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Debuts and legacies: the crime drop and the role of adolescence-limited and persistent offending

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Abstract

Age-specific arrest rates for the United States at the crime peak of the late 1980s and early 90s are compared to those for 2010. Three key features are explored; (1) The disproportionate decline in adolescent offending; (2) The decline in this age-effect up to age 40; (3) Offenders aged in their 40s who in 2010 offended at higher rates than offenders of that age at crime's peak. The first two are interpreted as consistent with the *debut crime hypothesis*: crime fell because reduced crime opportunities made adolescent crime, and hence criminal career onset and continuance, more difficult. We interpret the third as a *legacy* of increased onset and habitual criminality fostered by exploitation of the plentiful crime opportunities of the 1970s and 80s. Implications for theory and practice are identified.

Keywords: Crime drop, Crime decline, Security hypothesis, Adolescence-limited offending, Life-course persistent offending

Background

The great crime decline is probably the most important criminological issue of modern times, and it raises many questions. What caused many types of crime, including homicide, other violence and car theft, to decline so precipitously from the early 1990s? What can society do to maintain this downward trajectory? What might be learned that can be applied to reduce crime types that have increased such as cyber-crime? What are the implications for criminological theory and the study of criminal careers? The present study contributes to discussion primarily with respect to the latter.

Various explanations for the crime drop have been proffered. These can be grouped into those relating to criminal justice policies (more and better policing; more imprisonment), those that concern the inadvertent consequence of other public policies (abortion legalisation; reduced lead poisoning), those attributing it to exogenous change (demographics; immigration; waning crack markets) or to long-term societal change grouped into the broad but vague notion of a civilising process (for reviews see: Levitt 2004; Zimring 2007; Blumstein and Rosenfeld 2008; Farrell 2013).

Much of the first two decades of explanatory research focused on violence in the United States. Two facts broadened the discussion. The first was that vehicle theft fell at a similar time and rate as violence in the United States (Fujita and Maxfield 2012). This suggested that a singular emphasis on violence is misplaced, and property crime must be considered. The second was that most other high income countries experienced a crime decline. Hence the collection of work edited by van Dijk et al. (2012) refers to an international crime drop (see also Tseloni et al. 2010; Knepper 2012; Tonry 2014).

The shift in research focus has been accompanied by theoretical progress. Crime opportunity theories, that is, rational choice and routine activities linked to situational crime prevention, have been applied via the 'security hypothesis'. Research relating to Australia, Germany, the Netherlands, the UK and the US provides strong evidence that the steep decline in car theft, often around three-quarters, was due to the spread of high quality vehicle security including electronic immobilizers and

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central locking systems, with tracking devices appearing effective more recently (Brown 2004, 2013; Laycock 2004; Kriven and Ziersch 2007; Bassman 2011; Farrell et al. 2011; Fujita and Maxfield 2012; Van Ours and Vollaard 2013). These studies posit that reduced crime opportunities simply made it more difficult to offend. In addition, there is increasing evidence that improvements in household security caused burglary to fall (Van Dijk 2008; Tilley et al. 2011, 2015). In the US though, household burglary rates and larceny theft rates had been falling far longer than violent crime or motor vehicle crime—since the 1970s and through the 1980s according to the National Crime Victimization Survey (Bureau of Justice Statistics 1994). An extremely high volume acquisitive crime that also appears to have declined since the 1990s is shoplifting: Tilley (2010) lists 31 mainly situational measures that are likely responsible—from the meeting-and-greeting of customers to RFID-tags or locked cabinets for frequently stolen products.

Research into how changes to the opportunity structure caused the drop in violent crime is in its infancy. We anticipate that many types of commercial robbery will be found to have been directly reduced by security improvements: bank robbery is largely a thing of the past, for example. Robberies of bus drivers declined because exact fare payments and cash drop-boxes meant the money was no longer a viable target. Violence against taxi drivers has fallen due to measures including bandit-screens, with in-vehicle cameras reducing driver homicides (Chaumont Menéndez et al. 2014). Transportation systems more generally have seen reduced violence with, to paraphrase Smith and Cornish (2006), situational prevention bringing secure and tranquil travel. The design and management of licensed premises is known to affect crimes on site and nearby. Violence at and related to major public sporting and other events has been greatly reduced through situational measures including alcohol controls, organised transportation of fans, in-stadia segregation of rival fans and their monitored departure. Improvements to household security may conceivably account for reductions in intimate partner violence, particularly by separated partners who can no longer gain easy access—and similar mechanisms may have reduced violence between neighbours, siblings and other acquaintances. These are examples of the potential direct effect of security upon violence, and we expect many others to be identified as research progresses.

