

Impact of antisocial lifestyle on health

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Abstract

Background Antisocial lifestyle includes a range of related behaviours which constitute threats to health. Links between health outcomes and particular behaviours have been investigated, but the overall impact on health is largely unknown. In part, this reflects lack of longitudinal studies designed to link offending and other antisocial behaviour, injury and illness.

Methods Injury and illness data were collected prospectively in the longitudinal Cambridge Study of Delinquent Development (CSDD) for the age ranges 16–18 and 27–32. These data were translated into Read clinical codes, version 3.1 and categorized. Three hypotheses underpinned this investigation: that links between (i) convictions and injury and between (ii) childhood predictors of delinquency and injury at age 16–18 would be maintained at age 27–32; that (iii) antisocial behaviour at age 16–18 would be linked to injury at age 27–32; and that (iv) observed links between antisocial behaviour and decreased illness at age 16–18 would be reversed by age 27–32.

Results Childhood predictors of teenage offending predicted injury and cardiovascular and psychological illness at age 27–32. Delinquency predicted road, home and self injury and psychological disorder, but was associated with less illness and hospital admission. Measures of antisocial behaviour at age 18 which most strongly predicted illness/injury at age 32 were drunk driving, fighting after drinking, sexual promiscuity and heavy smoking. Relationships at age 16–18 between heavy alcohol consumption and less infection and less organic illness remained at age 27–32. Links common to both age 16–18 and age 27–32 were those between convictions, heavy regular drinking, low job status and injury; and links between convictions and less organic illness. Principal differences included links between convictions and psychological disorders only found at age 27–32.

Conclusions Antisocial lifestyle was associated with injury and psychological disorders up to age 32 but also with less organic illness. Alcohol consumption at age 16–18 predicted fewer illnesses overall, and fewer infections 15 years later. These negative associations are important and deserve further study.

Keywords: antisocial lifestyle, illness, injury, longitudinal study

Introduction

Although specific behaviours, such as substance misuse, violent offending and sexual promiscuity constitute self-evident health risks, the overall relationship between antisocial lifestyle and health is largely unknown. In part, this reflects absence of longitudinal investigations of links between offending and its precursors, and illness and injury.

Prospective longitudinal data on both offending and morbidity are available however, from the Cambridge Study of Delinquent Development (CSDD) and have been studied to find out how illness and injury relate to concurrent offending, whether offending predicts illness and injury or vice versa and whether relations persist after adjustment for childhood predictors of offending.¹ When information about injuries and illnesses between ages 16 and 18 was set against information on offending and other types of antisocial behaviour, it was found that males who were injured, especially in assaults, tended to be convicted, to be violent, to have unskilled manual jobs and to be generally antisocial. Surprisingly, respiratory tract illnesses were negatively related to convictions and antisocial behaviour in general. However, illicit drug users were significantly likely to be ill. Adult convictions were predicted by childhood troublesome behaviour, daring/hyperactivity, low IQ/attainment, a convicted parent, family disruption/poor supervision and poverty. Assault injuries and respiratory tract illnesses did not predict adult convictions independently of these childhood factors. This first longitudinal study of offending and health concluded that injury is one symptom of an antisocial personality which arises in childhood and persists into adulthood and therefore, that measures that lead to a reduction in offending (like pre-school education and early family support) should also lead to a reduction in concurrent injuries. It was concluded that the observed negative relation between a range of antisocial behaviours and respiratory tract illness deserved further investigation.¹

The study reported here was designed to do this by investigating relations between childhood predictors of delinquency, teenage offending and other delinquent behaviour, injury and illness at age 16–18; and offending and health measures 14 years later, at age 27–32. This second investigation using data from the same longitudinal study was driven by four hypotheses: first, that the observed association between convictions and more injury observed at age 18 would be maintained at age 32;

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secondly, that associations between childhood predictors of delinquency and more injury would be maintained at age 32; thirdly, that measures of antisocial behaviour at age 18 would be linked to more injury at age 32; and fourthly, that the observed association between childhood predictors, concurrent measures of delinquency and decreased illness observed at age 18 would be reversed by age 32. In relation to this fourth hypothesis, it was considered that although links between heavy drinking, heavy smoking and illness were not present at age 16–18, these threats to health (linked to antisocial behaviour) would have begun to take their toll in terms of measurable impacts on health by a decade and a half later.

