Available online at www.sciencedirect.com
SCIENCE DIRECT®
Journal of Research in Personality 37 (2003) 257–272
JOURNAL OF RESEARCH IN PERSONALITY
www.elsevier.com/locate/jrp

Why productivity fades with age: The crime–genius connection

Satoshi Kanazawa*

Department of Psychology, University of Canterbury, Private Bag 4800, Christchurch, Canterbury, New Zealand

Abstract

The biographies of 280 scientists indicate that the distribution of their age at the time of their greatest scientific contributions in their careers (age–genius curve) is similar to the age distribution of criminals (age–crime curve). The age–genius curves among jazz musicians, painters and authors are also similar to the age–crime curve. Further, marriage has a strong desistance effect on both crime and genius. I argue that this is because both crime and genius stem from men's evolved psychological mechanism which compels them to be highly competitive in early adulthood but "turns off" when they get married and have children. Fluctuating levels of testosterone, which decreases when men get married and have children, can provide the biochemical microfoundation for this psychological mechanism. If crime and genius have the same underlying cause, then it is unlikely that social control theory (or any other theory specific to criminal behavior) can explain why men commit crimes and why they desist.

1. Introduction

> A person who has not made his great contribution to science before the age of thirty will never do so.
>
> Albert Einstein (Brodetsky, 1942, p. 699)

* Fax: +64-3-364-2181.
E-mail address: Satoshi.Kanazawa@canterbury.ac.nz.

0092-6566/02/$ - see front matter © 2002 Elsevier Science (USA). All rights reserved.
doi:10.1016/S0092-6566(02)00538-X

Anecdotal evidence abounds that artistic genius or productivity fades with age. Paul McCartney has not written a hit song in years, and now spends his time painting. J.D. Salinger now lives as a total recluse and has not published anything in more than three decades. Orson Welles was mere 26 when he wrote, produced, directed and starred in *Citizen Kane*, which many consider to be the greatest movie ever made.

The relationship between age and genius appears to be the same in science. It is often said that physics and mathematics are young men's games, and physicists and mathematicians tend to think they are over the hill at age 25 (Mukerjee, 1996). John von Neumann, putatively the most brilliant scientist who ever lived, used to assert brashly when he was young that mathematical powers decline after the age of 26, and only the benefits of experience conceal the decline—for a time anyway. (As von Neumann himself aged, however, he raised this limiting age.) (Poundstone, 1992, p. 16). James D. Watson made the greatest discovery in biology in the 20th century at the age of 25, winning the Nobel prize for it, but has not made any other significant scientific contribution for the rest of his career.

This paper addresses two questions. Does productivity truly fade with age? If so, what explains this phenomenon? While the question of why productivity fades with age in itself may be of trivial scientific importance, I will argue that the study of the age trajectories of scientists and other geniuses illuminates a very important question in behavioral science: Why men commit crimes and why they desist. I will note that the relationship between age and genius, not only among scientists but among musicians, painters, and authors as well, is very similar to the relationship between age and criminality, and suggest that this is because the same mechanism produces the expressions of both genius and criminality. I will further note that marriage has the same negative effect on both genius and criminality, and thus any criminological theory that explains the desistance effect of marriage purely in terms of social control is not sufficient (because scientists, unlike criminals, are not subject to social control, and because scientific work is not illegal or deviant in any way).

2. Does productivity really fade with age?

In order to examine the relationship between age and scientific productivity, I study a random sample of the biographies of 280 scientists (mathematicians, physicists, chemists, and biologists) from *The Biographical Dictionary of Scientists* (Porter, 1994). There are a few scientists from the 16th and 17th centuries, but the overwhelming majority comes from the 18th century to the present. The biography of each scientist in this dictionary follows the same format. The first, brief paragraph lists the scientist's full name, years of birth and death, his nationality and field of research, and the most significant scientific contribution in his entire career. (97.8% of the scientists in my sample are male.) For most Nobel laureates, this is the discovery or research for which they won the Nobel prize.

The next one or two paragraphs detail the scientist's educational career and the history of institutional affiliations—where he received his degrees and which positions he held at what institutions. Then the next few paragraphs summarize

the research career of the scientist, enumerating the dates of major discoveries and publications. I use the date of the discovery or experiment which is listed in the first paragraph as the scientist's most significant contribution in his career to denote the *peak* of his career. If the date of the discovery or experiment is different from the date of its publication, I use the former date. Then I calculate the scientist's age at the peak of his career, by subtracting the year of his birth from that of his peak.

