

DOI: 10.1002/cbm.2194

ORIGINAL ARTICLE

WILEY

Self-reported and general practitioner recorded indicators of lifetime health up to age 48 according to offender type in the Cambridge Study in Delinquent Development

Guy C. M. Skinner  | David P. Farrington 

Institute of Criminology, Cambridge University, Cambridge, UK

Correspondence

Guy C. M. Skinner, Institute of Criminology, Cambridge University, Sidgwick Avenue, Cambridge, CB3 9DA, UK.
Email: gs545@cam.ac.uk

Funding information

Economic and Social Research Council

Abstract

Background: Previous research has suggested that people with a history of offending have worse health compared to non-offenders, but it is less clear whether all types of offenders are at similar health risks. In a New Zealand birth cohort study, Moffitt evidenced three main offending trajectories—life-course-persistent (LCP), adolescence-limited (AL) and late-onset (LO) offending, subsequently confirmed in other substantial longitudinal studies.

Aims: Our aim was to explore the relationship between these offending trajectories and both self-reported (SR) and general practitioner (GP) (primary care) recorded health indicators.

Methods: Self-reported medical data at age 48 were obtained for 394 men followed since age 8 years in the Cambridge Study in Delinquent Development. In addition, medical records were obtained from GPs for 264 of them. Health indicators from both sources were compared between each of the three established trajectories of offenders across the life course—LCP, AL, LO and the non-offenders.

Results: LCP offenders were found to have over twice the likelihood of disabling medical conditions according to both self-report and GP records. They were also more likely to

This is an open access article under the terms of the Creative Commons Attribution License, which permits use, distribution and reproduction in any medium, provided the original work is properly cited.

© 2021 The Authors. Criminal Behaviour and Mental Health published by John Wiley & Sons Ltd.

have GP records indicating mental health problems and treatment for them. According to GP records alone, the LO offenders were also more likely to have mental health problems. The health of AL offenders appeared to be no different from that of the crime-free controls.

Conclusions: Our findings add weight to the growing evidence that LCP offending and offending that only occurs relatively late in life are likely to be the indicators of generally unhealthy and disrupted lives. This suggests that if lifestyle is to change for the better, interventions are likely to be needed for health as well as antisocial behaviour.

KEYWORDS

adolescence-limited, life-course-persistent, late-onset health, medical records, offender trajectories

1 | INTRODUCTION

There is a substantial body of research which suggests that offending and poor health are associated (Borschmann et al., 2020; Farrington, 1995; Fazel & Baillargeon, 2011; Holzer, AbiNader, Vaughn, Salas-Wright & Oh, 2020; Odgers et al., 2007; Shepherd, Farrington & Potts, 2002; Testa & Semenza, 2020). There is evidence, for example, that young offenders and adults with criminal records are more likely to have a history of physical injuries of various kinds (Hughes et al., 2020). Literature also suggested that sexually transmitted, blood-borne infections and tuberculosis are also frequently seen among offenders (Kinner et al., 2018).

With respect to mental health problems more specifically, suicide as well as other premature mortality of offenders is well reported (Borschmann et al., 2014; Skinner & Farrington, 2020a, 2020b). Research has also indicated that depression, anxiety and post-traumatic stress disorders are common amongst young people who have contact with the criminal justice system (Karnick et al., 2009). This finding has been clarified by a recent meta-analysis, establishing that, while both externalising mental disorders and comorbid externalising/internalising disorders were linked to criminal behaviour, internalising problems alone did not have such an association (Wibbelink, Hoeve, Stams & Oort, 2017).

Much of the data on health and offending, however, are cross-sectional. Longitudinal investigations of associations between offending and health outcomes are uncommon and studies with community resident samples are rare. Findings have emerged from the Cambridge Study in Delinquent Development (CSDD) and other longitudinal studies, such as Piquero and colleagues' (2007) work on the Baltimore portion of the US National Collaborative Perinatal Project (Piquero, Daigle, Gibson, Piquero & Tibbetts, 2007; Piquero, Shepherd, Shepherd & Farrington, 2011; Skinner, Farrington & Shepherd, 2020) that longer criminal careers are associated with a significantly higher incidence of poor physical and mental health, in addition to an increased incidence of hospitalisation.

