders and those in custody. One of the related studies explored the behaviour of groups in residential and other settings that are excluded from ‘household surveys’, such as care homes, student accommodation and some types of military accommodation. An important conclusion from this effort was that the numbers of offences accounted for by the ‘household population’ was a very substantial element of all offending, by virtue of the dominance of this group within the overall population of England and Wales. As a result, all attempts to quantify the overall levels of criminal activity are substantially dependent on the quality of the estimates of offending for the household population (Budd, T. *et al.*, 2005b).

The unique value of longitudinal research studies based on self-reported offending is to enable changes within individuals to be identified. It is difficult to observe dynamic patterns in cross-sectional data. Although some processes may be inferred, and analysis can point to correlations, there are problems around identifying sequences of behaviour from information collected at a point in time. Retrospective reports are likely to contain inaccuracies, such as omission of certain sorts of behaviour. A series of data collection episodes repeated over time allows much more scope for establishing the order in which events occurred.

The Offending, Crime and Justice Survey 2003–06

This report is one of the outcomes of a research programme that started around 2000. Much of the ground work had been laid in previous national self-report studies, as outlined above. Following considerable development work,⁵ the main survey was launched in early 2003 and three further annual waves of data collection were carried out in 2004, 2005 and 2006. A series of reports, compiled by the Home Office research team, described the main findings of each year’s research.⁶ The longitudinal analysis (this report) was commissioned in early 2008.

3 Details of the study, including publications, are available at <http://www.law.ed.ac.uk/cls/esytc/>

4 Details of the study, including publications, are available at <http://www.pads.ac.uk>.

5 As well as Professor David Farrington’s review of existing literature, (2003), a paper on sample design options for a longitudinal study was commissioned from Professor Peter Lynn. Next, a feasibility study for a household survey was conducted (BMRB, 2005). In addition, a feasibility study was conducted on the institutional population aged 16 to 24 (ONS, 2005). A programme of further questionnaire development and testing preceded the first wave of the OCJS in 2003.

6 Budd *et al.*, 2005a, Budd *et al.*, 2005c, Wilson *et al.*, 2006, Roe and Ashe, 2008.

A specific advantage of the OCJS is that it focuses on criminal behaviour and relevant contextual data; this allows much more detailed analysis than would be the case with a general longitudinal study such as the British Household Panel Survey (BHPS) or longitudinal studies of individual development, including the UK Birth Cohort Studies (with cohorts that commenced in 1958, 1970 and 2000–01), the US National Survey of Youth or the Longitudinal Survey of Young People in England (LSYPE).

The subject matter of the OCJS was highly salient to the sample members; their engagement with the topic was reflected in the very high percentage of respondents who said they were willing to be re-contacted for further waves of the study: 95 per cent at the first interview and 98 per cent at the third and fourth interviews. Almost all respondents said they had been honest in answering questions. These findings give grounds for believing that the data may be trusted, subject to the limitations of recall and the range of topics covered in the interviews.

The OCJS was able to maintain a sample size of around 5,000 young people, to allow extensive analysis of sub-groups. On the whole, the sample size was sufficient to enable important patterns to be identified with statistical confidence; although findings for small sub-groups, such as users of heroin and crack cocaine, do run into limitations of sample size.

The four years of the study resulted in a very rich research resource, which will be able to sustain a variety of hypotheses. The analyses on which this report is based were necessarily selective and do not exhaust the potential for analysis. This report summarises the findings presented in greater detail in two companion reports (Nevill *et al.*, forthcoming; Pudney, forthcoming). It is hoped these reports will stimulate interest in further analyses.⁷

Research design

The design of the OCJS was ‘state of the art’ for self-report offending surveys. The main innovation was the use of ‘audio self completion’,⁸ in which the respondent listened through headphones to the questions about offending and then entered his or her answers directly on a computer. The use of audio files was intended both to maximise privacy and to mitigate the impact of low literacy among some respondents. It is believed it contributed to data quality in other ways, by encouraging the young people to listen to the whole question and the answer categories, by allowing them to work at their own pace and by reducing the impact of any distractions around the respondent.

Interviews were conducted at home and required parental consent for those respondents aged 10 to 17. Only one young person was selected per household. The resultant sample is nationally representative of the population aged 10 to 25.

A rotating panel design was used in which each sample member would be interviewed for a number of consecutive years. Each year, a fresh sample was added to replace those lost by attrition. It was planned at the outset that sample members would be interviewed for three years. In the event, the high response and low attrition rates made it desirable to retain the remaining part of the first year’s sample in the fourth year of the study. This means the data span a maximum of four years, rather than three, with consequent advantages in longitudinal analysis.

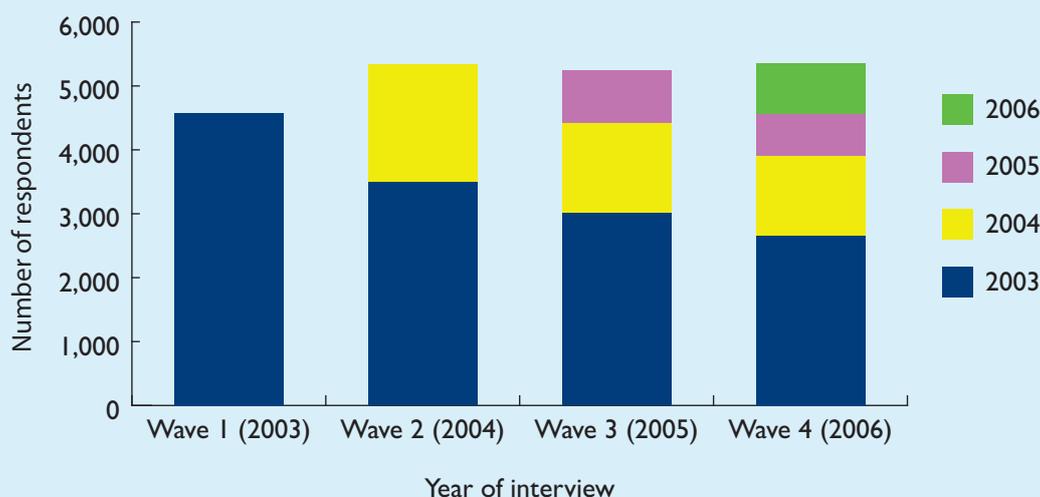
The structure of the OCJS sample is illustrated in Figure 1, with each pattern of shading relating to the first year in which sample members were interviewed. Appendix C reports a number of analyses of attrition.⁹ The key finding, reported in more detail in the Appendix, was that admission of offending in 2003 was not linked to a significantly reduced likelihood of interviews being achieved in the second and third years of the research, suggesting that offenders were as likely to be retained in the sample as non-offenders.

7 The Home Office proposes to deposit longitudinal datasets in SPSS format, as used in the preparation of this report, with the UK Data Archive.

8 The authors believe the OCJS represented one of the earliest applications of audio self-completion on a major national study, at least in Europe.

9 More detailed information is also provided in the companion volume (Nevill, C. *et al.*, forthcoming).

Figure 1 OCJS sample structure 2003–2006



Base: All OCJS respondents 2003-2006

A number of complementary approaches to analysis have been used in this study.

- The preliminary stage was intended partly to establish the suitability of the data for longitudinal analysis. As well as linking the data from the four surveys, this meant examining the extent of missing data and assessing the impact of attrition on the analysis.
- The initial descriptive analysis focused on the sample members interviewed in 2003 and in every subsequent year, who numbered just over 2,500.
- The second stage was an analysis of factors related to behaviour before and after a change occurred. This was able to draw on 11,449 'paired transitions' in which the same person was interviewed in two consecutive years. This approach focuses on very specific changes, contrasting those whose behaviour changed over 12 months with their counterparts whose behaviour did not change or whose behaviour changed in a different way.
- The third approach uses 4,260 respondents from all years in the sample within a single analysis framework. The key idea is that of trajectories over time, examining the factors related to particular pathways of behaviour.

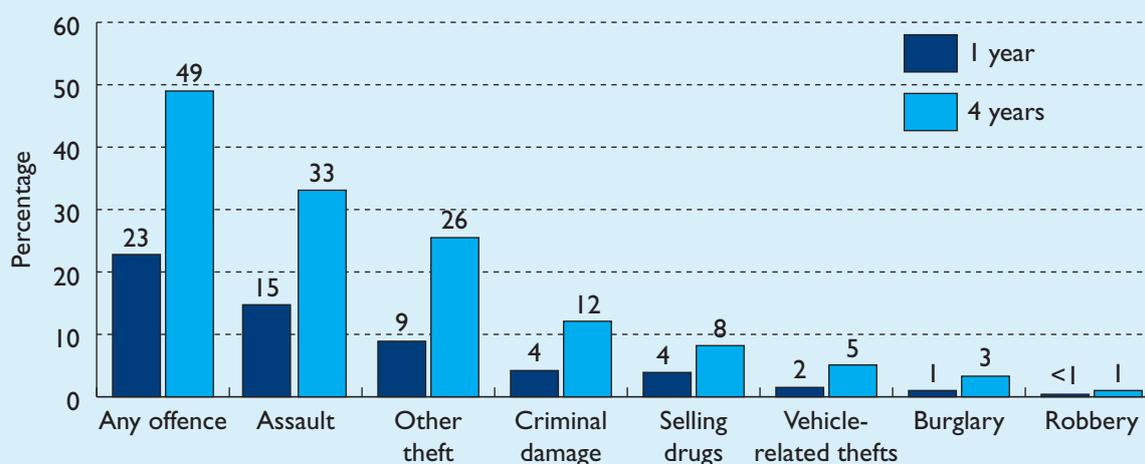
All of the analyses involve weighting of the data (discussed in Appendix C), to ensure the findings are representative of the population aged 10 to 25 in England and Wales.

MAIN FINDINGS – DESCRIPTIVE ANALYSES

Prevalence of offending

The prevalence of offending is concerned with establishing *how many people are offenders*. Figure 2 shows the percentages of young people in the OCJS who reported committing one or more offences in the 12 months prior to WWave 3 in 2005. It also shows the effect of aggregating across the four periods of 12 months. This analysis is based on the individuals who were interviewed on all four occasions, referred to as the ‘four-year panel’.¹⁰

Figure 2 Percentage of the four-year panel committing a core offence in one year and over four years



As with previous self-reported offending research commissioned by the Home Office, the OCJS shows that offending behaviour is common among young people in Britain, at least in terms of the broad definitions used in the OCJS to collect details of offences.¹¹ Nearly a quarter of the sample (23%) reported committing some sort of offence, which included some relatively minor incidents, in the previous 12 months. However, almost half the sample members (49%) reported one or more offences over the four years of data collection.

It can also be seen that some types of offence were committed by relatively large proportions of the sample, notably assault. As part of the first stage of analysis, some very minor incidents of ‘assault’ were excluded, typically where young people had been misbehaving at school in the playground or the queue for lunch. Some of the assaults retained in the analysis were also relatively minor, including some of those reported to have involved some injury¹². Many of the incidents of assault were unlikely to involve the police or other aspects of the criminal justice system. Other crimes that are more serious, such as burglary and robbery, were very uncommon, although the OCJS sample includes some young people who were involved in such crimes.

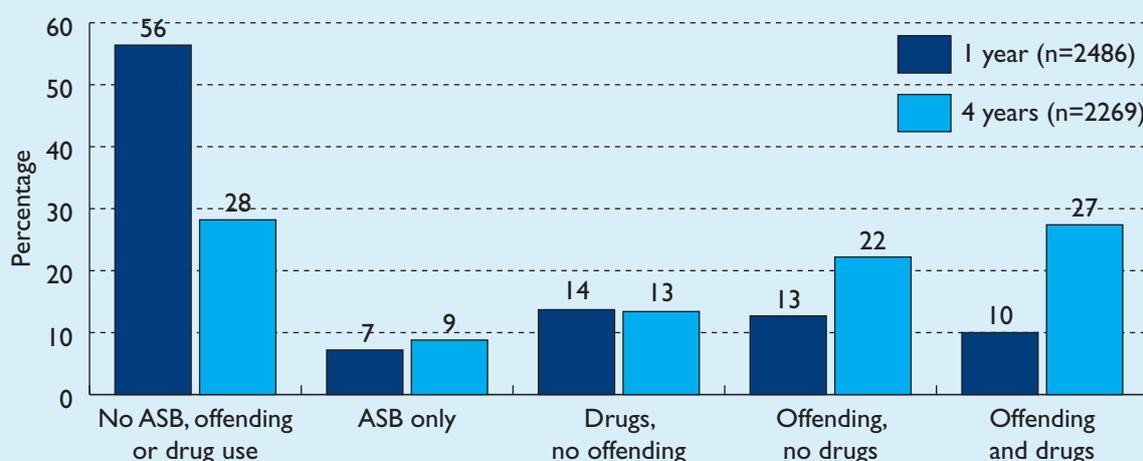
As well as offending, the OCJS was concerned with anti-social behaviour and consumption of illegal drugs, both of which were treated as distinct categories of behaviour (Appendix A). Figure 3 summarises the analysis of these three types of harmful behaviour, concentrating on the sample members interviewed on four consecutive occasions.