The indirect effects of security upon violence are beginning to be explored in terms of the diffusion of their preventive benefits. These have more specifically been framed as the keystone crime and debut crime hypotheses (Farrell et al. 2011). The keystone crime hypothesis notes how many crime types are inter-related, such that removing the high volume acquisitive crimes caused a collapse in violence—just as the removal of the keystone from an arch causes all stones to tumble. For example, stolen cars are sometimes used in the commission of other crimes, so car theft's extirpation would have a much broader impact. Likewise, declines in stolen goods markets due to falling acquisitive street crime would be expected to reduce violence relating to those markets.

The indirect effect of primary interest to the present study is the debut crime hypothesis. This draws on the finding that the first and early-career offences of young offenders are more likely to be the high volume acquisitive crimes (Svensson 2002; Owen and Cooper 2013). If security has reduced these crimes then this could have positive knock-on effects where involvement in one offence is causally implicated in the commission of another, for example theft of cars and ram raiding (Light et al. 1993). A study of police-sanctioned offenders found that "offenders who had committed robbery, burglary or vehicle theft as their debut offence were almost three times more likely to be chronic offenders" and that "5 percent of the cohort became chronic offenders… responsible for nearly one half of all proven offences" (Owen and Cooper 2013; 4). Shoplifting as the debut offence was also twice as likely as the average to produce persistent offenders. Given that violent crime is more likely to result in formal sanction because offenders are more readily identified by victims, these official estimates are likely to be conservative indicators of the role of the acquisitive crimes in determining criminal career trajectories. The same study identified offenders receiving formal sanctions at younger ages as those more likely to persist.

The debut crime hypothesis bridges concerns with patterns of criminality to those of crime events, which have tended hitherto to be treated separately. Whilst quite a lot has been learned about the crime drop in terms of crime patterns less has been learned about how this has been expressed in changing patterns of criminality. Has the onset of criminality been delayed, with an unchanging average rate for those who do offend (constant age-related lambda)? Has desistance from crime, which ultimately occurs amongst almost all offenders, come earlier with unchanging average rates of those who do offend (constant age-related lambda)? Have onset and desistance ages remained the same, but rates of offending declined (reduced age-related lambda)? Or some mix of these? Moreover, is there a causal connection between crime event changes and patterns of criminality changes and if so, in which direction does it operate and by what underlying mechanisms? This paper aims to contribute to unpacking the change in patterns of criminality associated with the crime drop and to understanding the

causal direction and mechanism, but further work will be needed. So far the criminal careers research literature does not appear to have engaged with the crime drop and there is little attention to the significance of crime opportunities for criminal careers (DeLisi and Piquero 2011).

The debut crime hypothesis suggests a causal direction between crime opportunities and criminal careers, with three linked propositions:

(a) The reduction in debut crimes has been brought about by security improvements, which make them more difficult, more risky or less rewarding.
(b) A consequence of the reduction in debut crimes is that fewer young people become involved in criminal careers, which typically involve a wide range of offences.
(c) A lower rate of entry into criminal careers brings with it a reduction in a wide range of offences, including acquisitive and violent ones.

Many criminal career research studies involve tracking cohorts of individuals to collect data on their levels of offending behaviour as well as other variables that may be associated with that offending. This sometimes leads to the production of catalogues of risk factors and sometimes to tests of specific hypotheses relating to the mechanisms that lie behind initial involvement, continued involvement and desistance from offending. The debut crime hypothesis suggests that there may be cohort effects brought about by changes in the nature and distribution of opportunities for debut crimes. The supply of debut opportunities is not unchanging and if it shrinks, fewer young people will be drawn into offending careers, whilst if it expands more will be drawn in with wider-ranging crime trend legacies. The 1950s to 1980s saw a blossoming of crime opportunities for cohorts of young people at peak crime ages, as stressed by Cohen and Felson (1979), drawing many into offending careers. These lead to two further propositions:

(d) More recent cohorts of those at the peak age of offending have experienced fewer opportunities than earlier post-World War II cohorts.
(e) The legacy of the criminal careers kick-started by prolific opportunities for those in adolescence in the 1980s should still be visible amongst offenders whose formative criminal involvement occurred at that time.

Recent studies of criminality have tended to emphasise population heterogeneity, according to which some individuals have a set of genetic, epigenetic, family, peer and community experiences that dispose them to criminality (see DeLisi and Piquero's 2011 narrative review of 364 criminal careers research studies from 2000 to 2011). Changes in the life course in the nature and distribution of these dispositional states are hypothesised to produce onset, continuance and desistance from criminality. But there have also been suggestions that there is event or state dependency in criminal careers, whereby the commission of one crime is causally connected to the commission of another (see Heckman 1981, for a formal discussion of heterogeneity and state dependence and its application to female labour market participation trajectories, and Laub and Sampson 2003, for its application to criminal careers research). Labelling theory emphasises event dependency as a mechanism underlying criminal careers: the bestowal of a criminal identify following the commission of a crime and processing through the criminal justice system leads to fewer non-crime opportunities and to acceptance of a criminal identity that fosters continued criminal behaviour. Other causal pathways producing event dependency could include positive feedback from offending–getting away with it and benefiting from its fruits; increased skills in offending; reduced inhibition from offending once rules have been breached; habituation to offending; drug dependence enabled by debut acquisitive crimes; and increased time with offending peers who endorse, normalise or rationalise offending (see Light et al. 1993 on this, specifically as it relates to car theft). The following further propositions are suggested:

(f) Event dependent pathways to criminality are blocked with reduced opportunities for debut offences.
(g) The effects of debut crime inhibition may be further multiplied by reducing the supply of young early offenders who can induct others into offending and hence trigger the onset of criminal careers.

Moffitt et al. emphasise variations in levels of 'self-control' as the main attribute that lies behind criminal disposition. Those with low self-control are hypothesised to be more liable to become involved in crime, are easily drawn into criminal behaviour (and other risky behaviour), and find it more difficult to extricate themselves. In their discussions of ways in which 'policy-makers might exploit (low self control) by enacting so-called "opt-out" schemes that tempt people to eat healthy food, save money, and obey lays by making these the default options that require no effortful self-control' (Moffitt et al. 2011: 2673), they aver that 'the idea behind crime reduction policy of "target hardening" is to discourage would-be offenders by making law-breaking require effortful planning (e.g. antitheft devices require more advance planning to steal a car)' (ibid). This sits well with the hypothesis being advanced here. If Moffitt et al. are correct, this suggests an additional proposition for the debut crime hypothesis,

(h) With security improvements, fewer neophyte offenders are drawn into event-dependent versatile criminal careers.

Moffitt (1993; see also Moffitt et al. 2002) proposed a taxonomy of offending that distinguishes adolescence-limited, life-course persistent offenders and abstainers. The distinction is a controversial one. Sampson and Laub have been highly critical on the basis of very long-term criminal careers research, tracking a sample of males born before the second world war, who had initially been followed by the Gluecks from age 10–17, until they reach 70. Sampson and Laub find patterns of episodic offending and near-universal desistance at some point (Sampson and Laub 2004, 2005; Laub and Sampson 2003). Nevertheless, DeLisi and Piquero report, 'voluminous empirical support' for it (DeLisi and Piquero 2011: 292). Moffitt was writing in the early 1990s when it appeared to be a universal truth that the majority of young persons (mainly young men) committed one or a small number of crimes in their teens then quickly desisted, and constituted the category of adolescence-limited offending. In other words abstainers seemed rare. More recent research in the United States found continuing low levels of abstention: across two successive self-report surveys of males and females each covering the previous 12 months, only 13.56 per cent of adolescents admitted no offences or antisocial behaviour (Barnes et al. 2011).

Of the smaller proportion of the population who become life-course persistent offenders, Moffitt writes:

> *With slight variations, this general relationship between age and crime obtains among males and females, for most types of crimes, during recent historical periods and in numerous Western nations (Hirschi and Gottfredson, 1983). (Moffitt 1993; 675)*

and continues:

> *Until recently, scholars still disagreed about whether the adolescent peak represented a change in prevalence or a change in incidence: Does adolescence bring an increment in the number of people who are willing to offend or does the small and constant number of offenders simply generate more criminal acts while they are adolescent? Empirical evaluations now suggest that the former explanation is correct. (Moffitt 1993; 675–676)*

If Moffitt is correct, it follows from this statement that the crime increase in the 1980s and 1990s was primarily an increase in the prevalence of adolescence-limited offending, and that the crime decrease was primarily a decrease in the prevalence of adolescence-limited offending. Hence, we propose that,

(i) The change in the adolescent component of the age-crime curves up to 2010 is driven more by a decrease in the prevalence rather than the frequency of offending.

The crux of the present study is that we conjecture that changes in age-related offending patterns in the context of overall widespread drops in many crimes can be largely understood using the theoretical framework of crime opportunity theory and the security hypothesis that was described earlier. That is, we propose that the disproportionate drop in adolescence-limited offending is what would be expected were a reduction in crime opportunities the cause of the crime drop. Put another way, the age-crime curves examined herein present a data signature that we interpret as consistent with reduced crime opportunities.

Our further conjecture is that crime opportunities are an important determinant of the rate of criminal career continuance, such that

(j) When crime opportunities are plentiful there is more continuance than when they are scarce.