Nonetheless, there is still a lack of research investigating differences in health outcomes between different types of offenders. In this regard, important new opportunities have emerged in the CSDD, which provides prospective longitudinal data on injury, illness and treatment-seeking behaviour, as well as data concerning offending trajectories. This unique dataset therefore allows us to investigate whether offender health concerns differ according to the type of criminal career. Furthermore, general practitioner (GP) records and data self-reported to CSDD researchers, uniquely, were collected at similar time points, making it possible to compare

the two streams of reported medical data longitudinally over 48 years for different offender trajectories. The main aim of this study was a short report to compare health between different offending trajectories, taking account of the different systems of health reporting.

2 | METHODS

2.1 | The Cambridge Study in Delinquent Development

The CSDD is a prospective longitudinal survey of the development of offending and antisocial behaviour in 411 London males. The details of interviews and tests involving the boys, teachers, parents and peers have been published (Shepherd et al., 2002, 2004). The men were interviewed in a research office at ages 16, 18 and 21, and in their homes at ages 25, 32 and 48, by trained social science graduates. At all ages except 21 and 25, the aim was to interview the whole sample. It always proved possible to trace and interview a high proportion—for example, 389 of 410 who were still alive at age 18 (95%), 378 of 403 who were still alive at age 32 (94%) and 365 of 394 who were still alive at age 48 (93%). Criminal records of these males have been obtained up to age 61, by which time, as alive and living in the United Kingdom, 360 of them were still at risk of offending (Farrington, 2019).

2.2 | Offender trajectories

Distinct offender groups were studied according to the taxonomy of Moffitt (1993) and Jolliffe et al. (2017a, 2017b). These have been framed as life-course-persistent (LCP), adolescence-limited (AL) and late-onset (LO) offenders (Farrington, Ttofi & Coid, 2009; Jolliffe et al., 2017a; McGee & Farrington, 2010; Moffitt, 2006, 2018; Moffitt & Caspi, 2001; Piquero, Jennings & Barnes, 2012). LCP offenders were defined as those who committed their first offence before age 20 and then at least one additional offence at age 30 or later (up to age 61). AL offenders were defined by committing their first offence before age 20 but having their last recorded conviction before age 30. LO offenders were those whose first recorded conviction was at or after age 21.

2.3 | Ethics approval

The interviews received ethical approval from the Institute of Psychiatry, King's College London, and the Institute of Criminology, University of Cambridge.

2.4 | Health data

At age 48, 304 men completed a medical interview for the research (89% of the 343 who had the core face-to-face social interview) and each was asked for consent for us to obtain their medical records from their GPs. Data were requested from every GP surgery where an individual had been registered, and full primary care data (paper records) from birth up to age 48 were returned for $N = 264$ men, 87% of those who completed the medical interview but only 77% of those with a social interview. The GP data were then coded into binary (Yes/No) variables. Physical illness categories were respiratory tract, cardiovascular, musculoskeletal, skin, allergic, gastrointestinal and infectious illnesses. Severity was in part indicated by disabling medical conditions. Mental illness was indicated by psychological episodes and psychiatric inpatient admissions. Service use was indicated by outpatient admission for mental health problems, ever hospitalised as a medical inpatient, and surgical admissions.

In social interviews, self-reports of all illnesses that had occurred at ages 16–18, 27–32 and 43–48 were collected. The ages at interview (18, 32 and 48) were determined by the availability of funding. Illnesses were coded into the same health categories as described above for the GP records, with the exception of outpatient admission for mental health problems and surgical admissions, which were not asked about because of shortage of time in a wide-ranging interview (Skinner et al., 2020). There were two separate hospitalisation variables: the number of hospital visits mentioned within social interviews conducted at ages 32 and 48, and a second ever hospitalised variable computed from the aforementioned medical interview. For comparison of GP and self-report data, because the mean age of the men was 48 years at the time of receiving the GP records, we combined all the age 18, 32 and 48 self-report data into cumulative variables up to age 48. We note, however, that the self-report data do not cover the whole period up to age 48. Both sets of data are contemporaneous and prospective.