Methods

The Cambridge Study of Delinquent Development

Research methods adopted in this study are described in a report of an investigation of links between offending, injuries and illness up to the age of 18.¹ In summary, the CSDD is a prospective longitudinal survey of the development of offending and antisocial behaviour in 411 London males. At the time they were first contacted in 1961/1962 they were all living in a working class city area of South London. The sample was all the boys who were then aged 8–9 and on the registers of six state primary schools within a 1 mile radius of a research office that had been established. Hence, the most common year of birth of these males was 1953. In nearly all cases (94 per cent), the family breadwinner at that time, usually the father, had a working class occupation (skilled, semi-skilled or unskilled manual worker). Most of the males were white (97 per cent) and of British origin. The original aim of the study was to describe the development of delinquent and criminal behaviour in inner city males, to investigate how far it could be predicted in advance, and to explain why juvenile delinquency began, why it did or did not continue into adult crime, and why adult crime usually ended as men reached their 20s. A major aim in this study was to measure as many factors as possible that might be causes or correlates of offending. Reflecting this, in the research reported here, injury and illness data were studied 20 years after data collection because previously, no hypotheses relating to health outcomes had been considered. Recently, prompted by the authors' concern that antisocial lifestyle may have unknown effects on health, and by the availability of relevant longitudinal data, this study was undertaken.

Interviews and tests

The males were interviewed and tested in their schools by male or female psychologists when they were aged about 8, 10 and 14. They were interviewed in a research office at about 16, 18 and 21 and in their homes at about 25 and 32 by young male social science graduates. At all ages, except 21 and 25, the aim was to interview the whole sample, and it was always possible to trace and interview a high proportion – for example, 389 out of 410 still alive at age 18 (95 per cent) and 378 out of 403 still alive at

age 32 (94 per cent). The tests in schools measured individual characteristics, such as intelligence, attainment, personality and psychomotor impulsivity, while information was collected in the interviews about such topics as living circumstances, employment histories, relationships with females, leisure activities such as drinking and fighting and offending behaviour.

In addition to these interviews and tests, the boys' parents were interviewed by female social workers who visited their home. This happened about once a year from when the male was about 8 until he was aged 14–15 and in his last year of compulsory education. The primary informant was the mother, although many fathers were also seen. The parents provided details about such matters as family income, family size, their employment histories, their child rearing practices (including attitudes, discipline and parental disharmony), their degree of supervision of the boy and his temporary or permanent separations from them. Teachers completed questionnaires when the boys were aged about 8, 10, 12 and 14 to provide information about their troublesome and aggressive school behaviour, their attention deficits, their school attainments and their truancy. Ratings were also obtained from their peers when they were in primary school, about such topics as their daring, dishonesty, troublesomeness and popularity.²

For the analyses described in this paper, each predictor variable was dichotomized as far as possible into the 'worst' quarter (e.g. the quarter with lowest income or lowest intelligence) versus the remainder. This was done in order to compare the importance of different variables and also to permit a risk factor approach. Because most variables were originally classified into a small number of categories and because fine distinctions between categories could not be made very accurately, this dichotomizing did not usually involve a great loss of information. The one quarter/three quarters split was chosen to match the prior expectation that about one quarter of the sample would be convicted as juveniles.²

Searches were also conducted in the central Criminal Record Office (National Identification Bureau) in London to try to locate findings of guilt of the males, of their parents, of their brothers and sisters and later of their wives and cohabitantes. The minimum age of criminal responsibility in England and Wales is 10. The Criminal Record Office contains records of all serious offences committed in Great Britain or Ireland and also acts as a repository for records of minor juvenile offences committed in London. Convictions were only counted if they were for offences normally recorded in the Criminal Record Office, such as thefts, burglaries, violence, vandalism and drug use. In this paper, the recorded age of offending is the age at which an offence was committed, not the age of conviction.