Since adolescents with less experience and fewer resources for offending are more susceptible to crime blocking by improved security—as found by, for example, the studies of declining car theft where youthful joyriding declined disproportionately—there are grounds to infer a significant debut crime inhibition effect induced by improved security measures. The present study pursues this avenue of inquiry by linking changes in age-related offending patterns to key criminal career concepts. It identifies data signatures (distinct patterns in data that would be expected if a given hypothesis were true—see Eck and Madensen 2009) consistent with the debut crime hypothesis. We are far from the first to observe the key role of adolescents in the crime peak and crime drop: Cook and Laub (2002), for example, termed the prior crime peak an 'epidemic of youth violence', while Butts (2000) observed a 'youth crime drop'. However, the present study makes its original contribution through its particular usage and interpretation of the age-crime curves examined below, the way the findings are linked to theories of criminality and of the crime drop, and in the identification of potentially significant implications for theory and policy.

Method

The data are age-specific arrest rates collated by the Office of Juvenile Justice and Delinquency Prevention (OJJDP) from the Uniform Crime Report program and the Bureau of Justice Statistics.[a] We use arrest rates as a

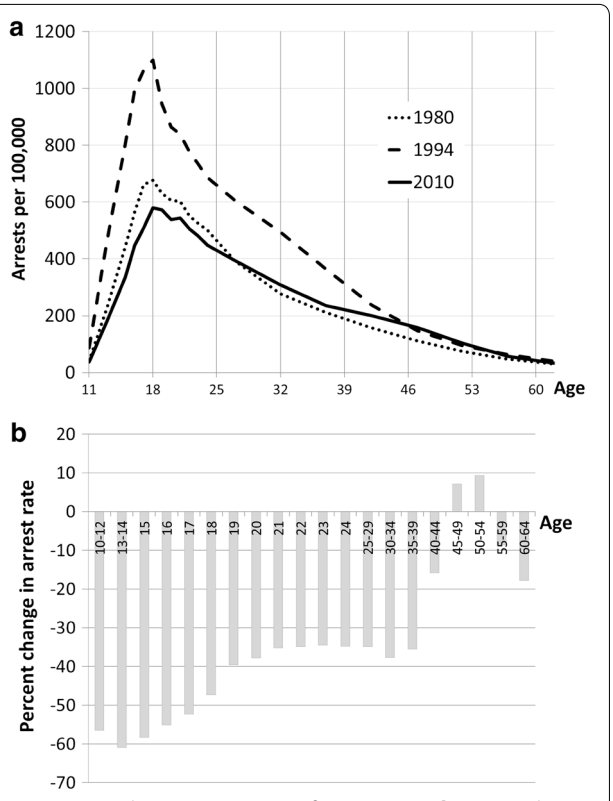

Figure 1 **a** Violent crime (age-specific arrest rates). **b** Percent change in violent crime arrest rates 1994–2010.

proxy for offending rates, and for simplicity often refer to offending rather than arrests. However, arrests are clearly an imperfect measure of offending because only a fraction of offending results in arrest. Among the various methodological issues, the most important to note here is that the number of arrests rather than persons is counted, which means some people are included more than once (Puzzanchera 2013; Snyder and Mulako-Wangota 2011). For present purposes though, the arrest rates are the best available indicators and there are sound precedents (see e.g. Blumstein et al. 1986; Farrington 1986). Trends in arrest rates will, *ceteris paribus*, reflect offending trends, and while changes in policing practice and exogenous factors mean the veracity of the *ceteris paribus* assumption is uncertain, the data described below offer good reason to conclude it is not unreasonable for present purposes.

The data are analysed for an aggregate group of property crimes and an aggregate group of violent crimes, and for the following specific crime types: murder (including non-negligent manslaughter), rape, robbery, aggravated assault, motor vehicle theft, burglary and, larceny theft. The violent crime group category comprises murder and non-negligent manslaughter, forcible rape, robbery and aggravated assault, that is, the serious violent crimes. The property crime group category comprises burglary, larceny-theft (including shoplifting, theft from motor vehicles and bicycle theft), motor vehicle theft and arson.

The analysis spans three decades, using data from 1980 and 2010 as the first and last years, and using a 'middle' year each time to represent the crime-specific peak arrest year. There is some variation by crime type in the peak year, the exceptions being burglary and larceny theft which, as noted, were in steady decline over the three decades and for which 1991 is used as the comparative intermediate year.

Results

Pairs of charts are shown for violent and property crimes, as Figures 1 and 2. The first chart of each pair (Figures 1a, 2a) is the well-known age-crime curve (Farrington 1986): there is one line for each year showing arrest rates, with age on the abscissa and the per capita rate on the ordinate. In the second chart in each pair (Figures 1b, 2b), the bars show the percentage difference between the 2010 arrest rate and the peak year. Age is grouped in the second figures of each pair, for ages 10–12 and 13–14, and into 5-year groups from age 25. This follows the format used in the OJJDP data.[b] Figures 3, 4, 5, 6, 7, 8, 9 show age-crime charts for seven individual crime types. Figures 1 and 2 contain most of the main features of interest but, by providing further detail, Figures 3, 4, 5, 6, 7, 8, 9 illustrate the variation between crime types that is not evident in the grouping of violent and property crime.