Fig. 1 presents the distribution of the peak age among the 280 scientists in my sample. It is apparent from the histogram that scientific productivity indeed fades very rapidly with age. Nearly a quarter (23.6%) of all scientists makes their most significant contribution in their career during the five years around age 30. Two-thirds (65.0%) will have made their most significant contributions before their midthirties; 80% will have done so before their early forties. The mean age for the peak of scientific career is 35.4; the median is 34.0. Most significantly, the interquartile range (the distance between the 75th and 25th percentile, encompassing the middle half of the

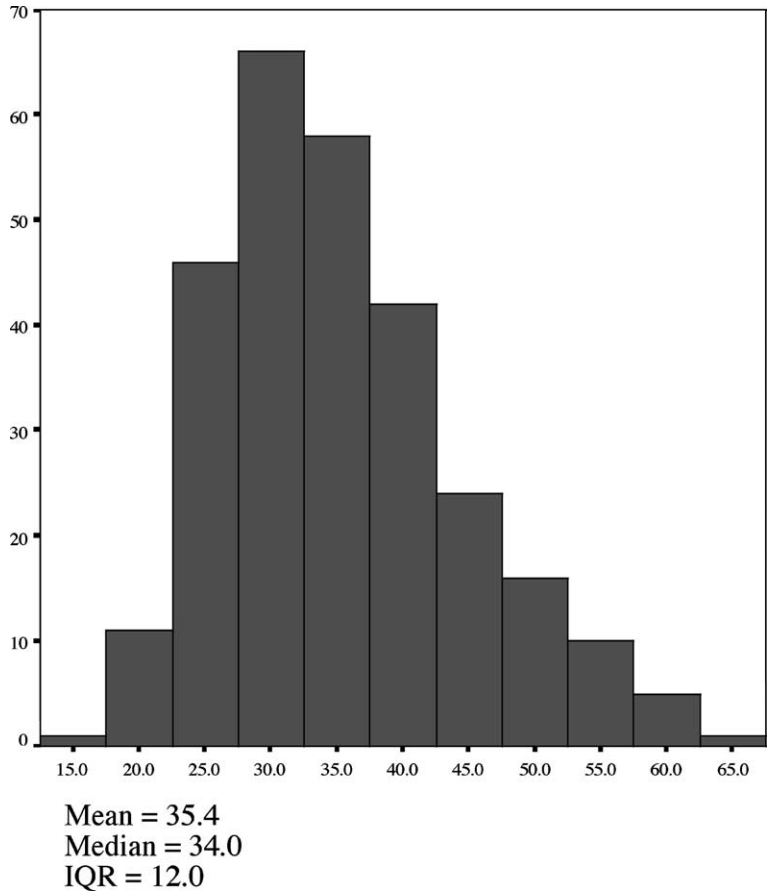


Fig. 1. The age of peak scientific achievement, 280 scientists.

distribution) is merely 12 years. Peak scientific productivity appears to occur in a quick burst within a few years of the scientists' lives around the age 30.

My data replicate Lehman's (1953) classic study of the history of scientific discoveries, which shows that more significant discoveries are made by younger scientists than by older ones, and thus the age of the scientist has a negative effect on the likelihood of making a significant discovery. My data are also consistent with Cole's (1973) and Levin and Stephan's (1991) studies of representative samples of contemporary scientists, which show that scientific productivity rapidly increases shortly after the Ph.D. and gradually declines thereafter. Taken together, the evidence does seem to indicate that scientific productivity appears to fade with age.

3. What about other types of productivity?

Fig. 1 demonstrates the age distribution of scientific productivity, but what about other types of productivity? Scientific discoveries are not the only way genius expresses itself. What about more artistic forms of genius? Music? Literature?

Fig. 2 presents the relationship between age and productivity in jazz music (Miller, 1999, Fig. 5.1). It plots, separately for men and women, the age at which 719 jazz musicians released their 1892 albums. (Unlike the age distribution of the greatest scientific discoveries in Fig. 1, the distributions in Fig. 2 counts the same musician more than once. However, Simonton's (1988, 1997) *equal-odds rule* asserts that scientists make the most significant contributions when they make the largest number of contributions. If Simonton is correct, then these two measures, one of quantity and the other of quantity, are equivalent.) Fig. 2 shows that the relationship between age and productivity in jazz music *among male musicians* is virtually identical to the relationship between age and scientific discoveries among largely male scientists in Fig. 1. There appears to be no discernible relationship between age and jazz productivity among female musicians. In this random sample of jazz albums produced between

Fig. 2. The age–genius curve among jazz musicians. *Source*: Miller (1999).

the 1940s and 1980s in the United States or Britain, the male musicians outnumber the female musicians by 20 to 1 (male:female = 685:34).