Health data

Injury and illness data were recorded for the 2 year period when subjects were aged 16–18 and for the 5 year period when they were aged 27–32 in the following manner. Interviewers recorded all the illnesses that led to absences from work of a week or more

– or equivalent if not working, what was wrong, when the illness occurred, how it was managed, how many days off work it caused and the length of time if any in hospital. Men were also asked about operations and treatment that had been required. Accounts of these illnesses were amplified by the interviewers in free text. Information about injuries was recorded in precisely the same way except that men were asked about the circumstances and causes of injury.

The illnesses and injuries recorded by the interviewers were translated into Read clinical codes, version 3.1. On the basis of the Read codes, assigned illnesses were grouped into respiratory, cardiovascular, musculoskeletal, skin, allergic, gastrointestinal and psychological/neurological disorders. Injuries were characterized by their cause. The main causes of injury were assault, motorcycle, home and work accidents and sport. Data were analysed by means of the Statistical Package for the Social Sciences.

Results

Of 378 men coded, 185 (49 per cent) experienced an illness between ages 27 and 32 compared with 258 of 387 (67 per cent) who experienced an illness between ages 16 and 18; and 102 (27 per cent) experienced an injury at age 27–32 compared with 211 at age 16–18 (55 per cent: Table 1), despite an increase in the observation period from 2 to 5 years. The most common type of illness was infection – mostly respiratory tract disease [such as flu and bronchitis; 15 per cent (52 per cent at age 16–18)], followed by gastrointestinal disease [such as appendicitis, ulcer, gastric flu, food poisoning; 7 per cent (10 per cent at age 16–18)], skin disease [for example, acne, boils, dermatitis, shingles: 2 per cent (9 per cent at age 16–18)], allergic illness [including hayfever, allergic reaction, asthma, eczema: 0.5 per cent (5 per cent at age 16–18)] and psychological/neurological disorders [such as migraine, depression, nervous rash, nervous break-

down: 3 per cent (5 per cent at age 16–18)]. The most common category of injury was work injury [11 per cent (21 per cent at age 16–18)], followed by sports injury [6 per cent (12 per cent)], assault injury [1 per cent (8 per cent at age 16–18)], and home injury [1 per cent (6 per cent at age 16–18)].

In the following sections, Tables 1–5 present only the significant findings among the very large number of correlations studied.

Illness and injury versus offending (Table 2)

Men who were injured on the roads between ages 27 and 32 were significantly more likely to be convicted at some stage, particularly between 19 and 32. There were also significant links between self and home injury and convictions after age 22. There were significant links between psychological disorders and convictions at age 27–32, in contrast to age 16–18. There was also a link between age of conviction and the chances of psychological disorder; the strongest link was between concurrent convictions at 19–40 and psychological disorders. Overall however, there were highly significant negative relations between illness, particularly organic illness, and convictions.

Concurrent antisocial behaviour (Table 3)

There were few significant links between measures of concurrent antisocial behaviour, illness and injury. Again, both negative and positive correlations were found: negative relations between hospital admission and self-reported delinquency (SRD), but positive relations between illness overall, psychological illness and SRD and drug use.