¹⁰ As a result of missing data, the base for the analysis is slightly smaller than the 2,539 individuals in the overall sample for the four years of the study.

¹¹ Appendix A outlines the 20 types of offence that were included in the OCJS within the grouped categories of property-related, violent and drug offences. Appendix A also gives details of how information on anti-social behaviour and use of drugs was collected.

¹² For example, the report on the 2005 OCJS (Wilson et al., 2005) showed that injuries sustained in assaults experienced by respondents in that year were mainly minor bruising.

Figure 3 Percentage of the four-year panel who admit to offending, drug use or ASB over a four-year period compared to a one-year period

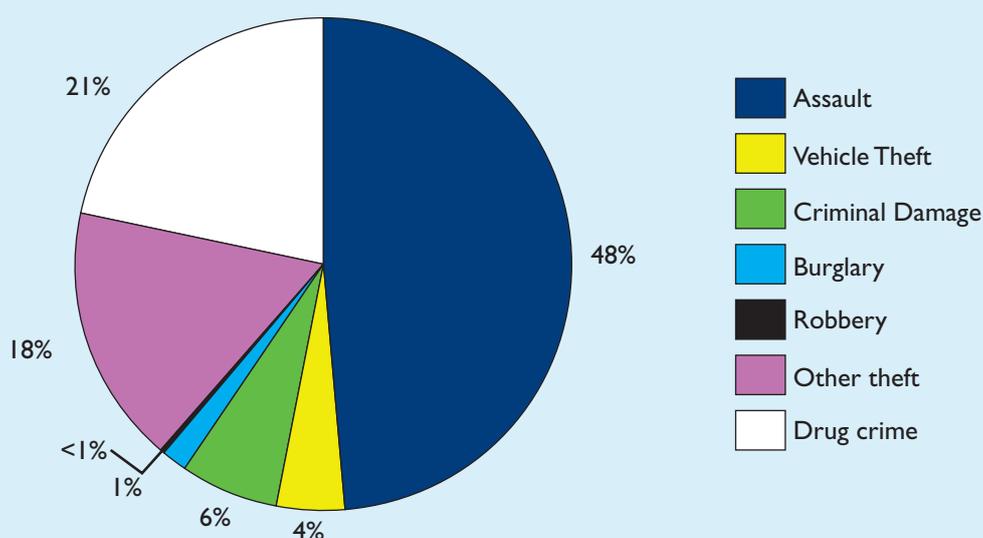


Over 12 months, the proportion of respondents who had offended and used drugs (10%) was lower than the proportion of respondents who had offended and not used drugs (13%). Over 48 months, the position changed and the proportion of respondents who had offended and used drugs at least once in this period was higher (27% versus 22% who had offended and not used drugs).

Anti-social behaviour and drug use also occur separately without offending. It can be seen that the percentages of respondents involved in these separate behaviours were very similar, whether based on a single year's reporting or four years. When these individuals are included, the percentage of young people involved with one or more types of harmful behaviour increases to 44 per cent over 12 months and to 72 per cent over four years.

In order to understand these high rates of prevalence, the evidence needs to be examined more closely. Initially, this means looking at the nature of the offences reported. After that, variations in offending by age and sex can be considered.

Figure 4 Profile of offences measured by the survey in the four years of the OCJS



Base: All offences recorded by four year panel

Figure 4 is based on the overall number of incidents reported throughout the four years of the study. The importance of assault as a category of offending is clear (although, as noted previously, many of the assaults reported to the OCJS involved no injury or minor injury only). Drugs offences, namely selling of illegal drugs, was the next most frequently occurring crime among young people. Minor theft (labelled 'other' to distinguish it from vehicle theft, etc.) was also relatively common, representing 18 per cent of all offences. Burglary and robbery were the least frequently reported categories of offending. One important conclusion to draw from this, as already established from previous self-report studies and victimisation research, is that the majority of offending is relatively minor.

The figures discussed relate to the whole of the OCJS sample, representing an average of behaviour across the sample aged 10 to 25. However, there was a substantial variation in behaviour by age, gender and crime type. The variation by age (pairs of years) and gender can be seen in Figure 5.

Figure 5 *Percentage of the four-year panel offending over a four-year period by age at the beginning of that period and gender*



Base: Four-year panel

The trend illustrated in Figure 5 shows the peak of offending occurring in the late teens. Then levels of offending reduced amongst the sample in their 20s. At all ages, males were more likely to have committed offences, but half of the women in their teens reported some offending. The rate of offending for those women aged 16 or 17 at the start of the panel appears to be a result of sampling variation, and it seems the true rate is likely to be intermediate between the figures for the adjacent (14/15 and 18/19) age groups.

The large sample size of the OCJS allows for a considerable amount of disaggregation, which shows much more complex trends associated with different types of offending. This is illustrated in Figures 6 to 8, respectively dealing with a number of types of 'minor theft', violence and anti-social behaviour. These figures use data from the entire OCJS sample, treating every interview as an opportunity to observe age-specific behaviour.

The most notable feature of Figure 6 is the different age profiles for theft from school and theft from work for the obvious reason that employment occurs later than schooling. However, the relatively early peak, at around the age of 14, can also be seen in the prevalence of stealing from shops, cars and 'other thefts'.

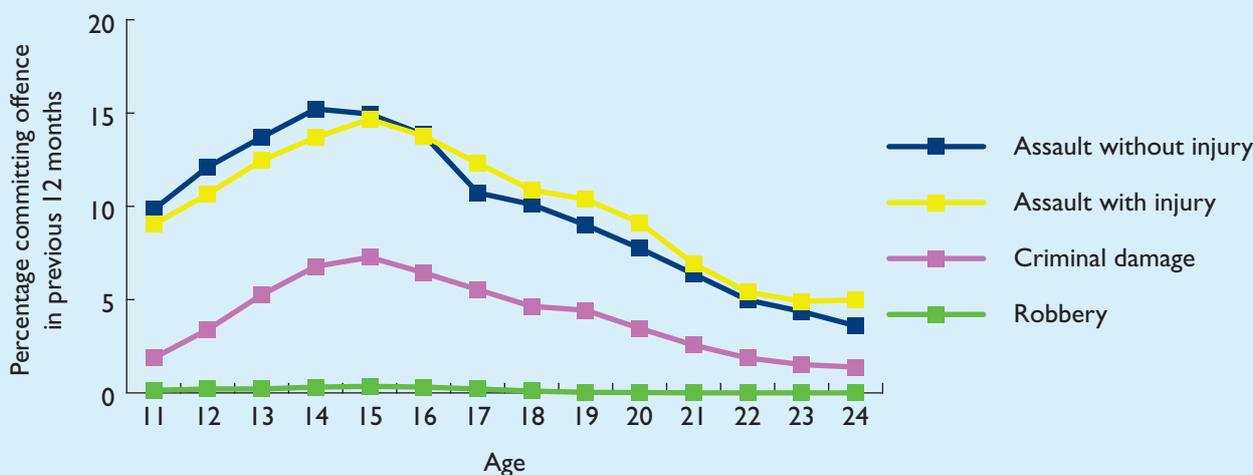
Figure 6 Age profiles for minor theft



Base: All OCJS respondents 2003-2006

Figure 7 shows that the pattern of violent offending also has a peak around the age of 14 and 15, followed by a fairly rapid reduction in prevalence among older respondents. It also shows an almost identical pattern for assaults with and without injury. This suggests that these are not really distinct patterns of behaviour and further suggests that most of the injuries associated with such violence were minor.

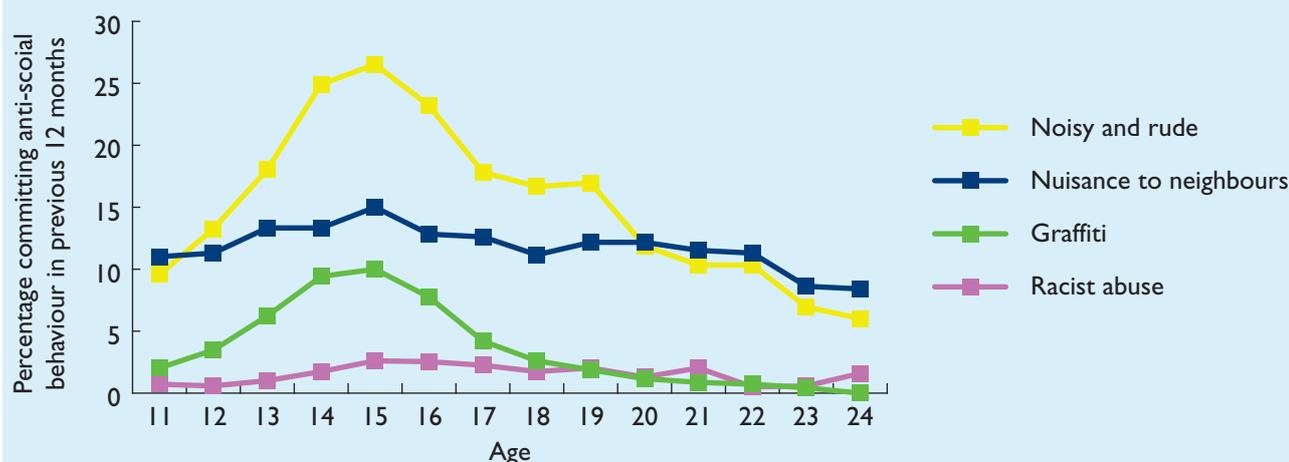
Figure 7 Age profiles for those committing violence



Base: All OCJS respondents 2003-2006

Figure 8 covers four types of anti-social behaviour. This shows two quite distinct patterns: while graffiti and noisy and rude behaviour had an early peak and declined sharply in prevalence, nuisance to neighbours and racist abuse were more persistent into later ages. This shows that anti-social behaviour was not exclusively a problem among younger teenagers and that it consisted of a variety of quite distinct patterns of behaviour.

Figure 8 Age profiles for those committing anti-social behaviour



Base: All OCJS respondents 2003-2006

In order to summarise patterns of offending, drug use and anti-social behaviour, a ‘latent class’ analysis was used to identify a number of distinct patterns of behaviour. This technique allows a large number of variables to be included simultaneously in the analysis, and classifies the sample members into a number of distinct categories.¹³ Each of these categories was given a descriptive label, reflecting the behaviour characteristic of each group. These categories are summarised in Table 1.

Table 1 Classifying behaviour over four years

Category	% of four-year panel	% of offences committed by four-year panel
Law abiders	45	7
Occasional transgressors	37	29
Anti-social disrupters	9	16
Drug offenders	5	16
Prolific offenders	4	32

Consistent with other studies, this identifies a group of around four per cent of the four-year-panel sample who were the most ‘prolific offenders’. While the focus here is on their offending, they were also users of illegal drugs. This group accounted for almost one-third of the offending reported in the OCJS, including a relatively high proportion of the more serious types of offending. The ‘drug offenders’ group are characterised by their use of and selling of drugs. This group accounted for 16 per cent of reported offending, some of it serious. The ‘anti-social disrupters’ group accounted for a similar proportion of offending, although they are characterised as committing anti-social behaviour and tended to be involved in less serious crimes than the ‘prolific offenders’.

The other two categories are groups which are not usually described as ‘offenders’. Over four years, some of these respondents committed a few offences, even among the ‘law abiders’. Others committed no crimes during the period of the research, but this is not to imply that they had never committed offences: typically, the people in this group were the older sample members whose offending was in their past.¹⁴ Altogether, these sample members accounted for over four-fifths of the respondents in the OCJS sample. However, they were by no means immune from criminal activity. They accounted for 36 per cent of the offences reported over four years, most of which were relatively minor. The distinctive point with this large segment of the sample is that their offending was often a one-off exception to their normal behaviour.

¹³ The use of latent class analysis is explained in Appendix C.

¹⁴ The attrition rate was relatively high among those in their 20s, partly associated with the mobility of young people in this age group. The outline attrition analysis in Appendix C shows that those who had offended were just as likely to be interviewed in later years as the non-offenders; hence the desistance is what it appears to be, and is not an artefact of attrition.

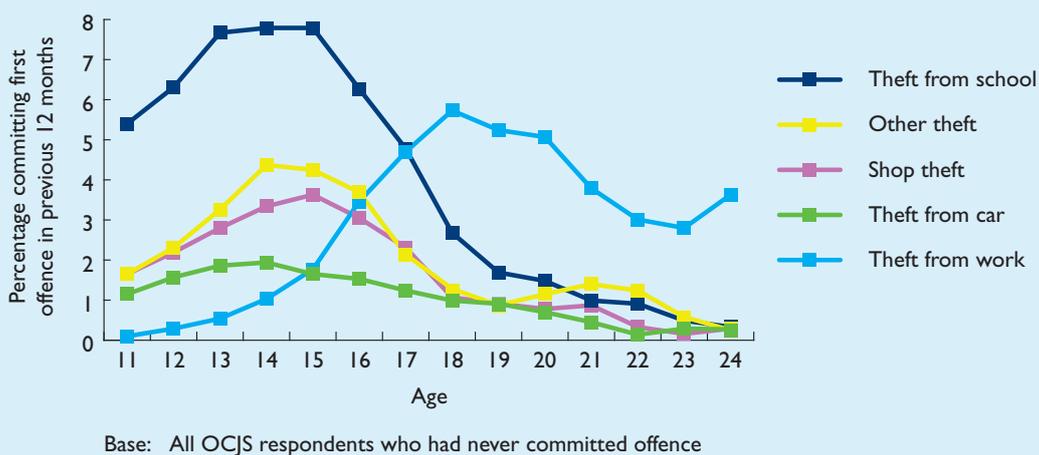
Onset of offending

The importance of onset for criminal-justice-policy design is that measures would ideally *prevent* or *divert* young people from offending in advance of the age at which initiation is likely to occur. As this discussion implies, onset occurs at a relatively young age, often considerably in advance of the age at which such behaviour peaks in the population as a whole.