Fig. 3 presents the same relationship among modern painters (Miller, 1999, Fig. 5.2). It plots, separately for men and women, the age at which 739 artists painted 3274 painting. Once again, Fig. 3 clearly shows that the relationship between age and productivity in modern paintings *among male artists* is virtually identical to the age distribution of scientific discoveries in Fig. 1. Once again, the same relationship does not hold among female painters. In this exhaustive sample of every datable painting owned by the Tate Gallery, London, as of 1984, where the artist's last name begins with A through K, the male artists outnumber the female artists by roughly seven to one (male:female = 644:95).

Fig. 3. The age–genius curve among painters. *Source*: Miller (1999).

Fig. 4. The age–genius curve among authors. *Source*: Miller (1999).

Finally, Fig. 4 presents the same relationship among authors (Miller, 1999, Fig. 5.3). It plots, separately for men and women, the age at which 229 writers published 2837 books. Once again, Fig. 4 demonstrates that the relationship between age and literary productivity *among male authors* is virtually identical to the age distribution of scientific genius in Fig. 1. The same relationship among female authors, if it exists at all, is far weaker and seems to peak somewhat later. In this random sample of 20th century English-language fictions and nonfictions, the male authors outnumber female authors by roughly four to one (male:female = 180:49).

Thus the relationships between age and productivity in fields as varied as science, music, art and literature share two characteristic in common. First, in all fields, the age distribution among male practitioners has the virtually identical form. Second, in all fields, men far outnumber the women. What can possibly explain these common features in the age distribution of genius in such varied fields?

4. The crime–genius connection

The most curious aspect of the relationship between age and genius represented in Figs. 1–4 is that these distributions (which I would like to call the "age–genius curves") very closely resemble another very well-known age distribution: The invariant age–crime curve (Hirschi & Gottfredson, 1983), presented in Fig. 5. Criminologists widely recognize that criminal behavior, especially among men, rapidly rises during adolescence, peaks in late adolescence and early adulthood, and then equally rapidly declines through adulthood, reaching a plateau at a very low level around

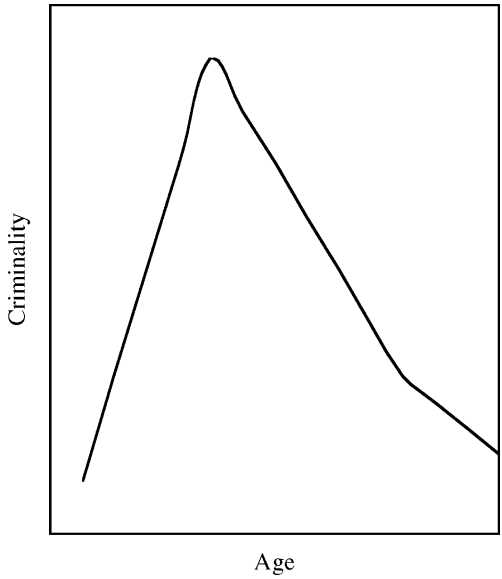


Fig. 5. The age–crime curve. *Source*: Kanazawa and Still (2000, p.435, Fig. 1).

age 40. (For empirical illustrations of the invariant age–crime curve, see Blumstein, 1995, Figs. 2 and 3; Daly & Wilson, 1990, Fig. 1; Hirschi & Gottfredson, 1983, Figs. 1–78). While the validity and universality of the invariant age–crime curve, with some minor variations, are beyond dispute in the criminological literature, there currently is no satisfactory theory that can explain why the relationship between age and criminal behavior takes the shape that it does.[1]