Age 16–18 year precursors of illness and injury at age 32 (Table 4)

The most striking links were negative associations between heavy alcohol consumption at age 16–18 and later infections/organic illness. Motoring convictions predicted fewer illnesses

Table 1 Prevalence of illness and injury at ages 16–18 and 27–32

Illness/Injury	16–18 years		27–32 years	
	No	%	No	%
Illness	255	66	185	49
Allergic	22	5	2	0.5
Gastro-intestinal	39	10	28	7
Infections	214	52	57	15
Psychological/	20	5	11	3
Neurological				
Respiratory tract	189	46	40	10
Skin	36	9	8	2
Cardiovascular	–	–	7	2
Organic	251	67	102	25
Injury	211	55	102	27
Assault	29	8	4	1
Work	78	20	41	11
Home	23	6	3	1
Sport	45	12	24	6

Note: – none recorded at 16–18 years

Table 2 Illness and Injury at age 27–32 versus offending

Variable 1	Variable 2	Odds ratio	95% Confidence interval
Illness	Convicted 26–32	0.45	0.23–0.88
Organic illness	Convicted 26–32	0.37	0.15–0.90
Psychological	Convicted 10–18	3.60	1.07–12.1
Psychological	Convicted 19–32	4.87	1.39–17.02
Psychological	Convicted 19–40	6.44	1.68–24.78
Psychological	Convicted 10–40	7.23	1.53–33.98
Self-injury	Convicted 26–32	15.14	1.34–170.6
Road injury	Convicted 22–32	4.32	1.35–13.81
Road injury	Convicted 10–40	4.80	1.27–18.04
Road injury	Convicted 19–21	5.38	1.67–17.30
Home injury	Convicted 22–25	14.78	1.31–166.1

Table 3 Illness and Injury at age 27–32 versus Concurrent Antisocial Behaviour

Variable 1	Variable 2	Odds ratio	95% Confidence interval
Illness	Convicted 26–32	0.45	0.23–0.88
Organic illness	Convicted 26–32	0.37	0.15–0.90
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Psychological	Convicted 19–32	4.87	1.39–17.02
Psychological	Convicted 19–40	6.44	1.68–24.78
Psychological	Convicted 10–40	7.23	1.53–33.98
Self-injury	Convicted 26–32	15.14	1.34–170.6
Road injury	Convicted 22–32	4.32	1.35–13.81
Road injury	Convicted 10–40	4.80	1.27–18.04
Road injury	Convicted 19–21	5.38	1.67–17.30
Home injury	Convicted 22–25	14.78	1.31–166.1

Table 4 Age 18 precursors of illness and injury at age 32

Illness/Injury	Antisocial behaviour at 18	Odds ratio	95% Confidence interval
Infections	>20 pints beer/week	0.37	0.16–0.84
Organic illness	>20 pints beer/week	0.43	0.23–0.78
Any illness/injury	motoring conviction	0.55	0.31–0.97
Operation	drunk driving	3.67	1.03–12.99
Injury	>13 units/evening	1.74	1.01–3.01
Injury	Tattooed	2.17	1.05–4.45
Work injury	Motoring conviction	2.23	1.03–4.77
Psychological	Fights after drinking	3.64	1.04–12.69
Skin Disease	Smokes >20 cigs/day	6.85	1.31–35.94
Sports Injury	Sex with 2+ girls in last 6 months	2.37	1.01–5.56
Any illness/Injury	Low pulse rate	1.59	1.04–2.43
Assaults injury	Trouble with sleep	14.26	1.45–139.43
Hospital admission	Low status job	2.44	1.25–4.76
Cardiovascular	Low pulse rate	0.95	0.92–0.99
Road injury	Low pulse rate	4.24	1.13–15.96

and injuries. Low pulse rate in early adulthood predicted less cardiovascular illness, but more road injury 15 years later. The risk of surgical intervention was more than threefold higher for those who committed drunk driving at age 16–18. The risk of psychological illness was more than threefold higher for those

who reported fighting after drinking at age 16–18. The risk of skin disease was more than threefold higher for those who reported heavy smoking at age 16–18. Sleep disruption at age 16–18 predicted assault injury.