In the OCJS, much of the evidence of onset comes from asking respondents about whether they have ever committed each type of offence, and if so, at what age. As a result, much of the information was based on retrospective reports. In the analysis, onset is identified by estimating the onset risk specific to respondents of a given age *who have not previously engaged in the activity*. It is simply the percentage of these people whose *first offence* will take place during the next year.

This can be illustrated with the example of the pattern of onset for various categories of theft, in Figure 9. In this and following figures, the material is presented as three-year moving averages to make the trends easier to discern. The most common category of theft was theft from school. Figure 9 shows that the onset risk for theft from school was highest from ages 13 to 15, after which it fell sharply. However, Figure 6 showed the peak prevalence of offending of this type occurred at age 15. The two measures are clearly linked, with onset taking place prior to the peak prevalence of offending.

Figure 9 Onset risk for thefts



Understanding the onset of drug use is of considerable importance and interest for policy-makers. Figure 10 shows the evidence for the onset of Class A drugs and Figure 11 the onset of use of non-Class A drugs.

Figure 10 Onset risk for Class A drug use

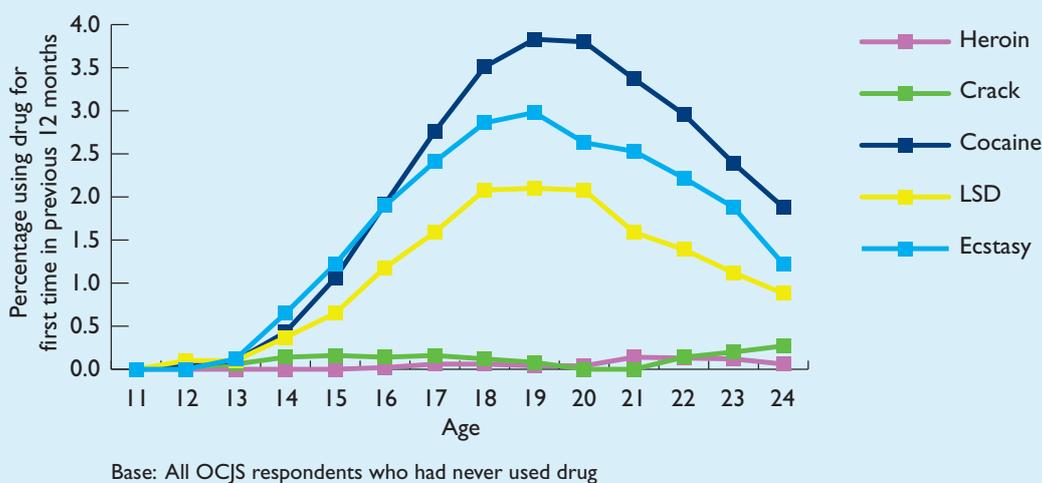
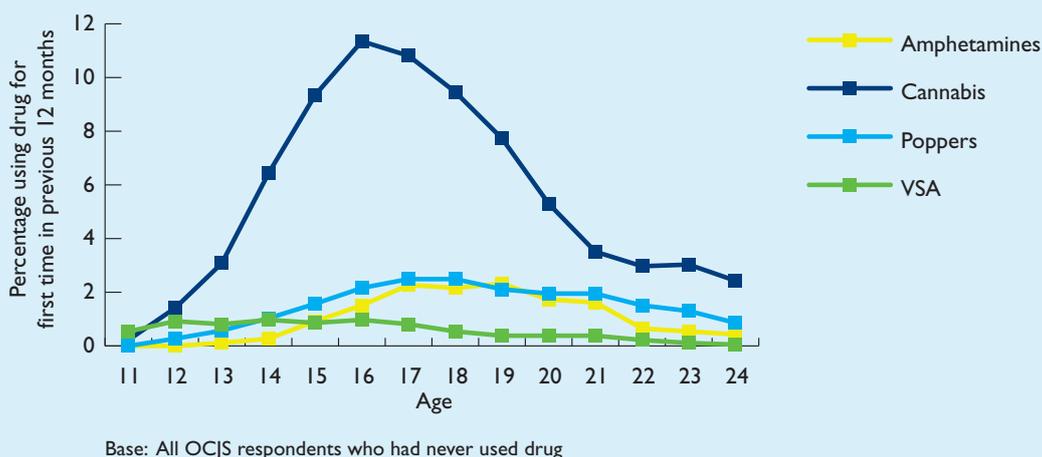


Figure 11 Onset risk for non-Class A drugs



The most obvious characteristic of drug use was that Class A drugs (Figure 10) had a later onset for most people than non-Class A drugs (Figure 11). Usage of heroin and crack was at such a low level throughout that some caution is required in interpreting the pattern. However, for cocaine, ecstasy and LSD, the peak onset risk was at age 19. Non-Class A drugs had a considerably lower age of onset. For cannabis, there was a very steep increase in the onset risk for those aged 14, 15 and 16, followed by an almost equally steep drop in the risk over the next five years. This was a quite different pattern of onset than that for the other non-Class A drugs, where the onset risk increased very gradually to a peak around 16, 17 or 18 and then dropped very little.

Returning to the five ‘latent class’ analysis categories, Table 2 indicates the mean ages of onset for offending, serious offending (as defined in Appendix A) and drug use across the five categories of behaviour.

Table 2 Mean ages of onset of offending, serious offending and drug use by latent class

Base: All offenders and drug takers in four-year panel

OCJS

Latent class	Delinquent behaviour					
	Offending		Serious offending		Drug use	
	Mean age of onset		Mean age of onset		Mean age of onset	
1: Law-abiders	14.5	±0.4	15.7	±0.7	17.5	±0.4
2: Occasional transgressors	14.6	±0.3	16.3	±0.4	16.4	±0.2
3: Anti-social disrupters	12.8	±0.3	15.6	±0.5	15.2	±0.4
4: Drug offenders	14.5	±0.4	19.0	±0.7	15.3	±0.4
5: Prolific offenders	12.9	±0.4	16.4	±0.7	13.9	±0.4
All	14.2	±0.2	16.4	±0.3	16.2	±0.2

Overall, this shows that the onset of serious offending occurred around two years later than of offending in general, with onset of drug use occurring at a similar mean age to serious offending. The most important finding in Table 2 is that the prolific offenders had an average age of onset of general offending considerably earlier than most other sample members. The ‘prolific offenders’, who combined offending with drug use, also had a markedly lower mean age of onset of drug use than any of the other four categories. The other group with a low age of onset of offending were the ‘anti-social disrupters’; their offending was linked to their committing some forms of anti-social behaviour during their pre-teen ages. There can be little doubt from this that the situation of young people around the age range 10 to 12 has far-reaching implications for their behaviour over the ten years ahead.

Changes in offending rates for various cohort groups over time

A distinctive property of longitudinal studies with a wide range of ages in the sample, as in the OCJS design, is that these samples may be viewed as a series of birth cohorts. While the youngest members of the sample were in the ‘formative period’ of their lives at the time of interview, the oldest members of the sample had passed through this stage some ten years previously. This enables us to examine changes in aggregate patterns of behaviour over a period of years.

This cohort analysis reveals reductions in the rate of offending. In view of the popular perception that crime and disorder are increasing over time, this is further evidence of the falling trend of key types of criminal behaviour (also seen in crime trends from victimisation surveys), at least among a section of the population.

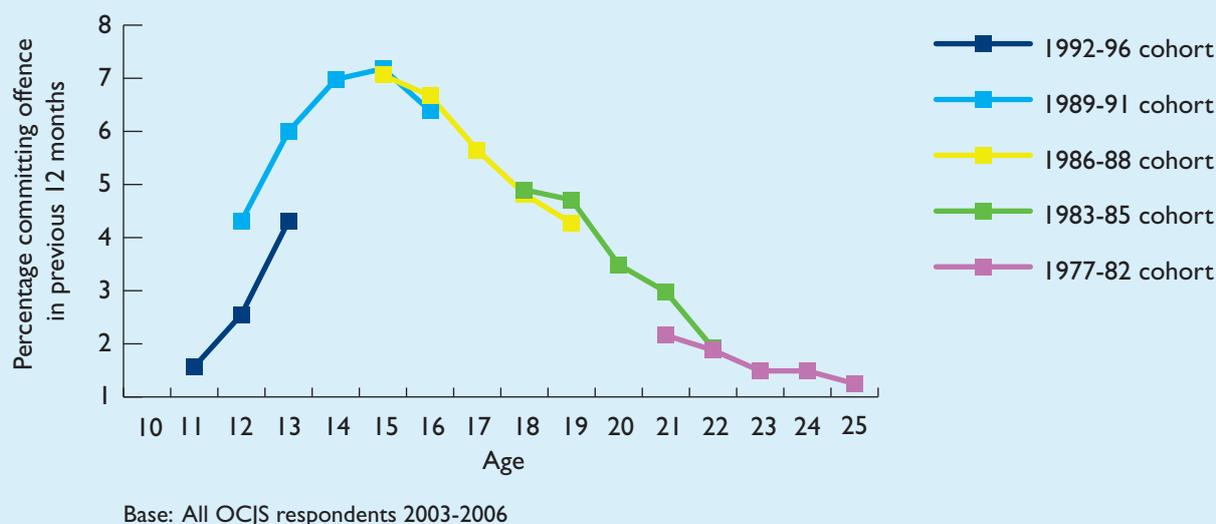
For this analysis, the OCJS sample of young men and women has been categorised into those born during the following sets of years:

- 1977 to 1982 (those aged 20 to 25 in 2003)
- 1983 to 1985
- 1986 to 1988
- 1989 to 1991
- 1992 to 1996.

These five cohorts reach the age of 15–16, when the peak rate of offending occurs for many categories of crime, around 1997, 1999, 2003, 2006 and 2009.

As an example of the type of analysis that may be carried out with these age cohorts, Figure 12 shows the percentages of the sample who reported having deliberately damaged property during the previous 12 months. For the earlier birth cohorts this shows a fairly consistent pattern. However, there is clear evidence of a reduction in deliberate damage to property between the two youngest groups in the sample. This is apparent if we compare behaviour at ages 12 and 13 for the two cohorts (1992–96 and 1989–91) that include respondents at these ages.

Figure 12 Cohort-specific age profiles for deliberate damage to property



The most distinct feature in the case of assault with injury (Figure 13) is a progressive decline in prevalence in this sort of offending between the 1983 to 1985 birth cohort and those born later. The most marked reductions in prevalence occurred some time ago. For example, there are two observations of the rate for those aged 18, with the younger cohort (those born in 1986 to 1988) much less likely to have reported assault with injury. There is less of a difference between the two most recent groups, for example at age 13.