3 | RESULTS

Offending trajectory distribution across the whole sample was: LCP: $N = 54$; AL: $N = 76$; LO: $N = 42$; non-offenders: $N = 222$. Within our final sample, over 90% of men in each group had provided self-reported health data (LCP: 100%; AL: 96%; LO: 100%; NO: 99%). Although a majority had GP data, this was available for fewer men in the offender and non-offender groups (LCP: 54%; AL: 72%; LO: 64%; NO: 69%).

3.1 | Associations between health and offending

Table 1 shows that, among LCP offenders, there was an elevated likelihood of disabling medical conditions compared with non-offenders, although numbers were small. According to the social interviews, LCP offenders were more likely than healthy controls to report ever having been hospitalised, and there was a tendency also for the other two offender groups to do so. Fewer people overall completed the medical interview; in this context, none of the health care differences proved significant.

Table 2 shows that, in the smaller cohort of men with GP records, these confirmed the greater likelihood of disabling physical conditions in the LCP offender group but also showed that these men were more likely to have had mental health problems and to have been in receipt of at least outpatient treatment for them. Also, according to GP records, late onset offenders were more likely than non-offenders to have mental health problems. Otherwise, the offender groups did not differ from the controls.

4 | DISCUSSION

All sources of data suggested that the LCP offenders were particularly vulnerable to problems with their health, although had we been reliant on self-report alone the difference from healthy controls seemed to be mainly in physical health conditions. Where GP records were available, it was clear that the LCP offenders also have mental health problems, as did LO offenders. The health of AL offenders appeared in all measures to be no different from that of healthy controls. This may suggest that intervention strategies attempting to limit offending to adolescence would be particularly effective in reducing poor health outcomes across the life course.

LCP offenders have a higher likelihood of being hospitalised according to SR data but not according to GP records (but overall hospitalisation rates in GP records were very high). It may be that the cohort was from a particularly disadvantaged area with respect to health and social characteristics, and findings should be viewed in this context.

TABLE 1 Prevalence and odds ratios of self-reported health in types of offenders compared to non-offenders

	LCP		AL		LO		N-OFF	
	N	OR	N	OR	N	OR	N	OR
Physical illness (284/394)	40 (74.1%)	1.20 (0.62-2.36)	57 (78.1%)	1.50 (0.81-2.80)	28 (66.7%)	0.84 (0.42-1.70)	159 (70.4%)	
Disabling medical condition (14/358)	5 (10.0%)	5.58* (1.44-21.62)	3 (4.4%)	2.32 (0.51-10.63)	2 (5.7%)	3.05 (0.54-17.30)	4 (2.0%)	
Mental illness (34/395)	5 (9.3%)	0.95 (0.34-2.62)	6 (8.2%)	0.83 (0.32-2.13)	1 (2.4%)	0.23 (0.03-1.73)	22 (9.7%)	
Hospitalised (social interview age 32 and 48) (217/380)	39 (72.2%)	2.43* (1.27-4.68)	46 (63.0%)	1.59 (0.92-2.75)	23 (54.8%)	1.13 (0.58-2.20)	109 (51.7%)	
Ever hospitalised (medical interview) (180/304)	31 (72.9%)	1.91 (0.92-3.98)	33 (55.9%)	0.94 (0.52-1.71)	20 (69.0%)	1.64 (0.71-3.82)	96 (55.5%)	

Notes: Percentages in parentheses in data columns. 95% confidence intervals in parentheses.

Abbreviations: AL, adolescence-limited offenders; LCP, life-course-persistent offenders; LO, late-onset offenders; N-OFF, non-offenders; OR, odds ratio.

*p < 0.05.