Table 5 Childhood precursors of injury and illness at age 32

Injury/Illness at 32	Precursor at 8–10 years	Odds ratio	95% Confidence interval
Injury	Low school attainment	1.84	1.076–3.15
Injury	Low verbal IQ	1.76	1.05–2.93
Assault injury	Nervous mother	0.96	0.93–0.99
Work injury	Hyperactivity/low concentration	0.41	0.20–0.84
Work injury	Low verbal IQ	2.4	1.2–4.78
Cardiovascular	Poor supervision	6.11	1.33–28.0
Psychological	Low non-verbal IQ	3.66	1.09–12.23
Skin	High neuroticism at 14	5.27	1.23–22.5

Childhood precursors (Table 5)

There is a great deal of previous research in the Cambridge Study on the early childhood precursors of offending.² These fall into six major categories – antisocial child behaviour, impulsivity, school failure, an antisocial family, poor parenting and economic deprivation. Not surprisingly, there were far fewer significant links between these precursors, and injury and illness at age 27–32 than there were at age 16–18. Negative relations were found between childhood hyperactivity/low concentration and work injury 15 years later, and the strongest positive correlations were between high neuroticism at age 14 and skin disorders; and between poor parental supervision and cardiovascular disorders.

Discussion

Most interestingly perhaps, the results of this and an earlier study of links between an antisocial lifestyle, injury and illness at age 16–18, both show some striking negative relationships. For example, convictions were associated with fewer respiratory illnesses at age 16–18 and fewer illnesses overall and fewer organic illnesses at age 27–32. Furthermore, concurrent antisocial behaviour was inversely related to respiratory infections at age 16–18 and also to hospital admission at age 27–32. Childhood precursors linked to lower risk of infections at age 16–18 were daring and low income. These links had disappeared by age 27–32 but new inverse relations had, by then, become apparent. For example, at 27–32 lower risk of work injury was linked to childhood hyperactivity and low concentration. Further inverse relations were found between antisocial behaviour at age 18 and health outcomes at age 27–32 – principally between heavy alcohol consumption, infections and organic illness.

Overall, there is clearly some stability in these negative relationships. Potential explanations relate to the protective effect in terms of infection risk of large family size;¹ a propensity of offenders not to take time off work; and some protective effect of infections on offending – for example, through limiting outdoor activity or physical fitness. One of the most important studies of protective factors and resilience was carried out by Werner and Smith,³ who followed up over 500 Hawaii children from birth to age 32. They identified one-third of the children

as high-risk because they were born into poverty and experienced perinatal stress, family discord or divorce, parental alcoholism or mental illness. One-third of these high-risk children were considered to be resilient, because they had no crime record or mental illness by age 18, and most of them grew up into competent, successful adults at age 32. However, interestingly, the resilient children were more likely to have health problems at age 32 (e.g. ulcers, chronic back problems, obesity, dizziness or fainting spells) than high-risk children who became offenders (54.5 per cent compared with 10.3 per cent for males).

Moderate alcohol consumption is known to be associated with decreased risk of respiratory tract infections.⁴ It is also possible that antisocial individuals neglect illness or seek treatment less often.⁵ Whatever the mechanism, this protective effect extended to fewer hospital admissions by age 32. Furthermore, self-reported delinquency at 32 was also negatively related to hospital admission at the same age. On the other hand, by age 32, earlier antisocial behaviours, like fighting after drinking and heavy smoking, had become linked to illness – particularly psychological and skin disorders; and low job status was positively related to hospital admission.

Therefore, an antisocial lifestyle and its childhood precursors seem to be associated with both negative and positive health outcomes. Interestingly, one physiological measure, low heart rate at age 16–18, was positively associated with injury at both age 16–18 and age 27–32 but negatively with cardiovascular disorders at age 27–32. This fits with the concept that physical fitness – one of the causes of low heart rate – carries with it both the risk of injury and cardiovascular protection.