Figure 13 Cohort-specific age profiles for assault with injury

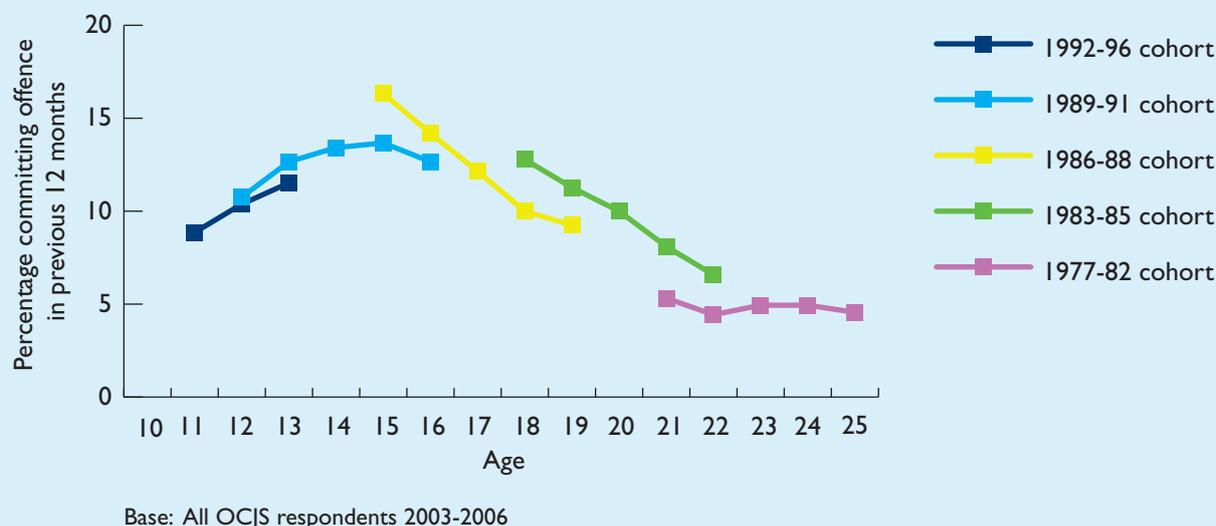
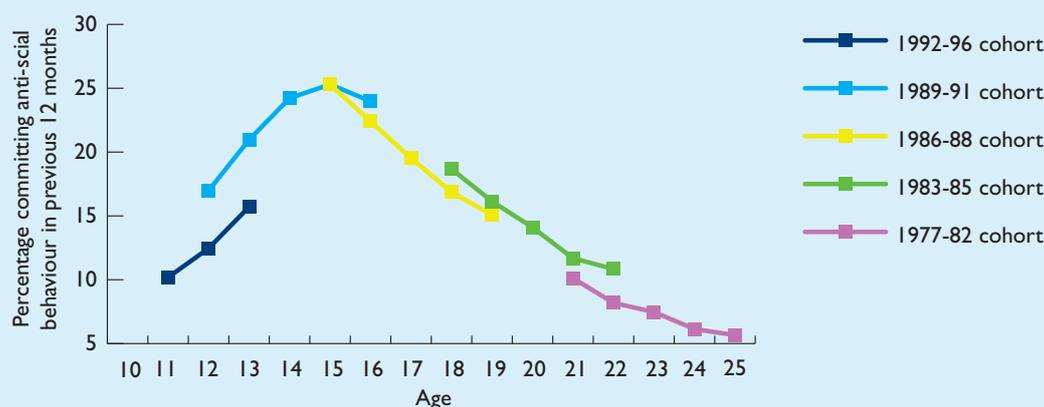


Figure 14 shows the pattern for noisy or rude behaviour, the most common of the anti-social behaviour types, with a marked peak in prevalence at around age 15 (Figure 8, above). However, this shows no appreciable trend among the earlier cohorts. It is only the most recent (1992–96) cohort that shows a clear reduction in such behaviour, as compared with its predecessors.

Figure 14 Cohort-specific age profiles for noisy and rude behaviour in public places



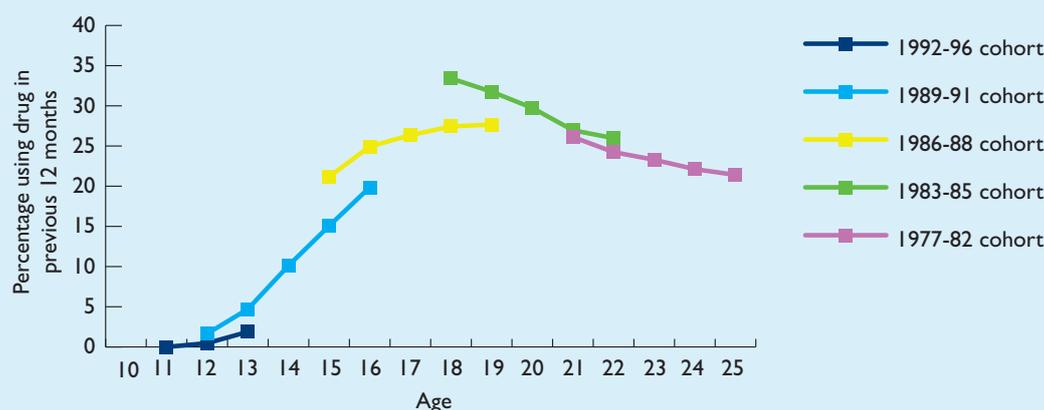
Base: All OCJS respondents 2003-2006

Figures 15 and 16 show two examples of the trends in drug use among the cohorts in the OCJS sample, first for cannabis and then for cocaine.

The evidence for cannabis shows a clear decline over time, starting with the 1986–88 cohort and continuing with the 1989–91 cohort. However, the evidence available for the younger members of the sample shows that there have probably been only minor further reductions in the use of cannabis since that shift in the pattern. With cocaine there is no discontinuity in the pattern. This is consistent with information on trends in drug use among young people collected by the British Crime Survey (Kershaw, C. *et al.*, editors, 2008).

These examples illustrate the ability of a study such as the OCJS to demonstrate the existence of ‘macro-level’ changes in behaviour patterns, and in particular to reveal the existence of changes between successive age cohorts. These changes mostly support the existence of an increase in law-abiding behaviour among young people, but the patterns of behaviour are not uniform and there are exceptions to the broad trend.¹⁵

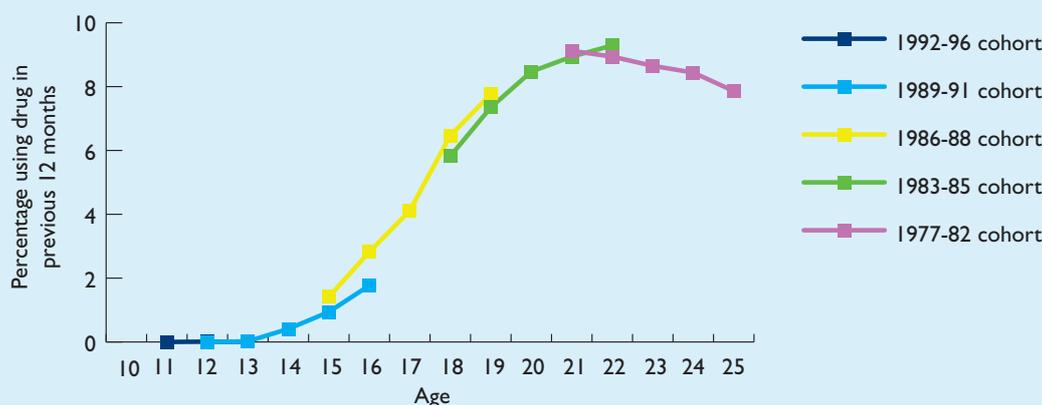
Figure 15 Cohort-specific age profiles for cannabis use



Base: All OCJS respondents 2003-2006

¹⁵ In addition, members of the youngest cohort have only been observed up to the age of 13 so it is not certain that their delinquent behaviour will remain at a lower level in the future.

Figure 16 Cohort-specific age profiles for cocaine use



Base: All OCJS respondents 2003-2006

Transitions and trajectories

As well as the general changes illustrated in the previous section, a key interest with a longitudinal study is to examine change at the level of individuals in the sample. When individuals change their behaviour, what are the co-occurring features in the lives of the young people? Can we identify patterns of behaviour, in which we can perceive a link between the previous behaviour and subsequent activities? This report calls the point at which a change occurs a ‘transition’, while a sequence over time is referred to as a ‘trajectory’.

Table 3 Transitions in the OCJS sample

Row percentages	Classification in second year of transition				
Classification in first year of transition	No offending, drug use or ASB	ASB only	Drug use without offending	Offending without drug use	Offending and drug use
No offending, drug use or ASB (5,562)	78	6	5	9	2
ASB only (986)	42	25	7	21	5
Drug use without offending (976)	25	4	47	6	19
Offending without drug use (1,556)	34	11	6	37	12
Offending and drug use (954)	9	2	28	10	51

Notes:

1. Numbers in brackets show number of respondents in the category in the initial year of the transition.

Table 3 uses all the cases in the sample in which the same individual was observed in two consecutive years.¹⁶The figures in the table are *row percentages*. The sample members are categorised in five groups based on the information for the earlier period of 12 months. The row labels of the table describe each respondent’s category in the initial year. For example, in the first year, there were 954 respondents categorised as combining offending and drug use.

Across the columns of the table, we can observe how each respondent within the same category at the outset was classified, based on their answers in the second year. Where the sample members remained in the same cell on the two occasions, these cells are shaded in Table 3. This shows the *persistence* of each behaviour pattern.

¹⁶ Due to missing data in the construction of some of the derived variables, the base for analysis was slightly smaller than the number of respondents for whom two consecutive years’ data had been collected.

- Those who did not offend, commit anti-social behaviour or use drugs in the initial year are the group whose behaviour changed least, with 78 per cent remaining in the same category in the second year. Very few members of this group were observed to have become offenders, or users of drugs or doing both of these activities.
- In the bottom row of the table, it can be seen that half of the ‘offenders using drugs’ remained in this category in the second year. The analysis shows their drug use was more persistent than their offending. However, only nine per cent of this group were observed to stop their harmful activities.
- Rates of desistance (stopping offending, even if only temporarily) were much higher among the three intermediate categories. Both anti-social behaviour and offending had the lowest levels of persistence (as indicated by the shaded cells).
- Around a quarter (26%) of those who reported anti-social behaviour in the initial year started to offend in the subsequent year but more of this group did not commit any delinquent behaviour in the following year (42%).
- The proportion of those reporting drug use without offending in the initial year who then reported offending, with or without drug use, in the second year (25%) was of the same magnitude as those who ceased their delinquent behaviour (25%).

Trajectories of behaviour can also be identified based on the reported age of onset of offending and drug use of OCJS respondents (questions on the age of onset for anti-social behaviour were not included in the OCJS). In doing this, the diverse types of offending and drug use have been reduced to five categories of activity, as follows:

- no offending or drug use;
- minor offending only;
- serious crimes;
- non-Class A drugs (use or selling);
- Class A drugs (use or selling).¹⁷

The analysis of trajectories builds on these categories to identify sequences. Table 4 shows the eight most common temporal sequences, accounting for 90 per cent of the sample members. The remaining ten per cent consisted of various specific sequences, some of which were similar to the more common categories. The most important feature of this analysis is the rarity of sequences involving seriously harmful behaviour. Indeed, serious crimes did not feature within any of these eight sequences.

Table 4 *Sample proportions of the most common temporal sequences*

Sequence type	Sample proportion (%)	
	All respondents	Age ≥ 21 in at least one wave
No offending or drugs	44.9	32.1
Minor crime only	16.1	10.6
Non-Class A drugs only	10.2	13.7
Minor crime → non-Class A drugs	9.5	10.4
Minor crime → non-Class A drugs → Class A drugs	4.0	7.3
Non-Class A drugs → Class A drugs	2.4	4.6
Minor crime + non-Class A drugs simultaneously	1.7	2.1
Non-Class A drugs → minor crime	1.5	2.4
Cumulated total	90.3	83.2

The third column of Table 4 shows the same eight sequences, but limited to the data provided by sample members aged 21 or over in at least one wave of the study. This group provides a more focused picture, as it avoids the truncation effects of observing younger people whose sequence of harmful behaviours is more incomplete. It is important to notice that 68 per cent of this age group had offended or used drugs.

¹⁷ The definition of serious crime used in this classification is slightly different from the definition of serious offending used previously in the report. See Appendix A for details.

Summary of descriptive analysis

The OCJS provides a wealth of information about the behaviour of young people. It is apparent that some of this behaviour is on the borderline between criminal activity and misbehaviour that is unlikely to receive attention from the criminal justice system even if it was reported. The survey shows that half (49%) of the sample members admitted one or more of the 20 categories of offences over the course of four years. This figure of 49 per cent averages across the whole age-range from 10 to 25. But it is clear that offending was more common in the middle than at both ends of the range. By their late teens, a majority of young people had committed one or more of the offences. But, while this behaviour was quite common, relatively little of it was serious.

The survey also tracked the behaviour of a small group of young people, four per cent of the OCJS sample, who committed offences relatively frequently and who also used drugs. They are described in this report as 'prolific offenders'. They accounted for around one-third of offences. A key finding of the research, consistent with other studies, was the relatively early onset of criminal behaviour and drug use of young people in this group.

MULTIVARIATE ANALYSES

A key concept for the multivariate analysis was that of ‘risk factors’. These include both individual characteristics and a range of contextual factors believed to be associated with criminal activities. The OCJS drew on the findings of a wide range of previous studies in the design of questions to identify a range of factors, including:

- family and parenting;
- school;
- peer group; and
- locality.

A multivariate analysis aims to tease out the separate influence of these factors, by controlling statistically for relationships between the factors, so that the influence of each factor can be estimated independently of the others. However, even with the benefits of longitudinal data it remains difficult to draw conclusions about causal influences.

A number of different approaches were adopted for this part of the analysis and are presented in turn.

- The latent class analysis was the basis for an analysis of risk factors associated with offending, drug use and anti-social behaviour during the four years of data.
- The analysis of transitions was based on individuals who were interviewed in any two consecutive years.
- The analysis of trajectories used a more generalised analysis of the same factors. This employed a technique called ‘multinomial regression’, in which factors associated with a number of trajectories of behaviour can be included within a single analytical model.