TABLE 2 Prevalence and odds ratios of GP-reported health in types of offenders compared to non-offenders

	LCP N = 29		AL N = 55		LO N = 27		N-OFF N = 153	
		OR		OR		OR		OR
Physical illness (152/264)	17 (58.6%)	1.04 (0.90–1.21)	33 (60.0%)	1.07 (0.38–1.23)	16 (59.3%)	1.06 (0.91–1.22)	86 (56.2%)	
Disabling medical condition (64/264)	11 (37.9%)	1.66* (1.37–1.99)	12 (21.8%)	0.95 (0.78–1.17)	6 (22.2%)	0.97 (0.79–1.19)	35 (22.9%)	
Mental illness (103/264)	17 (58.6%)	1.79* (1.53–2.11)	21 (38.2%)	1.17 (0.98–1.39)	15 (55.6%)	1.70* (1.45–2.00)	50 (32.7%)	
Outpatient admission for mental health problem (47/264)	8 (27.6%)	1.57* (1.27–1.93)	8 (14.5%)	0.82 (0.65–1.04)	4 (14.8%)	0.84 (0.66–1.06)	27 (17.6%)	
Ever hospitalised (234/264)	26 (89.7%)	1.04 (0.91–1.18)	50 (90.9%)	1.05 (0.93–1.20)	26 (96.3%)	1.12 (0.98–1.27)	132 (86.3%)	
Surgical admission (221/264)	26 (89.7%)	1.12 (0.97–1.26)	47 (85.5%)	1.06 (0.93–1.20)	24 (88.9%)	1.10 (0.96–1.25)	124 (81.0%)	

Notes: Percentages in parentheses in data columns. 95% confidence intervals in parentheses

Abbreviations: AL, adolescence-limited offenders; LCP, life-course-persistent offenders; LO, late-onset offenders; N-OFF, non-offenders; OR, odds ratio GP, general practitioner.

* $p < 0.05$.

The findings here indicate that exploring health and offender trajectories over the life course is valuable, in line with Moffitt's (1993) theory, providing useful temporal insights for intervention. These findings also highlight that it is useful to compare different data sources for health outcomes, especially when comparing hospitalisation records; in the same way, different sources of offending data have previously been compared (Auty, Farrington & Coid, 2015; Borschman et al., 2017; Farrington, Ttofi, Crago & Coid, 2014; Keen, Kinner, Borschmann & Young, 2020; Kirk, 2006).

This brief report adds weight to the growing evidence that LCP offending and offending that only occurs relatively late in life are likely to be risk factors for worse health outcomes. This work provides evidence that interventions are needed to not only address anti-social behaviour at temporally sensitive periods, but that interventions which address the health ramifications of offending are also needed.

ACKNOWLEDGEMENTS

The CSDD data collection was funded mainly by the Home Office and the Department of Health. Guy Skinner's PhD studentship was funded by the ESRC DTP. For carrying out criminal record searches, we are very grateful to Gwen Gundry in the 1960s and 1970s, Lynda Morley in the 1980s, Sandra Lambert in the 1990s, Debbie Wilson in the 2000s, Owen Thomas in 2011-12, and Lisa Robinson in 2017. We are also grateful to Professor Donald West for obtaining and coding the GP data, and to Dr Crystal Romilly for conducting the medical interviews at age 48.

CONFLICT OF INTERESTS

There were no conflicts of interests.

DATA AVAILABILITY STATEMENT

Research data cannot be shared because of confidentiality considerations..