The overall shape of each age-crime curve is familiar: a steep rise from the youngest ages to a peak in early adulthood which is followed by a rapid decline that flattens and slowly tails off among older age groups. However, a difference in the age-crime curve between years (the lines) is particularly distinct in Figures 1a and 2a. Most notably, the arrest rate in 2010 was dramatically lower among the younger age groups. Property crime arrests (Figure 2a) exhibit a slightly later peak age in 2010 than earlier years. Note that, for property crime, the 1980 and 1988 age-crime curves are closer together than those for violence because, as noted earlier, there was not the same increase in property crimes in the 1980s that there was in violence.

At first glance it is visually less obvious that, towards the right side of each of Figures 1a and 2a, the age-crime curves for 2010 *cross* the earlier year. This is counterintuitive: it means that the 2010 arrest rate of offenders in their 40s and 50s (age groups 40–54 for property crime and 45–54 for violence) was higher than it was two decades earlier when the crime rate was far higher. This is shown most clearly in Figures 1b and 2b when the bars switch from a negative to a positive difference.

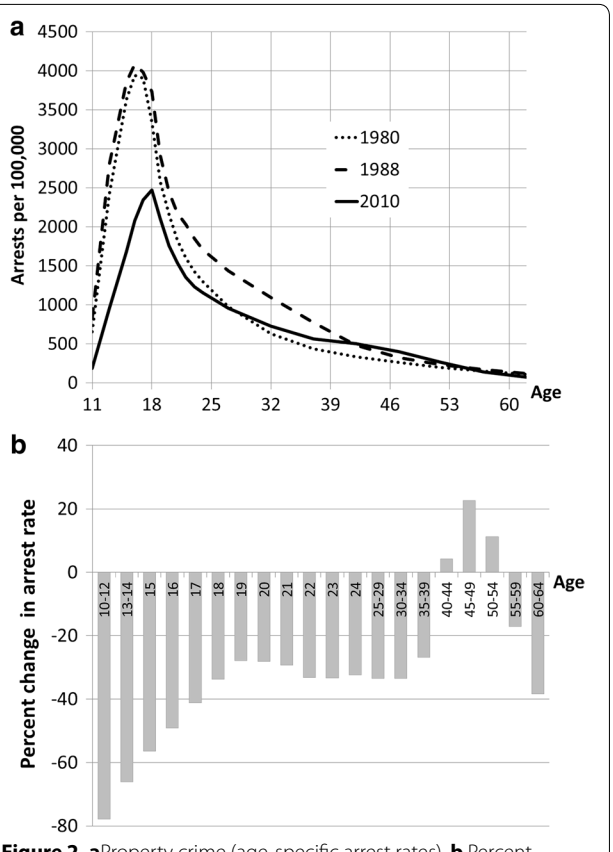

Figure 2 **a**Property crime (age-specific arrest rates). **b** Percent change in property crime arrest rates 1988–2010.

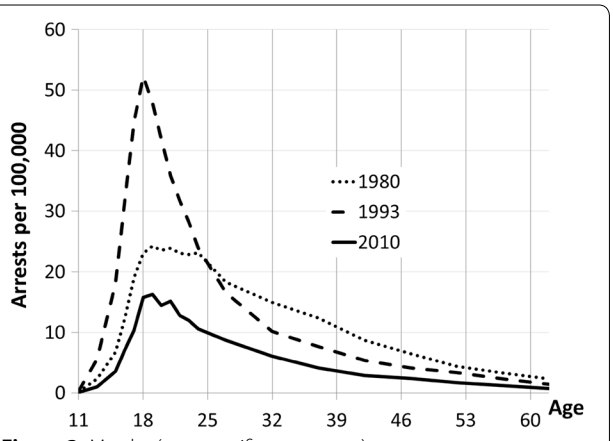

Figure 3 Murder (age-specific arrest rates).

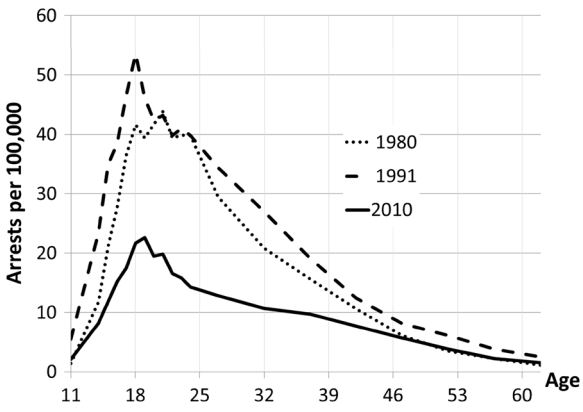

Figure 4 Rape (age-specific arrest-rates).