Latent class analysis

A logistic regression analysis was used to identify risk factors associated with an individual identified through the latent class analysis of their behaviour over four years as being in one of the three relatively ‘high-harm’ latent classes. These groups were ‘anti-social disrupters’, ‘drug offenders’ and ‘prolific offenders’ and altogether they accounted for two-thirds of OCJS offences (see Table 1). This brief account focuses on the analysis covering all ages from 10 to 25. The ‘risk factors’ significantly linked to more harmful activities are summarised in Table 5 (the full regression model may be seen at Appendix B, Table B.3). Many of the risk factors identified in the analysis presented here correspond with the findings from previous studies.

Table 5 Risk factors for high-harm latent classes (four-year behaviour)

Lifestyle and behaviour	Victim of personal crime
	Drunk once a month or more
	Likely to agree criminal acts are OK
Area/local factors	Not trusting police in area
Family factors	Not brought up by both natural parents
	Get on badly with at least one parent
	Friends or siblings being in trouble with the police
School factors	Truancing
	Ever excluded from school
Demographic characteristics	Male

Paired transitions analysis

In the paired transitions analysis, the approach involves one or more of the transitions previously identified in Table 3. It is possible to highlight one sort of transition, contrasting those making a specific change with those who remained in the same state (as indicated by the shaded cells in Table 3) or making a comparison with another group who started in the same situation, but who made a different transition. The analysis builds up as a series of regression analyses, seeking a pattern in which the factors significantly associated with certain transitions can be collated across a range of behaviour changes of interest. The analysis covered a series of models concerned with both offending and drug use.¹⁸

As an example of this style of analysis, those respondents aged 10 to 16 who had never offended in the first year (t), and who reported one or more sorts of offending in the second year ($t+1$) can be examined. There were 3,303 respondent-years available for the analysis of this transition. Those who started to offend were more likely to be:

- male;
- aged 11–14 at t , rather than those aged 10, 15 and 16;
- had committed anti-social behaviour (ASB) at t ;
- had friends or siblings who were in trouble with the police at t ;
- lived with one natural parent or a step-parent at t ;
- truanted at t ; and
- lived in areas where there were one or more disorder problems.

The example just outlined is the first of the analyses summarised in Table 6. Overall, ten separate multivariate analyses were run, some making a distinction between respondents aged 10–16 and those aged 17–25. Key factors that recurred across a number of the models as being linked to deviant transitions were:

- friends or siblings in trouble with the police;
- truanted or excluded from school; and
- brought up by only one natural parent.

For those aged 10–16, the analysis also highlighted:

- teaching skills and maintenance of discipline by teachers; and
- style of parenting.¹⁹

While drugs and offending were considered separately, they interacted quite strongly. Those already involved in one were likely to become involved in the other. Anti-social behaviour was found to precede the onset of offending and drug use. It was also associated with escalation of offending, but not of drug use.

Social class, ethnic group and religious participation were not significantly associated with offending and drug use in any of the models, given the other factors that were controlled for in the statistical models. This is at variance with some other analyses of the OCJS. For example, previously reported analysis on the 2003 OCJS (Sharp and Budd, 2005) indicated that members of Minority Ethnic groups were less likely to commit crime than White young people. The longitudinal data suggests that this appeared to be the case due to other differences between the sample members.

¹⁸ More detailed discussion of the various models developed may be found in Nevill, C. *et al.*, forthcoming.

¹⁹ These topics were only covered in interviews with the younger OCJS respondents.

Table 6 Summary of paired transitions multivariate analysis

Model	Transition	Who	More likely if
B1	Onset of offending	aged 10–16, never offended before t+1, base = 3,303	male, aged 11–14 at t, committed ASB at t, had friends/siblings in trouble with police at t, lived with one natural parent or in a step-family, truanted at t, lived in areas at t with disorder problems
B2	Escalation of offending (seriousness of offence)	aged 10–24, committed not serious offence at t, base = 630	ever excluded from school, carried out an assault at t, said they were not managing well on their income
B3	Escalation of offending (frequency of offence)	aged 10–24, offended infrequently at t, base = 826	had friends/siblings in trouble with police at t, committed ASB at t, took (any) drugs at t, ever truanted, ever excluded from school, had poor self-reported health
B4	Persistence of offending (1)	aged 10–16, committed an offence (any) at t, base = 1,637	aged 10–14, committed ASB at t, excluded from school at t, committed frequent offences at t, took (any) drugs at t, parents had poor parenting skills
B5	Persistence of offending (2)	aged 17–24, committed an offence (any) at t, base = 984	male, committed frequent offences at t, committed ASB at t, took (any) drugs at t, regularly visited nightclubs, brought up in a one-parent family or step-family, ever excluded at school
B6	Persistence of serious offending	aged 10–24, committed a serious offence at t, base = 1,366	aged 10–16, had friends/siblings in trouble with police at t, taken drugs at t, got on badly with their parents
B7	Onset of drug taking	aged 10–24, never used drugs before t+1, base = 7,932	aged between 13–18, committed ASB at t, committed an offence at t, ever truanted, had friends/siblings in trouble with police at t, perceived crime and criminal acts to be OK, bought up in a one-parent family or step-family, visiting pubs/clubs regularly
B8	Escalation of drug use	aged 10–24, used non-Class A drugs at t, base = 942	aged 17 and over, drank alcohol regularly, offended at t, had friends/siblings in trouble with police at t
B9	Persistence of drug use (1)	aged 10–16, used any drugs at t, base = 624	aged 13 and over, perceived crime and criminal acts to be OK, drank alcohol regularly, offended at t
B10	Persistence of drug use (2)	aged 17–24, used any drugs at t, base = 1,432	male, had friends/siblings in trouble with police at t, perceived crime and criminal acts to be OK, drank alcohol regularly, offended at t

Multivariate analysis of trajectories

As outlined in Table 4 above, a trajectory could have more than two stages. A different form of multivariate analysis was used to consider trajectories, known as a multinomial logit (MNL) regression modelling. This technique allows a number of outcome states to exist. This analysis was carried out on the set of more common sequences of behaviour, as described previously in Table 4.

Table 7 summarises the results of the analysis for those aged 16 or under.²⁰ In Table 7 three different trajectories are identified, involving:

- no offending or drug use;
- minor crime and/or non-Class A drug use; and
- serious crime and/or Class A drug use.

Table B.6 in Appendix B displays a more detailed model, distinguishing seven trajectories and Table B.5 outlines the explanatory variables used in the analysis.

In Table 7, each column gives an estimate of the marginal effect of a change in the covariates on the probability of occurrence of each of the trajectories in the model. The way in which this works will be explained through a series of examples in the following paragraphs. The key findings of these analyses are discussed under a number of headings.²¹

Age and cohort

For an 'average respondent', the probability of having a 'crime-free' or 'drug-free' trajectory declined by around five percentage points for each additional year since the birth of the respondent. This was a direct result of the length of time during which the individual had been *at risk* of offending or drug use with those who were older having been exposed to this risk for longer; it follows that more of them were observed in a trajectory involving drugs or crime.

There was also a significant birth-cohort effect in both sets of estimates. After controlling for age, being born one year later increased the probability of having a drug-free and crime-free trajectory by four percentage points per year. This was a reflection of the reduction in rates of offending and most sorts of drug use, as outlined earlier in this report.

Ethnicity, religion, social class and gender

The analysis does not indicate any significant influence on trajectories associated with ethnicity or religious affiliation, after controlling for other factors included in the models. As noted earlier, some analyses of the OCJS (e.g. Sharp and Budd, 2005) have pointed to the evidence that levels of offending and drug use were lower for young people of non-White ethnic identities and those with religious affiliation. Our findings suggest this pattern is attributable to other characteristics of these sample members. The social class of the family, based on the occupation of the chief wage-earner, was not significantly associated with the likelihood of offending and drug use.

The OCJS results accord with many other sources of information on gender. Female sample members were around seven percentage points less likely than males to have one of the trajectories involving offending or drug use. Most of this gap arose from a lower propensity among female young people to commit offences. On the other hand, relative to a male young person who was otherwise in a similar situation, young women in the OCJS sample were estimated to have a six percentage point higher probability of taking a trajectory involving non-Class-A drug use only (see Table B.6).

²⁰ Those people aged 17 and over in 2003 or later were not asked the questions that enable us to identify those respondents brought up in a single-parent family or where one parent had a new partner, so were excluded from the analysis presented here.

²¹ In the full report on these analyses, (Pudney, S. (forthcoming)) a further set of analyses is briefly outlined, in which the conventional distinctions between Class A and non-Class A drugs and between serious and minor crime are replaced by a different way of specifying the more common sequences observed over time among the OCJS sample. In general, the findings of this alternative way of specifying the analysis produced very similar conclusions about the factors associated with offending and drug use.

Local factors

The influence of locality was based on a number of questions put to OCJS respondents. For example, they were asked how common it was to observe drug users and drug dealing in their area. Where this behaviour was reported to occur more frequently, there was a large reduction in the estimated probability of an OCJS respondent taking a crime-free and drug-free trajectory. However, a wide confidence interval on this relationship suggests it was not necessarily consistent across the sample; this may indicate that respondents (in particular younger sample members) were not very accurate in their assessment of drug use and drug dealing, which few of them would have experienced at first hand.

Other questions have been combined into an indicator of local social control over young people's behaviour. For example, this included a question on the likelihood that someone would intervene to stop young people from misbehaving in the area. It also included a question on trustworthiness among local residents and the degree of population movement into and out of the area. This variable did not provide a statistically significant effect on trajectories.

Family and peer group

Among the factors considered in the model, a range of 'family' or 'peer group' factors were the dominant influences on the probability of taking a trajectory involving offending and/or drug use. Having a sibling or friend who had been in trouble with the police decreased by 32 percentage points the likelihood of following a crime-free or drug-free trajectory, after controlling for other factors. This supports the evidence of previous research, in which co-offending among young people was a very common feature of their criminal behaviour. It seems likely that part of the effect arises from having one or more *older* friends or siblings, whose criminal career may have progressed further (Fagan *et al.*, 2007).

Contrary to the influence of siblings who have been in trouble with the police, the OCJS indicates that being in a larger family increases the likelihood of taking a drug-free and crime-free trajectory by around three percentage points.

Where an OCJS respondent was brought up in a family headed by a single parent, this reduced the likelihood of their having taken a crime-free or drug-free trajectory by six percentage points as compared with respondents brought up in families with two (natural) parents. Respondents brought up in a two-parent family consisting of a mother and step-father were even less likely to follow a crime-free or drug-free trajectory.

Another influence on young people was parental attitude and behaviour, as perceived by the young person. OCJS respondents were asked how their parent(s) would react if they were reported to have been involved in fighting, graffiti, playing truant from school or taking cannabis. The answers to these questions were combined to create an index running from 0 to 4, where parents would object to a greater number of these activities. Having parent(s) who were perceived to be 'strict' was associated with an increase of 14 percentage points in the likelihood of a crime-free and drug-free trajectory. However, where parents were perceived to be 'liberal' (not objecting to such behaviours), a second index was used. Where parents were thought not likely to object to such behaviour, this increased the likelihood of a crime-free and drug-free trajectory by 17 percentage points. These estimates are relative to the answers given by young people who thought their parents would react differently according to the nature of the misdemeanour. A provisional interpretation of this would be that parental guidance needs to be consistent to have a beneficial impact on the behaviour of children, whether the guidance is liberal or authoritarian in nature. This point deserves further investigation.

Schools

Questions were asked about violence towards teachers, truanting and standards of behaviour at the respondent's school. An index variable was compiled with values from 0 to 3, a higher score reflecting weaker school discipline. A shift of one point on this index was associated with a ten per cent reduction in the probability of a crime-free and drug-free trajectory. While smaller than the influence of family-based factors, this still emerges as a very important factor.

Table 7 Marginal effects from multinomial logit model for occurrence of sequence types (OCJS respondents aged 16 or under on entry into the panel)

Covariate	No offending or drugs	Minor crime/Non-class A drugs only	Serious crime/Class A drugs
Year of birth	0.041***	-0.043***	0.002
Non-White †	0.036	-0.029	-0.007
No religion †	-0.017	0.008	0.009
Weak local social control	0.004	-0.027	0.024
Local drug problems	-0.210*	0.175*	0.035
Maximum observed age	-0.048***	0.027***	0.021***
Friends/siblings in trouble with police	-0.318***	0.249***	0.069***
Household size	0.033***	-0.027**	-0.006*
Female †	0.069***	-0.059**	-0.009
Social classes 123 †	-0.011	0.014	-0.003
Social classes 789 †	0.028	-0.015	-0.013
Non-two-parent family †	-0.059*	0.031	0.028***
Mother and step-father †	-0.126***	0.114***	0.012
Weak school discipline	-0.096***	0.080***	0.016**
Strong parental guidance	0.143***	-0.114***	-0.030***
Parents liberal	0.171***	-0.157***	-0.014*
Predicted probability at point of means	0.522	0.437	0.040

Notes: Estimates of $\partial \Pr(\text{jth outcome})/\partial x$, except for covariates (†), where a discrete change is evaluated; all evaluated at point of sample means. Sample size: $n = 2,285$. Log-likelihood = -1710.06. Pseudo-R² = 0.1760. *, **, *** denote significance at 10%, 5% and 1% levels respectively.

Conclusions of the multivariate analysis

Whether short-term transitions or longer-term trajectories are examined, the same underlying factors emerge as correlates of offending and drug use.