Overall, a consistent finding up to age 32, was links between convictions, concurrent antisocial behaviour, childhood precursors of antisocial behaviour and injury. These links were much stronger at age 16–18 when both injury and conviction rates were much higher, than at age 27–32. However, against a background of work and sport injury at both ages, assault injury was much more frequent at 16–18 compared to 27–32 (only four men reported assault injury at 27–32 compared to 29 at age 16–18). This fits with the known peak ages for antisocial behaviour in boys and also with desistance from offending after the age of about 20.

The other principal differences between relations at the two

ages were significant links between convictions and self-reported delinquency and psychological disorders at age 27–32, which were not found at age 16–18. There was also an age response effect from age 19 up to age 32, with convictions an increasingly powerful predictor of psychological disorders.

Returning to the hypotheses which informed this research, these findings indicate that the positive relationship between antisocial behaviour and injury observed at age 16–18 was maintained up to at least 32 years of age, though the prevalence of injury fell markedly. Secondly, whilst, overall negative relations between convictions and illness remained, the corrosive effect on mental health of convictions was apparent by age 32. Interestingly, one childhood predictor of offending, poor parental supervision, also predicted cardiovascular disorders.

Most interestingly perhaps, convictions still had an overall significant negative relation with illness at age 32. With regard to mental health outcomes, however, this study provides evidence of a positive age-related effect of convictions on psychological disorders after age 18, in the 2 years prior to which no significant associations between offending and psychological disorders were found.

This longitudinal study allows causal inferences to be drawn, particularly since the direction of effect was consistently from convictions to later psychological disorder. In this context, offender treatment programmes are necessary not just to treat established psychological problems arising out of substance misuse for example, but also the mental health problems which appear to be complications either of convictions (proof of guilt) or of criminal justice sentences ('remedies') for offending, or a combination of both. The link found in this study between assault injury and sleep disruption may reflect chronic post-traumatic stress disorder, anxiety or depression.^{6,7}

On the basis of these findings, the principal health impacts of an antisocial lifestyle occur most frequently, not surprisingly, when antisocial behaviour is at its most frequent. Adverse impacts are of two types: short-term impacts – such as most injuries, and longer term impacts, such as psychological disorders and alcohol or other drug dependence. There are other long-term impacts, not assessed here, which include those associated with teenage pregnancy. This cohort of men reached the age of 25 (in 1978) before HIV infection became a significant risk. The results of this study are consistent with the association between antisocial behaviour and the constellation of impacts on health comprising DATES syndrome (Drug Abuse, Assault, Trauma and Elective Surgery).⁸ From a prevention standpoint, the obvious implication of this is to limit the chances of long-term effects like dependence, and, in view of the links between convictions and psychological disorders, chronic involvement with the criminal justice system. Reductions in convictions seem likely to have substantial benefits for mental health, particularly after the age of 20. Given links between convictions and psychological disorders, future research should seek to compare the impact of traditional criminal justice and of alternative criminal

justice 'remedies' such as restorative justice on the mental health of offenders.

Where risk taking is at its most prevalent, situational prevention and targeted policing is most effective.⁹ One implication of these findings is that prevention of offending and of childhood precursors of offending, for example, by pre-school education and early family support, is likely to improve health mainly by preventing injury and drug misuse in early adulthood and also by preventing psychological disorders and skin disease in subsequent decades. Another implication is that because an antisocial lifestyle is associated with comparatively low rates of illness at least up to age 32, research and health promotion effort should be invested in trying to identify underlying protective factors, events and mechanisms, whilst reducing opportunities and propensity to offend. Since alcohol may be at the root of both health protective effects and injury, alcohol harm reduction is an important priority.¹⁰ In this context, making sure that treatment for injury includes management of alcohol misuse, for example, by combining wound care for young males with brief alcohol interventions may be particularly cost effective.¹¹

At present, the prevention of offending and the prevention of injury and illness are considered and organized separately. The findings of this study, including positive associations between risk taking and health, suggest that a more integrated approach to prevention – in which offender rehabilitation and public health practitioners collaborate – would pay substantial dividends.

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