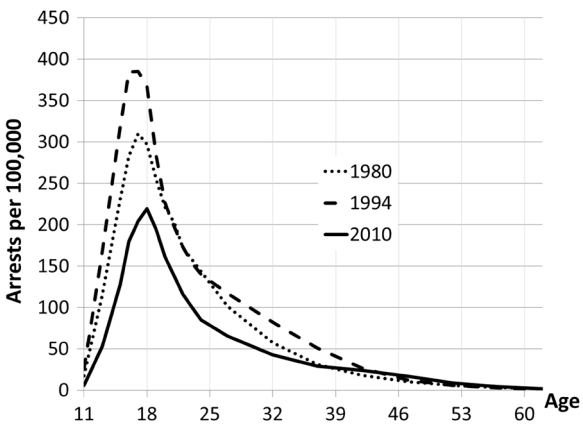

Figure 5 Robbery (age-specific arrest rates).

The largest decline in the 2010 violence rate was among those aged 13–14, with a 61 percent decline, and there was a halving of the rate up to age 17 (Figure 1b). The peak age for violence was age 18 in all years shown, with a decline of 47 percent from 1994 to 2010. A decline of a third or more is evident for all age groups up to age 40. By 2010, offenders aged 45–54 had higher violence rates than offenders of the same age in 1994.

The largest decline in the property crime rate by 2010 was among 10–12 year olds, the youngest ages for which data were available, with declines of half through to age 16. By 2010 the highest rate was at age 18 compared to 16 previously, though the rate had declined by a third among that age group. A decline of similar magnitude is found in most ages for property crime until age 40. In contrast, for age groups 40–54, the 2010 arrest rate was higher.

Figures 3, 4, 5, 6 show four individual categories of serious violence, and for the most part they exhibit features similar to the aggregate violence category of Figure 1. Note, however, that unlike violence more generally, murder and forcible rape (Figure 3a, b) did not have higher 2010 arrest rates for those offenders in their 40s.

Figures 7, 8, 9 show the three individual categories of property crime. Whereas all violent crimes peaked in the early 1990s then fell dramatically, there is greater variation in the property crimes because burglary and

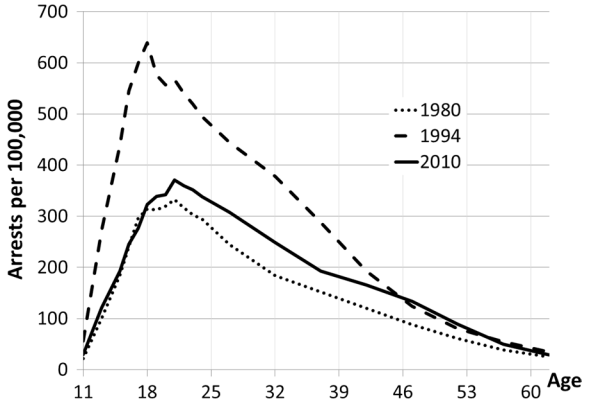

Figure 6 Aggravated assault (age-specific arrest rates).

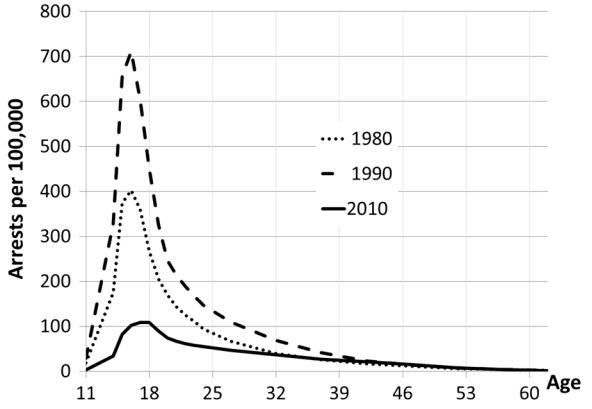

Figure 7 Motor vehicle theft (age-specific arrest rates).