- The analysis shows that social class, ethnic identity and participation in religious observance were not associated with greater or less likelihood of young people following offending or drug-use pathways, once other factors were taken into account.
- While the analysis does not demonstrate a strong link with local social control, it is thought this is because the survey instrument was only partly successful at capturing this factor. Previous research using Census data on neighbourhood characteristics has found a strong link between area of residence and offending behaviour (Wikstrom and Loeber, 2000).
- The importance of peer groups, whether siblings or friends, seems to lend support to the criminological literature that emphasises the influence of ‘contagion’ from more active criminals as a causative factor in the more occasional offending among their associates (Fagan, *et al.*, 2007). These analyses suggest that the targeting of the criminal justice system needs to be directed towards those likely to be ‘contagious’ among their associates, while reserving different sorts of intervention for the one-off or lower-risk offenders.
- Relationship breakdown between natural parents has adverse effects even when the young person lives with a re-partnered parent. This is where interventions such as the Family Intervention Projects (White, C. *et al.*, 2008), highlighted in the 2008 Youth Crime Action Plan, are expected to play their role.

IMPLICATIONS OF THE LONGITUDINAL ANALYSIS

The value of longitudinal analysis of offending and drug use

A longitudinal analysis provides substantial evidence for an understanding of the criminal behaviour of young people. It is hardly surprising that analysis of the OCJS points to similar influences on the behaviour of young people to those that were identified previously in other self-report studies. In common with other longitudinal studies of the behaviour of young people, what the evidence of the OCJS adds to previous research studies based on self-reports is the ability to link together sequences of behaviour. The OCJS provides a more powerful means to do this, being based on much larger samples than previous British studies adopting a longitudinal design. This brief report gives only a flavour of the research and policy issues that may be addressed and the ways in which analyses may be set up to do so. It is hoped that this report will encourage other analysts to pursue further avenues for research.

One key point to emerge from the analysis is that policy interventions need to engage with young people at a very early age. The average age of onset of offending among prolific offenders was 12.4 years. This represents the mid-point across a range of variation, and implies that for some members of the sample their onset of offending was at ten or earlier.

The OCJS identifies anti-social behaviour as a precursor to more frequent offending and/or drug use for some young people. In some cases, interventions targeting young people involved in anti-social behaviour may help to reduce the likelihood of an individual following an offending trajectory. But the OCJS also shows that some types of anti-social behaviour are not exclusively found among the very young: some patterns appeared to change little from mid-teens to mid-twenties.

In accordance with previous findings, this analysis identified family breakdown, poor or inconsistent parenting and truancy and exclusion from school as risk factors for offending and/or drug use. Some of these factors, such as family breakdown, may be causal factors while others, such as truancy and exclusion, are more likely to be indicators of an underlying anti-social personality. The most recent policy initiatives, as outlined in the Youth Crime Action Plan published in July 2008, already emphasise early intervention with families in which young people are at risk of an escalating pattern of offending and drug use. Family Intervention Projects (FIPS) are being expanded from their original emphasis on anti-social behaviour to a youth-crime programme that will soon be available in every local authority across England and Wales; there will also be a child poverty version of FIPS. Children and young people excluded from school are already likely to be involved in prompt and wide-ranging assessments of their situation.

While the evidence has suggested that weak school discipline is one of the risk factors associated with offending, it is difficult to identify the direction of causality in this association. Bad behaviour among pupils needs an appropriate response, and the OCJS suggests that in some schools the responses used are insufficient or in some way inappropriate. But the problem consists of badly behaved pupils, as much as the adequacy of the way in which school staff deal with the consequences of bad behaviour.

This report has identified a number of more common sequences in criminal behaviour, although a longer time period than four years might have yielded more information. A longer time period would perhaps have been more appropriate for questions around whether experience of criminal sanctions at one point in time is related to subsequent criminal behaviour over a period of several years.

Another important point is about the advantage of a longer period of observation to enable people to be classified correctly. This is not an issue for the most prolific offenders in the sample, as their behaviour can be identified in a single year's data. But in the case of people with a low probability of offending, a substantial group appeared to be non-offenders over 12 months but were found to have committed offences over four years. In the latent class analysis, based on four years' data, the 'occasional transgressors' accounted for 37 per cent of the sample. They accounted for 29 per cent of the offences reported, nearly as large a share as that of the 'prolific offenders'.

Further analysis about young people and criminal careers

In this report, the focus has been primarily on offending. Some of the evidence discussed suggests that drug use was a separate pathway for the harmful behaviours of young people, involving many young people who were not involved in offending of other sorts, or were involved in only a transient manner. There would be considerable scope for further analysis of the OCJS with a focus on drug-use patterns.

The emphasis in this discussion has been on the onset and development of offending and drug-use trajectories. However, the analysis could be turned around to focus on the factors associated with young people who do not offend or use drugs. The cohort analysis suggested that this has been an increasingly large group within the population of young people. This begs the question as to which of the young people in the later cohorts 'survived' the risk of offending, when their counterparts born a few years earlier became involved in harmful activities.²²

The emphasis in these analyses was on patterns of onset, since this was how the questions were framed: specifically, all sample members were asked during their first interview whether they had ever committed any crimes in each category, and if so at what age they first did this. Particularly for the younger members of the sample, the obvious policy questions were around the onset of their offending behaviour and identifying their escalating involvement in offending at an early stage in criminal careers. A policy strategy for supporting reductions in overall crime rates should be equally interested in the factors associated with desistance. The OCJS arguably made less than it might have done of the potential opportunity to inquire about the factors associated with desistance among older members of the sample. In general, desistance is an aspect of criminality that has received less attention among criminologists than the factors associated with increasing offending and drug use (Farrington, 2003). Further research and analysis is needed on this topic. The ideas to be explored could be around the implications of 'adulthood': getting a stable job, earning a steady income, developing long-term relationships, forming a family and so on.

The finding that young people's bad behaviour is correlated with aspects of their lives, such as parenting and schooling, does not condone or excuse that behaviour. The identification of *risk factors* is only the first step in developing policy measures which might prevent or lessen the harm associated with such activities. Research on parenting, school environment and the criminal justice system is already extensive: it is suggested that reviews of that literature should be conducted to understand the underlying processes by which criminality is one of the more obvious outputs of adverse living conditions and lifestyles.²³

Optimising the value of future data collection

At this point, the question arises whether further investment in generating high-quality data should follow up the OCJS sample members, start with a fresh cohort or attempt to proceed with both of these approaches.

An approach that keeps those original sample members who can be traced and augments the sample with fresh cases is similar to a rotating panel design,²⁴ in that it seeks to provide both the longer-term perspective and the cross-sectional representativeness needed to estimate overall rates of criminality in the population.

The authors think the estimation of aggregate crime levels is a less interesting topic than further identification of processes and transitions. On this basis, it is suggested that a further wave of data collection, say in 2010 or 2011, would be the most effective way to augment the value of the original study. While this might appear to be a long interval between waves of data collection, in fact this is similar to the intervals between interviews of sample members of the

22 NatCen and BMRB conducted a qualitative follow-up among a small sample selected from the OCJS sample. This included a number of young people who were non-drug-users although they appeared to exhibit the same risk factors as their counterparts who admitted drug use. The research sought to identify the 'protective factors' in the lives of these young people that may have counteracted the influence of the risk factors. (Dillon, L. et al. (2007)).

23 We recognise, of course, that substantial contributions to understanding of these processes has been gained in the course of the British longitudinal self-report offending studies cited in Chapter 1 of this report.

24 Rotating panel designs may tend to retain sample members for relatively short periods, such as five or six years, but there is no intrinsic reason why they should not be extended for a greater number of years.

UK Birth Cohort studies (including the 1958 (NCDS), 1970 and Millennium Cohorts). An implication of the length of the interval is that relatively great resources need to be devoted to tracing the sample members, but the methods required are well-established.²⁵

Assuming that the emphasis was placed on tracing members of the original sample, a number of alternative research designs could be envisaged. One of these would be to focus resources on the younger people, for example those aged 10 to 16 in 2003–06. This would identify those whose early ‘criminal career’ developed into ‘prolific offending’ and enable this pattern to be related to their experiences in the age range 10 to 16. A specific advantage of a focus on the younger sample members is that their parents may be more likely to provide an effective means of tracing than may be the case with those who were already in their older teens or early twenties during the original study.

It is also arguable that those with the more problematical activities in 2003–06 (including drug use as well as offending) represent a group for which the use of additional resources would be justified to ensure that the maximum number could be traced for further interviews. It seems reasonable to argue that all such sample members should be sought as a priority, even if they were interviewed on only one or two occasions. It is suggested that a particular focus of the interviews with this group should be around indicators of desistance and the social conditions associated with this change in behaviour.

These proposals are not so radical as to suggest that the ‘law abiders’ and ‘occasional transgressors’ in 2003–06 would be of limited or no interest at a later interview. However, it may be possible to sub-sample these groups of sample members, to an extent that would allow weighting to maintain the overall representativeness of the sample. It is an important attribute of the OCJS that its findings can be generalised to the whole of the household population in England and Wales.

²⁵ In 2008, the Home Office commissioned NatCen and BMRB to attempt to re-contact members of the OCJS panel who had been interviewed in 2006. Of the 4,464 in the initial sample, 1,797 returned a paper self-completion questionnaire that included their current address and a further 1,014 were contacted by telephone. Other efforts to trace the sample members, such as inquiries at the address where the 2006 OCJS interview took place or contacts with those at ‘stable addresses’ would be possible if a further data collection exercise were to take place, although it is unknown how much these ways of contacting the sample members would increase the yield of the sample. The authors’ assessment is that the exercise showed a further follow-up interview would be viable.

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APPENDIX A DEFINITIONS OF OFFENDING, ANTI-SOCIAL BEHAVIOUR AND DRUG USE

Offending

The 20 core offences covered in the OCJS can be summarised in the following grouped offence categories:

Property-related offences

- **Burglary:** domestic burglary; commercial burglary.
- **Vehicle-related thefts:** theft of a vehicle; theft from outside of a vehicle; theft from inside a vehicle; attempted theft of a vehicle; and attempted theft from a vehicle.
- **Other thefts:** from place of work; from school; shoplifting; theft from a person; and other thefts.
- **Criminal damage:** damage to a vehicle; damage to other property.

Violent offences

- **Robbery:** robbery of an individual; robbery of a business.
- **Assault:** assault resulting in injury; non-injury assault.

Drug offences

- **Selling drugs:** selling Class A drugs; selling other drugs.

In order to ensure that this report does not over-estimate the number of 'real' offenders, some low-level reported crimes that would be classified as 'other theft' or 'assault' have been removed for the purpose of the longitudinal analysis.

The term 'offender' is used throughout this report. It refers to young people who have committed at least one of the 20 core offences (but not including the trivial theft and assault offences removed early in the analysis). In order to distinguish between young people who occasionally transgress and those who may have more problematic patterns of offending the following definitions are used:

Frequent offenders – those young people who have committed six or more offences in one (or more) year(s) of the OCJS, including the less serious.²⁶

Serious offending includes the following:

- theft of a vehicle;
- burglary;
- robbery;
- theft from the person;
- assault resulting in injury; and
- selling Class A drugs.

A slightly different definition of 'serious crime' is used in the analysis of sequences of behaviour (trajectories). This definition of 'serious crime' includes: theft of a vehicle, burglary and robbery. In contrast, the definition of minor crime in the trajectory analysis includes: theft from school, theft from work, theft from a vehicle, shop theft and other theft.

²⁶ This is the definition of frequent offending that is used by the Home Office. In order for sample members to be defined as a frequent offender in this report they need to have been a frequent offender as defined by the Home Office in one or more years of the OCJS.

Anti-social behaviour

Anti-social behaviour as measured by the OCJS covers:

- being noisy or rude in a public place so that people complained or the individual got into trouble with the police;
- behaving in a way that resulted in a neighbour complaining;
- graffiti in a public place (spray paint or written on a building); and
- threatening or being rude to someone because of their race or religion (racially/religious motivated abuse).

Drug use

The drugs covered in the OCJS were:

- glues, solvents, gas or aerosols (volatile substances);
- amyl nitrites (poppers);
- cannabis;
- amphetamines;
- ecstasy;
- LSD or magic mushrooms;
- cocaine;
- crack; and
- heroin

These drugs can be divided into Class A drugs (ecstasy, LSD or magic mushrooms, cocaine, crack and heroin) or non-Class A drugs (volatile substances, poppers, amphetamines and cannabis).

For the analysis of sequences of behaviour (trajectories), use and selling of Class A and non-Class A drugs have been grouped together.