ORCID

Guy C. M. Skinner  <https://orcid.org/0000-0002-2134-3913>

David P. Farrington  <https://orcid.org/0000-0003-1312-2325>

REFERENCES

- Auty, K. M., Farrington, D. P., & Coid, J. (2015). The validity of self-reported convictions in a community sample: Findings from the Cambridge Study in Delinquent Development. *European Journal of Criminology*, 12(5), 562–580.
- Borschmann R., Coffey C., Moran P., Hearps S., Degenhardt L., Kinner S. A., & Patton G. (2014). Self-Harm in Young Offenders. *Suicide and Life-Threatening Behavior*, 44(6), 641–652.
- Borschmann, R., Janca, E., Carter, A., Willoughby M., Hughes N., Snow K., Stockings E., Hill N. T. M., Hocking J., Love A., Patton G. C., Sawyer S. M., Fazel S., Puljjevic C., Robinson J., & Kinner S. (2020). The health of adolescents in detention: A global scoping review. *The Lancet Public Health*, 5(2), 114–126.
- Borschmann, R., Young, J. T., Moran, P., Spittal, M. J., Snow, K., Mok, K., & Kinner, S. A. (2020). Accuracy and predictive value of incarcerated adults' accounts of their self-harm histories: Findings from an Australian prospective data linkage study. *Canadian Medical Association Journal Open*, 5(3), E694–E701.
- Borschmann, R., Young, J. T., Moran, P., Spittal M. J., Snow K., Mok K., & Kinner S. A. (2017). Accuracy and predictive value of incarcerated adults' accounts of their self-harm histories: Findings from an Australian prospective data linkage study. *CMAJ Open*, 5(3), E694–E701.
- Farrington, D. P. (1995). Crime and physical health: Illnesses, injuries and accidents. *Criminal Behaviour and Mental Health*, 5, 261–278.
- Farrington, D. P., Ttofi, M. M., & Coid, J. W. (2009). Development of adolescence-limited, late-onset, and persistent offenders from age 8 to age 48. *Aggressive Behavior*, 35, 150–163.
- Farrington, D. P., Ttofi, M. M., Crago, R. V., & Coid, J. W. (2014). Prevalence, frequency, onset, desistance and criminal career duration in self-reports compared with official records. *Criminal Behaviour and Mental Health*, 24, 241–253.