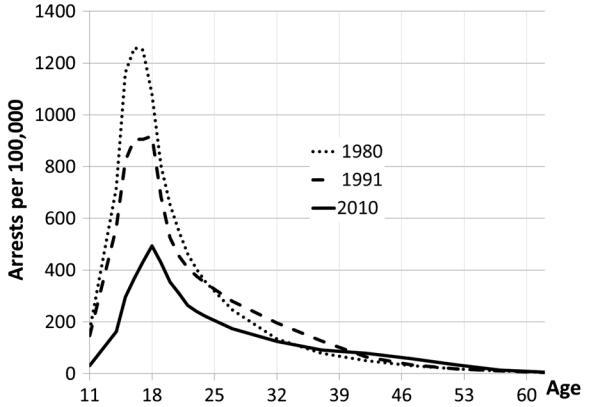

Figure 8 Burglary (age-specific arrest rates).

larceny-theft had been falling for longer. Motor vehicle theft, however, exhibits a pattern very similar to that of the violent crimes. Here it is clear that both the peak of

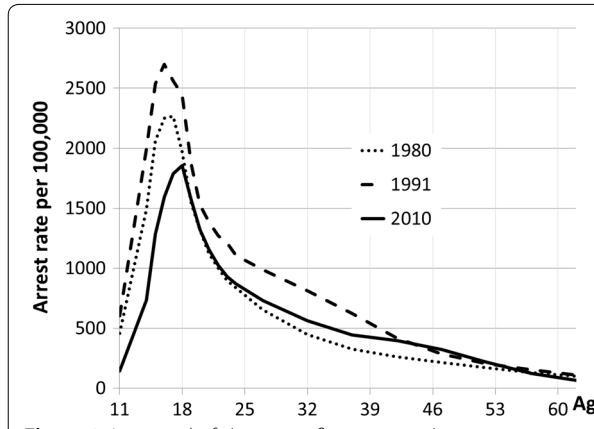

Figure 9 Larceny theft (age-specific arrest rates).

1990 and the subsequent decline relate almost entirely to variation in adolescent offending.

The spread of the age-crime curves is worthy of note. Generally speaking, the property crimes have very steep age-crime spikes as they are dominated by adolescent offending. The peak is less exaggerated for violent crimes, with forcible rape and aggravated assault in particular being somewhat less skewed, indicative of a greater proportion of arrests among older offenders.

Among age groups from 40 to 54, it was evident that by 2010 the arrest rates increased compared to when crime was at its peak. This is in stark contrast to what would have been anticipated if the crime drop impacted uniformly upon the prevalence of offending irrespective of age. Yet it makes sense if we consider that offenders aged in their 40s in 2010 most likely began their criminal careers in the 1970s and 1980s. Offenders aged 40–54 in 2010 were aged 24 to 38 in 1994. We conjecture that these offenders are those who were old enough to have completed their debut crime offending and to have established themselves, whereas younger potential offenders were more likely to be affected by improved security measures. That is, the offenders in their 40s by 2010 learned their trade when crime opportunities were plentiful; earning quick and easy rewards that meant they became less likely to desist. We interpret this increased rate of older offenders in the years leading up to 2010 as a negative *legacy* of the plentiful crime opportunities of the 1970s and 80s.

Discussion

There is strong evidence that most offenders are versatile, or generalists, though there is some specialization. Most crime is property crime not violence, and so the careers of most life-course offenders tend to be dominated by property crime. Farrington observed that.

"Only a small proportion of offenses in criminal careers are violent: 15 percent up to age 40 in the Cambridge Study … 9 percent up to age thirty in the first Philadelphia age cohort study … and 5 percent up to age twenty-five in the Stockholm Project Metropolitan… In American research limited to the juvenile years, most recorded violent offenders have committed only one recorded violent offense. For example, the average number of violent offenses per violent offender was 1.32 for the first Philadelphia birth cohort and 1.38 for the second Philadelphia birth cohort … The same conclusion follows from juvenile offender samples; 83 percent of violent juveniles in Columbus committed only one recorded violent offense … However adult careers of violence can be much more extensive, at least in the United States. … [I]n Columbus between 1950 and 1976 … 20 percent had five or more arrests for violence, and 53 percent had between two and four such arrests." (Farrington 1998; 435).

A more recent review concludes:

"In a long-term analysis of specialization using conviction records from the South London male cohort through age 40, Piquero et al. (2007) found little evidence of specialization in violence and concluded that the strongest predictor of a violent conviction over the course of a criminal career was the number of convictions. More frequent offenders had a higher likelihood of conviction for a violent crime." (Piquero et al. 2014; 14).

Recall that Owen and Cooper (2013) found that offenders who committed robbery, burglary or vehicle theft as their debut offence were the most likely to become chronic offenders. Hence, by setting the criminal career research findings alongside the security hypothesis in the context of age-crime curves relating to the crime drop, we infer support for the debut crime hypothesis: as discussed above, the evidence showing that improved vehicle security reduced motor vehicle theft is largely unequivocal, and the fall in vehicle theft immediately preceded that of violent crime.

It is possible that homicides and sexual offences have been prevented by the removal of debut crimes. We infer support for this possibility from the fact that criminal career research identifies a lack of offence specialization:

"The analyses of specialization in criminal careers suggest that there is little specific concentration within offense types among most offenders. This overall conclusion holds with respect to different samples, measures of offending (including the incorrect presumption of specialization among sex offenders; Zimring et al. 2008, 2009), and time periods." (Piquero et al. 2014; 15; emphasis added).