APPENDIX B ADDITIONAL TABLES

Tables summarising the latent class analysis

Table B.1 Mean number of offences committed over four years by latent class

Base: Four-year panel

OCJS

Latent class	Weighted estimate with 95% confidence bands	N
1: Law-abiders	1.2 ± 0.8	1,017
2: Occasional transgressors	5.7 ± 2.7	886
3: Anti-social disrupters	12.8 ± 4.3	221
4: Drug offenders	20.2 ± 8.3	138
5: Prolific offenders	56.9 ± 18.3	97
All	7.3 ± 1.2	2,359

Table B.2 Proportion of crime recorded during the four years of the OCJS committed by each latent class

Base: Incidents recorded (four-year panel)

OCJS

Offence type	Latent class					Incidents weighted N
	Law-abiders %	Occasional transgressors %	Anti-social disrupters %	Drug offenders %	Prolific offenders %	
Assault	11	43	20	6	21	9,554
Vehicle crime	0	3	11	4	83	809
Criminal damage	0	8	22	9	61	1,297
Burglary	1	1	17	2	79	273
Robbery	0	2	22	5	71	108
Other theft	2	18	25	17	37	3,686
Selling drugs	0	0	0	43	56	4,202
Violent offences	11	42	20	6	21	9,694
Property offences	1	15	21	14	49	5,595
All offences	7	29	16	16	32	17,302
Serious offences	10	40	16	9	24	4,729

Table B.3 Logistic regression of risk factors associated with relatively ‘high harm’ groups in the latent class analysis

Base: Four-year panel latent classes

OCJS

Risk factor		Age at first interview		
		All	10 to 15	16 to 25
Demographics				
Age at first interview	10/11			-
	12/13	1.35	0.53	-
	14/15	1.13	0.32	-
	16/17	1.05	-	
	18/19	0.28****	-	0.28****
	20/21	0.68	-	0.60
	22/23	0.29***	-	0.27****
	24/25	0.29***	-	0.30***
Sex	Male			
	Female	0.50****	0.75	0.35****
Lifestyle and behaviour				
Being drunk	Always less than once a month			
	Once a month or more	2.49****	1.59	2.21**
Victim of personal crime	Not a victim			
	Victim	2.66****	5.11****	2.48***
Attitude to criminal acts	Less likely to agree criminal acts ok			
	More likely to agree criminal acts ok	2.52****	1.81*	2.97****
Whether impulsive	Not impulsive	-	-	3.45****
	Highly impulsive	-	-	
Area factors				
Attitudes towards their local area	Good or indifferent attitudes			
	Bad attitude	0.99	0.48**	1.16
Whether trusts local police	Trusts police			
	Does not trust police	1.51***	1.18	1.58*
Family and friends				
Who brings up/ brought up	Both natural parents			
	Not both natural parents	1.39**	1.78*	1.21
Whether gets on with parents	Gets on well			
	Gets on badly with at least one	1.94***	1.55	1.86*
Whether friends/ siblings in trouble with the police	No, not in trouble			
	Yes, got in trouble	2.19****	3.22****	1.56*
Perceptions of parents	Good parenting skills	-		-
	Poor parenting skills	-	2.34**	-
School factors				
Ever been suspended or expelled	Never			
	Have been excluded	2.50****	2.00*	2.33***
Ever truanted	No, never truanted			
	Yes, truanted	1.56***	2.64***	1.18

Significance levels (2-tailed test) *10%, **5%, ***1%, ****0.1%

Note: This table shows only those variables that were significant in one or more of the logistic regressions. Variables that were also included are: pub visits, club visits, perceptions of health, tenure, how well family manages on income (for all regressions), and amount of free time spent with parents, perception of parents' attitude to delinquency, perception of school and attitude towards school (for 10 to 15 years regression). These variables were not significant.

Table B.4 Transitions analysis of the onset of offending

Factors associated with onset of offending	Odds ratio	Std. Err.	z statistic	Sig.	[95% Conf.	Interval]
Respondent age						
10	0.69	0.252	-1.0	0.32	0.34	1.41
11	1.70	0.427	2.1	0.04	1.04	2.78
12	1.69	0.413	2.2	0.03	1.05	2.73
13	1.72	0.419	2.2	0.03	1.07	2.78
14	1.60	0.394	1.9	0.06	0.98	2.59
15	1.06	0.275	0.2	0.83	0.64	1.76
16	baseline					
Respondent sex						
Male	baseline					
Female	0.73	0.092	-2.5	0.01	0.57	0.93
Committed ASB at t						
No	baseline					
Yes	1.82	0.297	3.7	0.00	1.32	2.51
Disorder problems in the local area						
None	baseline					
One or more	1.48	0.197	2.9	0.00	1.14	1.92
Friends/siblings in trouble with police						
No	baseline					
Yes	2.25	0.349	5.2	0.00	1.66	3.05
Who bringing up at t						
Both natural parents	baseline					
One natural parent/ step family	1.36	0.180	2.4	0.02	1.05	1.77
Truanted at t						
No	baseline					
Yes	2.50	0.608	3.8	0.00	1.55	4.03

Respondents aged 10–16 who had never offended before t

1 = offended at t+1, 0 = not offended at t+1

Table B.5 Explanatory variables used in the trajectory analysis

Sample means of covariates used in modelling of trajectories

Covariate	Observed at 16 or under	Observed at any age
Year of birth +	1989.1	1985.5
Non-White ethnic group +	0.085	0.086
No religion	0.385	0.435
Non-Christian religion	-	0.321
Weak local control + (proportion of people in local area who disagree with two or more of the statements: stable local population; troublesome kids will be told off; most local people can be trusted)	0.131	0.146
Local drug problems+ (proportion of people in local area over sample period who say drug selling /use is common)	0.217	0.225
Maximum age at which individual is observed	15.50	18.70
Any siblings or friends in trouble with police in last year	0.264	0.248
Owner-occupied housing	-	0.673
Lives in parental home	-	0.798
Household size	4.002	3.635
Female	0.481	0.493
Socio-economic class 1, 2 or 3 (SOC2000)	0.406	0.386
Socio-economic class 7, 8, or 9 (SOC2000)	0.293	0.306
Non-two-parent family+	0.269	-
Lived with mother and step-father+	0.092	-
Weak school discipline (Composite score 0-3: no clear behaviour rules + easy to skip school + violence against teachers)	0.398	-
Strong parental guidance (Composite score 0-4 on parents mind about: fighting; graffiti; truancy; cannabis use)	3.178	-
Liberal parenting (Composite score 0-4 on parents not minding about: fighting; graffiti; truancy; cannabis use)	0.122	-
Number of sample individuals	2,258	4,317

Note: Time-invariant characteristics indicated by +

Table B.6 Marginal effects from multinomial logit model for occurrence of sequence types (OCJS respondents aged 16 or under on entry into the panel)

Covariate	No offending or Drugs	Minor crime only	Non-class A drugs only	Minor crime & non-class A drugs (any order)	Minor crime → non-class A → class A drugs	Non-class A → class A drugs	Other sequences
Year of birth	0.034***	-0.036***	0.012*	-0.012**	0.003**	0.000	-0.002
Non-white†	0.038	-0.003	0.003	-0.031*	0.000	-0.002	-0.006
No religion †	-0.019	-0.017	0.001	0.027*	0.003	0.001	0.004
Weak local social control	0.015	0.022	-0.092	0.011	-0.024**	0.003	0.071**
Local drug problems	-0.214**	0.047	0.050	0.092*	0.012*	0.007	0.005
Maximum observed age	-0.057***	-0.026***	0.037***	0.026***	0.006***	0.003**	0.011***
Friends/siblings trouble with police	-0.317***	0.071**	0.080***	0.100***	0.011***	0.006**	0.049***
Household size	0.033***	-0.010	-0.012*	-0.005	-0.001	0.000	-0.006**
Female†	0.071***	-0.110***	0.060***	-0.010	0.000	0.002	-0.013**
Social classes 123 †	-0.012	0.006	-0.017	0.025	0.002	-0.001	-0.003
Social classes 789 †	0.031	-0.005	-0.023	0.010	0.001	-0.004	-0.010
Non-2 parent family †	-0.063**	0.016	-0.001	0.022	0.004	0.001	0.021**
Mother + step-father †	-0.128***	0.068*	-0.013	0.052**	0.001	-0.002	0.021
Weak school discipline	-0.106***	0.010	0.037**	0.043***	0.002	0.002	0.011**
Strong parental guidance	0.114***	-0.018	-0.029***	-0.042***	-0.004***	-0.002**	-0.018***
Parents liberal	0.195***	-0.074	-0.044	-0.068**	0.000	-0.001	-0.008
Predicted probability at point of means	0.554	0.226	0.101	0.082	0.005	0.003	0.028

Note: Estimates of $\partial \Pr(\text{ith outcome})/\partial x$, except for covariates (†), where a discrete change is evaluated; all evaluated at point of sample means. Sample size: n = 2285. Log-likelihood = -2723.0708. Pseudo-R2 = 0.1338. *, **, *** denote significance at 10%, 5% and 1% levels respectively.

APPENDIX C TECHNICAL DETAILS OF THE OCJS

This appendix provides a brief overview of the design of the Offending, Crime and Justice Survey. More detailed information on sample design, questionnaire design, fieldwork, data preparation and data files can be found in the four annual technical reports. The technical reports and the datasets for each year are available at the UK Data Archive (<http://www.data-archive.ac.uk/findingData/ocjsTitles.asp>).

As well as briefly explaining the sample design, this appendix also describes some analyses that were conducted to assess the reliability and validity of the longitudinal data. There is also brief documentation of the latent class analysis and paired transitions analysis.

Sample design

The OCJS was first conducted in 2003, when the sample covered the age range 10 to 65. There was also a boost sample of ethnic minority individuals. A representative sample of addresses was selected from the Small User Postcode Address File (PAF). One in five addresses was 'core sample', while the other four were used as a pre-selected sample for screening by interviewers.

Part of the sample was selected directly at pre-selected addresses that interviewers visited. When the interviewer made contact at the latter, he or she asked whether the two neighbouring addresses²⁷ on the 'right' side included any person aged around 10 to 25; the question was repeated for the two on the 'left'. A definite 'no' answer was accepted, but further enquiries were required if there was any doubt. In that case, and also when the answer was 'yes', the interviewer contacted the addresses. The interviewer also enquired at the adjacent addresses when he or she was unable to make contact with a responsible adult at the 'seed' address. Thus the remainder of the sample came from addresses adjacent to the 'seed' address.

People aged 10 to 25 who were interviewed in 2003 (n=4,574) and said they were willing to be re-contacted again in the future (n=4,259) were then followed up in 2004. In 2004, 2005, and 2006 approximately 5,000 young people were interviewed each year. A sample of new respondents aged from 10 to 25 was introduced to 'top up' the sample (using the same screening approach as in 2003). A more detailed description of the survey design is given in the NatCen companion report (Nevill *et al.*, forthcoming) as well as in the technical reports.

The 'four-year panel' sample

Table C.1 shows the structure of the OCJS sample. In total 8,034 respondents were interviewed during the four years of the OCJS. Of these, 2,539 were interviewed in all four waves, and these are called the 'four-year panel'. In addition, there are 1,706 respondents who were interviewed in three of the four OCJS waves.

The four-year panel provides the fullest data on longitudinal patterns of offending, ASB and drug use. In particular, it allows the analyst to look at who displays consistently delinquent behaviour, as opposed to occasionally transgressing, and also enables sequences of behaviour to be discerned.

²⁷ The neighbouring addresses were also pre-selected from the Postcode Address File, so interviewers were not required to make decisions in the field on which were the addresses to be screened.

Table C.1 OCJS longitudinal sample

Base: All respondents

OCJS

No. of times interviewed	First year of interview				Total N
	2003 N	2004 N	2005 N	2006 N	
1	1,002	389	164	800	2,355
2	525	256	653	0	1,434
3	508	1,198	0	0	1,706
4	2,539	0	0	0	2,539
Total	4,574	1,843	817	800	8,034

An analysis of attrition (see below) suggests it is valid to extrapolate findings from the ‘four-year panel’ to the whole population of young people. However, it is also possible to conduct analysis that includes respondents who were not interviewed in all four waves.

Sample sizes

The analysis of transitions includes the majority of the OCJS respondents. It was possible to include 11,449 transitions, covering 7,600 of the 8,034 respondents. The sample composition for this analysis, by age, sex and ethnicity, is shown in Table C.2. The sample has a nearly equal number of male and female respondents, but it has a skewed age distribution. Respondents aged 12–15 at t were somewhat over-represented in the transitions analysis. Those aged 10 and over 20 are under-represented in the sample (due to difficulty in locating eligible sample members aged 10, and because of greater mobility among those aged over 20). Although the analysis uses weights to correct the age distribution, this involves giving the 10-year-old respondents a large influence in the weighted sample. It is recommended that analyses should be based on broad age bands.

Table C.2 Number of transitions broken down by respondent characteristics (unweighted)

	n	% of all transitions made
Age at t		
10	381	3.3
11	842	7.4
12	1,110	9.7
13	1,154	10.1
14	1,142	10.0
15	1,081	9.4
16	1,011	8.8
17	908	7.9
18	769	6.7
19	586	5.1
20	498	4.3
21	465	4.1
22	508	4.4
23	529	4.6
24	465	4.1
Sex		
Male	5,644	49.3
Female	5,805	50.7
Ethnic group		
White	10,438	91.2
Mixed	273	2.4
Asian	466	4.1
Black	147	1.3
Other	125	1.1
Total transitions (unweighted)	11,449	100

Reliability and validity of the data

The OCJS design incorporated lessons from previous self-report offending surveys and exploited innovative techniques to improve the quality of data collected and help ensure that sensitive questions were answered honestly.