- Farrington, D. P. (2019). The duration of criminal careers: How many offenders do not desist up to age 61? *Journal of Developmental and Life-Course Criminology*, 4, 4–21.
- Fazel, S., & Baillargeon, J. (2011). The health of prisoners. *Lancet*, 377, 956–965.
- Holzer, K. J., AbiNader, M. A., Vaughn, M. G., Salas-Wright, C. P., & Oh, S. (2020). Crime and violence in older adults: Findings from the 2002 to 2017 national survey on drug use and health. *Journal of Interpersonal Violence*. <https://doi.org/10.1177/0886260520913652>
- Hughes, N., Ungar, M., Fagan, A., Murray, J., Atilola, O., Nichols, K., Garcia, J., & Kinner, S. (2020). Health determinants of adolescent criminalisation. *Lancet Child & Adolescent Health*, 4(2), 151–162.
- Jolliffe, D., Farrington, D. P., Piquero, A. R., Loeber, R., & Hill, K. G. (2017a). Systematic review of early risk factors for life-course-persistent, adolescence-limited, and late-onset offenders in prospective longitudinal studies. *Aggression and Violent Behavior*, 33, 15–23.
- Jolliffe, D., Farrington, D. P., Piquero, A. R., MacLeod, J. F., & van de Weijer, S. (2017b). Prevalence of life-course-persistent, adolescence-limited, and late-onset offenders: A systematic review of prospective longitudinal studies. *Aggression and Violent Behavior*, 33, 4–14.
- Karnick, N. S., Soller, M., Redlich, A., Silverman, M., Kraemer, H. C., Haapanen, R., & Steiner, H. (2009). Prevalence of and gender differences in psychiatric disorders among juvenile delinquents incarcerated for nine months. *Psychiatric Services*, 60(6), 838–841.
- Keen, C., Kinner, S. A., Borschmann, R., & Young, J. T. (2020). Comparing the predictive capability of self-report and medically-verified non-fatal overdose in adults released from prison: A prospective data linkage study. *Drug and Alcohol Dependence*, 206, 107742.
- Kinner, S. A., Snow, K., Wirtz, A. L., Altice, F. L., Beyrer, C., & Dolan, K. (2018). Age-specific global prevalence of hepatitis B, hepatitis C, HIV, and tuberculosis among incarcerated people: A systematic review. *Journal of Adolescent Health*, 62, 18–26.
- Kirk, D. S. (2006). Examining the divergence across self-report and official data sources on inference about the adolescent life-course of crime. *Journal of Quantitative Criminology*, 22, 107–129.
- McGee, T. R., & Farrington, D. P. (2010). Are there any true adult-onset offenders? *British Journal of Criminology*, 50, 530–549.
- Moffitt, T. E. (1993). Adolescence-limited and life-course-persistent antisocial behavior: A developmental taxonomy. *Psychological Review*, 100(4), 674–701.
- Moffitt, T. E. (2006). Life-course-persistent versus adolescence-limited antisocial behavior. In D. Cicchetti, & D. J. Cohen DJ (Eds.), *Developmental psychopathology: Risk, disorder, and adaptation* (pp. 570–598). Wiley.
- Moffitt, T. E. (2018). Male antisocial behaviour in adolescence and beyond. *Nature Human Behaviour*, 2, 177–186.
- Moffitt, T. E., & Caspi, A. (2001). Childhood predictors differentiate life-course persistent and adolescence-limited antisocial pathways among males and females. *Developmental Psychopathology*, 13, 355–375.
- Ogders, C. L., Caspi, A., Broadbent, J. M., Dickson, N., Hancox, R. J., Harrington, H., Poulton, R., Sears, M. R., Thomson, W. M., & Moffitt, T. E. (2007). Prediction of differential adult health burden by conduct problem subtypes in males. *Archives of General Psychiatry*, 64(4), 476–484.
- Piquero, A. R., Daigle, L. E., Gibson, C., Piquero, N. L., & Tibbetts, S. G. (2007). Are life-course-persistent offenders at risk for adverse health outcomes? *Journal of Research in Crime and Delinquency*, 44, 185–207.
- Piquero, A. R., Jennings, W. G., & Barnes, J. C. (2012). Violence in criminal careers: A review of the literature from a developmental life-course perspective. *Aggression and Violent Behavior*, 17, 171–179.
- Piquero, A. R., Shepherd, I., Shepherd, J., & Farrington, D. P. (2011). Impact of offender trajectories on health: Disability, hospitalization, and death by middle age in the Cambridge study in delinquent development. *Criminal Behaviour and Mental Health*, 21, 189–201.
- Shepherd, J., Farrington, D. P., & Potts, J. (2002). Relations between offending, injury and illness. *Journal of the Royal Society of Medicine*, 95, 539–544.
- Shepherd, J. P., Farrington, D. P., & Potts, A. J. C. (2004). Impact of antisocial lifestyle on health. *Journal of Public Health*, 26, 347–352.
- Skinner, G. C. M., & Farrington, D. P. (2020a). A systematic review and meta-analysis of offending versus suicide in community (non-psychiatric and non-prison) sample. *Aggression and Violent Behavior*, 52, 1359–101421.
- Skinner, G. C. M., & Farrington, D. P. (2020b). A systematic review and meta-analysis of premature mortality in offenders. *Aggression and Violent Behavior*. <https://doi.org/10.1016/j.avb.2020.101431>
- Skinner, G. C. M., Farrington, D. P., & Shepherd, J. P. (2020). Offender trajectories, health and hospital admissions: Relationships and risk factors in the longitudinal Cambridge Study in Delinquent Development. *Journal of the Royal Society of Medicine*, 113(3), 110–118.
- Testa, A., & Semenza, D. (2020). Criminal offending and health over the life-course: A dual-trajectory approach. *Journal of Criminal Justice*. <https://doi.org/10.1016/j.jcrimjus.2020.101691>

Wibbelink, C. J. M., Hoeve, M., Stams, G. J. J. M., & Oort, F. J. (2017). A meta-analysis of the association between mental disorders and juvenile recidivism. *Aggression and Violent Behavior, 33*, 78–90.

How to cite this article: Skinner GCM, Farrington DP. Self-reported and general practitioner recorded indicators of lifetime health up to age 48 according to offender type in the Cambridge Study in Delinquent Development. *Crim Behav Ment Health*. 2021;1–9. <https://doi.org/10.1002/cbm.2194>