Further support for the interpretation offered here is provided by other key areas of research. A comprehensive review of deterrence suggests that crime is often a relatively marginal activity and that even serious prolific offenders, including those involved in gang violence, can be nudged away from it if the right levers are pulled (Kennedy 2009). Victims of one type of crime are disproportionately likely to experience other types of crime (Feinberg 1980; Reiss 1980), so preventing one of those might reduce the likelihood of repeats by the same and different crime types—which also squares with the crime drop being disproportionately a fall in repeat victimization (Britton et al. 2012; Ignatans and Pease, forthcoming).

The rise in cyber crime in recent years has led to speculation that perhaps there has not been a real fall in crime but instead there has been displacement. The precise level of cyber crime remains unknown but it certainly seems to be widely experienced. Indeed, in terms of numbers of incidents it appears to have overtaken 'conventional criminal victimization' (UNODC 2013: 28). Two points are worth making here. First, our work on the crime drop has so far stressed that although security improvements have been widespread they have been expressed largely in terms of drops in the specific crimes where security improvements have been most targeted, notably vehicle theft and burglary. The hypothesis that security was a major source of the widespread drops in those volume crimes because it restricted opportunity for them is consistent with the expectation that where new opportunities for crimes arise, such as those associated with the internet, increases in those crimes can be expected. It is not the case, however, that the fall in the one is necessarily causally related to the increase in the other. This would assume that the same offenders switch from the one to the other which seems highly unlikely. The general evidence for displacement suggests that it is relatively uncommon and is incomplete (Guerette and Bowers 2009). Moreover, the rewards, motivations, tools, experience and resources needed for cyber-crime are very different from, say, those needed for car theft or burglary. The best evidence available suggests a population of older and more organised offenders than found in past volume crimes (UNODC 2013: 39-50). Secondly, car theft and violent crime fell in the US from 1991 (burglary and theft falling earlier) and property crime in the UK from 1992. America Online (AOL), however, first made the internet public in 1994 and initially its access was slow (involving dial-up) and to begin with it spread only quite slowly to those lower income sections of the population most associated with the commission of earlier volume crimes. Thus as

Farrell et al. (2014) observe, the internet arrived too late to explain the initial downturn in crime.

Conclusion

Our principal concluding hypothesis is that crime opportunities are a key determinant of rates of both adolescence-limited and life-course persistent offending. Further evidence is required from other countries, analytic approaches and data signatures, to confirm or refute this hypothesis. However the potential significance is, we feel, considerable, and more than sufficient to warrant the present study. Taken to its logical conclusion, it implies that situational crime prevention, particularly security technologies, may be more realistic means of influencing criminal careers than the developmental approaches that seem to dominate the literature on adolescence-limited and life-course persistent offending.

Our two further conclusions are as follows. First, more recent higher offending rates among offenders aged in their 40s suggest that both problem-solving efforts and incarceration policies may be relatively more important for that age group now than previously. Second, the changing composition of the criminal population, in particular the reduction in young people entering the criminal justice system on a long-term basis in more recent years, invites a rethink in criminal justice policy and policing tactics.

The steep decline in adolescence-limited offending that was examined here is consistent with it becoming less easy for young inexperienced offenders to embark on a criminal career when crime opportunities became scarcer. In addition, the fact that recent offending rates are higher than two decades before among those aged in their 40s is telling: these are the offenders who began their careers in the 1970s and 80s when it was easy and tempting. Once into a criminal career, they likely found it harder to get out.

We finish with an optimistic prediction based on extrapolation from the present findings: twenty or so years from now, offending rates for street and common crime among offenders aged in their 40s will have switched to be lower than they are at present. This will be beneficial legacy of our current low rates of criminal career onset and continuance that are due to reduced crime opportunities.

End notes

[a]Arrest estimates developed by the Bureau of Justice Statistics and disseminated through 'Arrest Data Analysis Tool'. Online. Available from BJS website: OJJDP Statistical Briefing Book. Online. Available: http://ojjdp.gov/ojstatbb/crime/qa05308.asp?qaDate=2010. Released December 17, 2012 (accessed 19 February 2014). These were supplemented with motor vehicle data from the Bureau of Justice Statistics Arrest Data Analysis tool (Snyder and Mulako-Wangota 2011), available at http://www.bjs.gov/index.cfm?ty=datool&surl=/arrests/index.cfm (accessed 20-25 March 2014).

[b]As the OJJDP data were grouped in this fashion, we assigned the group value to the mid-point age of each age group for the charts.

Authors' contributions

GF: intellectual input, analysis, writing. GL and NT: intellectual input, writing. All authors read and approved the final manuscript.

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Competing interests

The authors declare they have no competing interests.

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