The 2003 survey was preceded by a feasibility study which tested an early version of the questionnaire on a small sample of the general population, including offenders (BMRB, 2005). The OCJS questionnaire was administered to the respondent in their home using two separate modes: Computer Assisted Personal Interviewing (CAPI) and Computer Assisted Self Interviewing (CASI). For the crucial questions on offending, the CASI mode also contained an audio component, in which questions and answer categories were played to the respondent from audio files on the computer. This allowed respondents with poor literacy skills to answer the self-completion section. In very rare cases, the interviewer was asked to administer the entire interview, including the more sensitive questions. Where this approach was used, the data records identify the extent of the interviewer’s involvement.

The CASI modules covered potentially sensitive issues such as offending, drinking, drug use, domestic violence, mental health and family relationships. This enabled the respondent to answer these questions without anyone in the home or even the interviewer being able to hear the questions or see their response. This method addresses some of the

difficulties that affect the ability of respondents to provide accurate answers. However, the data are retrospective over a period of 12 months and it can be anticipated that significant gaps in the data are likely to remain. At the end of the interview, respondents were asked how truthful they were when answering questions about drugs and offending. In all four waves of the OCJS between 94 and 97 per cent of respondents said they had answered all drug questions truthfully, and between 95 and 98 per cent said they had answered all offending questions truthfully.²⁸

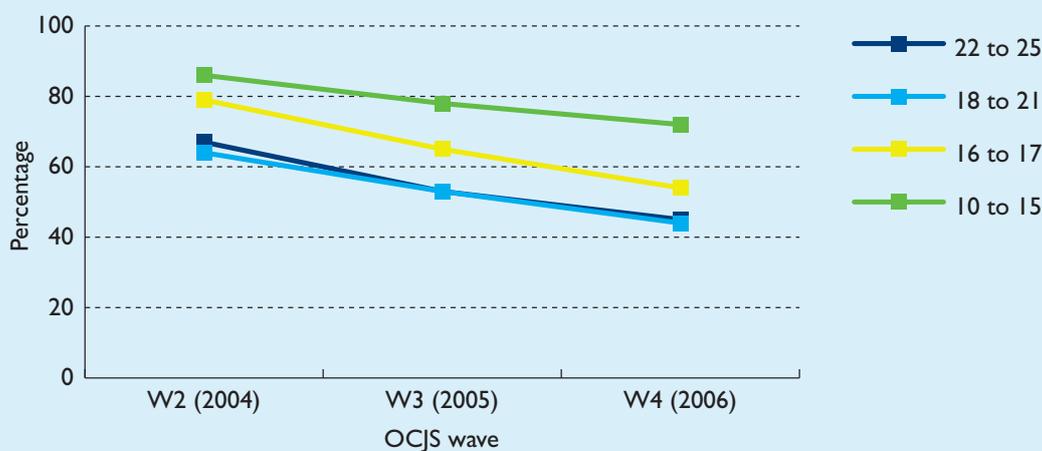
For the 2003 wave of the OCJS, Home Office researchers carried out a validation exercise to compare OCJS offence estimates with British Crime Survey (BCS) crime estimates. There are difficulties in making comparisons because the OCJS includes offences against commercial and public bodies, offences against children and drug dealing, unlike the BCS, and any OCJS estimates of individual instances of offending will always be higher than the BCS count of the number of crime events because more than one offender can be involved in a single crime. As a result, the validation exercise included adjustments to restrict the OCJS to a sub-set of offences most comparable to those in the BCS and to compensate for co-offending. The results of the exercise suggested that both sources gave similar counts of violent crime. However, the OCJS appeared to undercount comparable property crime relative to the BCS. This is likely to be because the highest-rate offenders are under-represented in the OCJS sample and are responsible for a considerable proportion of crimes reported to the BCS. Evidence from surveys of convicted offenders shows that their rates of property offending greatly exceed rates of violent offending (Budd, T. *et al.*, 2005b).

Attrition

The same respondents are interviewed year on year in the OCJS. However, as with any panel study some respondents drop out of the sample. This ‘attrition’ may lead to the panel becoming too small or no longer being representative of the total population.

It was found that 54 per cent of the original 2003 cohort were still in the panel at Wave 4. The main difference in retention rates by socio-demographic characteristics was that of age. Figure C.1 shows that those aged 18 and over were more likely to fall out of the sample, and this was presumably due to their leaving the parental home. On the other hand, the sample members aged 10 to 15 were the group most likely to be interviewed again, and this was linked to their family situation and compulsory attendance at secondary school. Differences in attrition by age were corrected for using longitudinal weights.²⁹

Figure C.1 OCJS panel retention rates (as a percentage of the original cohort) by age in Wave 1



28 See 2003 to 2006 Crime and Justice Survey Technical Reports. Available from the UK Data Archive – <http://www.data-archive.ac.uk>.

29 The longitudinal weight used was called ‘lng4wt’ and is described in the section on longitudinal weighting in the 2006 Offending Crime and Justice Survey technical report, available from the UK Data Archive.

A more detailed attrition analysis has been documented in the NatCen companion report (Nevill, C. *et al.*, forthcoming). Perhaps the point of most interest among criminologists is whether the sample members who accounted for relatively large proportions of criminal behaviour were less likely to be re-interviewed in successive waves of the survey. The findings of this analysis are presented in Figure C.2.

Figure C.2 shows that admission of serious offences at Wave 1 was not associated with a substantial difference in the percentage of sample members re-contacted in Waves 2, 3 and 4. There was a difference, but it was slight.

Figure C.2 OCJS panel retention rates (as a percentage of the original cohort) by offending status in Wave 1



Missing data

OCJS respondents were asked about 20 crimes they may have committed in the last 12 months. The drug-use module asked about nine drugs; ten from 2005 onwards when methadone was added to the list. Some respondents had missing data at one or more of these questions. However, only 13 per cent of respondents had one or more items of missing data on offending at some point during the four waves of the OCJS.

Analysis of the pattern of missing data shows that those who reported delinquent behaviour were no more likely to have refused to answer the questions on offences they had committed or to have missing data for any other reasons.

Other methodological issues

Despite the OCJS incorporating innovative techniques and the data quality being good, it remains subject to the following design and methodological issues, which should be considered in the interpretation of findings.

As the OCJS was based on a sample of the general household population aged from 10 to 25 (in the first wave of interview), estimates are subject to *sampling error*. The results obtained may differ from those that would be obtained if a number of similar samples were interviewed or if the entire population of interest had been interviewed.

Despite the high panel response rates, it is possible that those who were interviewed differed from non-respondents in the first wave of interviewing (2003). For example, those with lifestyles that mean they were often away from their home were relatively difficult to contact and may have been more likely to refuse in the first instance. The authors were able to take advantage of the data collected in 2003 to compare those re-interviewed in 2004 with those who could not be interviewed (not contacted or refused). Attrition analysis has shown that there was no difference in their reported offending. The only difference was in respect of age, which the weighting scheme was designed to correct.

People in custodial institutions, residential homes, hospitals and hostels, and the homeless were not included in the OCJS sample. As such, the sample may under-represent 'very serious' offenders, although it should represent reasonably well those on community orders and young offenders who were previously in custody.³⁰ A feasibility study commissioned by the Home Office (ONS, 2005) concluded that the inclusion of young people in residential establishments would not significantly impact on overall offending and drug-use estimates.

Latent class analysis

Latent Class Analysis (LCA) is a statistical technique for analysing relationships in categorical data (the categories may be nominal or ordinal). The analysis divides individual cases in a dataset (in this instance the cases are OCJS respondents) into discrete non-overlapping groups or 'latent classes' or 'clusters'. A statistical model is fitted that (a) identifies the latent classes in the data, and (b) generates probabilities, per respondent, of their being in each class (one probability per class). An individual is then assigned to the class for which they have the highest probability.

In order to output latent classes of delinquent behaviour over a four-year period, 16 variables summarising the offending, ASB and drug-use behaviour of the 2,539 four-year panel members over the four years of the OCJS were input into the LCA. The frequency of offending behaviour was also taken into account. The variables input were as follows.

- Seven offending behaviour variables (assault, vehicle theft, criminal damage, burglary, robbery, other theft, and drug crime) with three categories: no offending over the four-year period, the median or less than the median amount of offending, more than the median amount of offending over the four-year period.
- Four anti-social behaviour variables (noise and rudeness in public place, causing neighbours to complain, graffiti, and racial attacks or threats) with two categories: has not committed this behaviour over four-year period, has committed this behaviour over four-year period.
- Four other 'problem behaviour' variables (fare evasion, bullying, joyriding, and carrying a weapon) with two categories: has not committed this behaviour over four-year period, has committed this behaviour over four-year period.
- One drug use variable with three categories: has taken no drugs, has taken drugs but not Class A drugs, has taken Class A drugs.

The LCA gave several solutions but the model with five latent classes was found to have the best fit with the data (adding a sixth resulted in one class being too small for separate analysis) and gave the most sensible solution in terms of explaining underlying classes of delinquency.

Paired transitions analysis

The data from the OCJS were re-structured to give a dataset where each record represented a respondent who was interviewed at any two consecutive waves of the survey. For example, those respondents who had taken part in the first survey in 2003, and then were re-interviewed in 2004, 2005 and 2006, were included three times in the dataset; with a separate record for each of the periods covered by Waves 1 to 2, Waves 2 to 3 and Waves 3 to 4.

The transitions analysis did not require respondents to have been involved in all waves, as was the case with the latent class analysis. The only requirement was that a respondent needed to have taken part in two consecutive interviews. The analysis includes respondents in the annual 'refreshment' samples, but not those interviewed only once or who missed an intervening year³¹. The number of transitions at each survey wave is given in Table C.3.

³⁰The Home Office has conducted separate self-report offending surveys of sentenced offenders. The results of these surveys are available at: <http://homeoffice.gov.uk/rds/pdfs05/rds01r1805.pdf>

³¹Hence respondents recruited in the final year of OCJS (2006) are all excluded because they only completed a single interview.

Table C.3 The number of transitions made at each wave

Consecutive waves	First year of interview			
	2003	2004	2005	Total
W1-W2	3,358	1,375	626	5,359
W2-W3	2,706	1,142	-	3,848
W3-W4	2,242	-	-	2,242
Total transitions (unweighted)	8,306	2,517	626	11,449

The first of the two consecutive waves is referred to as t and the second interview of the pair as $t+1$. Hence a respondent's age at t would be their age at the first wave of that particular pair of interviews.

Initially, a descriptive analysis identified the most commonly made transitions. Subject to the number of respondents who made each type of transition, it was generally possible to focus on respondents in two broad age groups: ages 10–16 and ages 17–24.³² These age categories roughly distinguish between respondents who were legally obliged to be in full-time education and those aged above this requirement.

The way the analysis proceeds can be illustrated by one of the situations of key interest in the OCJS. It was possible to identify the people who did not commit offences in year t , but who admitted having offended during the second year ($t + 1$). The characteristics and behaviour of the people whose situation changed were contrasted with those of the people who did not offend in either year.

The more important transitions identified by the descriptive analysis were investigated in more detail using multivariate analysis methods. The analysis involved a range of respondent characteristics, such as sex, ethnicity and other socio-economic variables, as well as a range of 'risk factors' and 'protective factors' that were covered in the OCJS interviews.³³ The regression models³⁴ allow the influence of each of these factors to be estimated separately as a component of the differences between the group of sample members whose status changed, as compared with those whose status did not change. The aim is to identify short-term factors linked to changes in offending and drug-taking status.

³² A number of variables were only collected for children under the age of 17. These were: whether gets/got on with parents/guardians, parents perceived attitude to certain behaviours, perceptions of parents parenting skills, whether school thought to be important, perceptions of teaching skills and discipline, whether there is anything to do in area, would parents mind if found out you started fight with someone, would parents mind if you wrote, sprayed paint on building, would parents mind if you skipped school without permission and would your parents mind if you smoked cannabis. To make best use of these variables children aged 11–16 have generally been analysed separately.

³³ These variables are outlined in Appendix E of the companion report (Nevill *et al.*, forthcoming).

³⁴ The unit of analysis is the transition made by the individual, rather than the individual. This means respondents can appear more than once in the dataset. Data such as these contain less variability than data consisting entirely of unique individuals. Traditional regression models assume all individuals in a data set were unique. In addition, they ignore the variability that is found between transitions and will only model the variability found between individuals, meaning the standard errors and confidence intervals will be inaccurate. A random effects model allows the variability that is found between transitions to be incorporated into the modelling process. By including information on variability across transitions (instead of just individuals) the analysis generated standard errors, confidence intervals and significance tests that were more accurate. These estimates were typically more conservative than those produced by a traditional model as they would have otherwise taken this information into account. The analysis was run in Stata version 9 using the `xtlogit` command with random effects. The analysis uses a binary outcome because multinomial random effect models are not yet available.