Kanazawa and Still (2000) offer an evolutionary psychological explanation for the invariant age–crime curve. They extend Daly and Wilson's (1988, 1990) theory of homicide and explain all types of violent and property crimes as consequences of young men's competition for access to women's reproductive resources. The theory posits that young men become rapidly violent and criminal during the years right after puberty. There is no point for prepubertal boys to compete for women, but the reproductive benefits of competition quickly rises after puberty, since post-pubertal men can translate increased access to women's reproductive resources into greater reproductive success (see Fig. 6a). The theory also explains the rapid decline in criminal behavior among adult men as a function of increased *costs* of competition and its potentially harmful effects on reproductive success (see Fig. 6b). While men can always increase their reproductive success by gaining greater access to women's reproductive resources, competition for women can result in their own death or injury, which would be detrimental to the welfare of their existing offspring. In other words, while the reproductive benefits of competition (interpersonal violence and property malappropriation) remain high for men for their entire lives (as Fig. 6a shows), the reproductive costs of such competition quickly increase after they have had children (as Fig. 6b shows). Their children will suffer if they are injured or killed in the course of the competition. Kanazawa and Still argue that this is why men desist quickly during early adulthood, when they were likely to have had their children in the ancestral environment. The age–crime curve is the mathematical difference between the reproductive benefits and costs of competition (see Fig. 6c).

It is important to keep in mind two significant points in any discussion of evolutionary psychological theory of human behavior (Kanazawa, 2001). First, evolved psychological mechanisms, such as the ones that compel young men to act violently

[1] There is another uncanny resemblance between crime and scientific productivity. Cole's (1979) study of a representative sample of contemporary mathematicians in the United States demonstrates that, while the career trajectories of a majority of mathematicians follow what I call the "age–genius curve," where their productivity, measured both by the quality and quantity of their publications, peaks very early in their careers and gradually declines thereafter, there is a small minority of mathematicians who produce a large quantity of high-quality work throughout their careers. This dichotomy of mathematicians is reminiscent of Moffitt's (1993) taxonomy of "adolescence-limiteds" and "life-course persistents" among criminals. Moffitt argues that most men's antisocial behavior peaks in adolescence and then declines throughout the rest of their lives (following the age–crime curve), while there is a small minority of career criminals who continue to engage in anti-social behavior throughout their lives. While my focus in this paper is on the majority of scientists and criminals whose expressions of genius and criminality follow a predictable life-course pattern, I would not be surprised if the same hormonal factors underlie the behavior of what Cole (1979) calls life-long "strong publishers" and that of what Moffitt calls "life-course persistents."

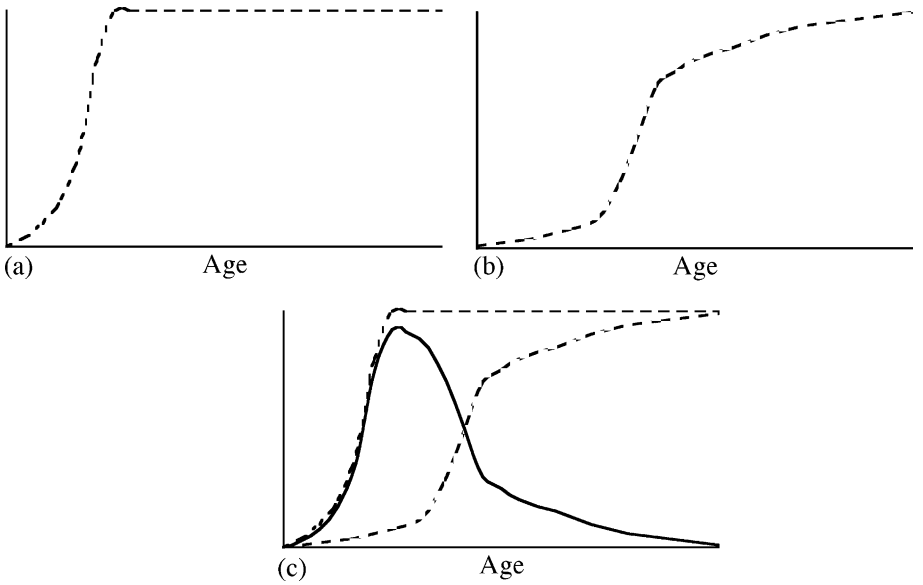


Fig. 6. The benefits and costs of competition and the age–crime (and age–genius) curve. (a) Reproductive benefits of competition. (b) Reproductive costs of competition. (c) Propensity toward competition = benefits – costs.

toward each other, operate *mostly behind conscious thinking*. Young men *feel like* acting violently or *want to* steal others' property, but they do not know why. Organisms (including humans) are usually not privy to the evolutionary logic that placed the psychological mechanisms in the brain to solve adaptive problems. Criminals themselves are therefore unaware of the ultimate causes of their behavior; they are not consciously pursuing reproductive success when they engage in criminal behavior. Their preferences and desire for violence and crime serve as the proximate causes of their behavior.

Second, all evolved psychological mechanisms are adapted to the ancestral environment where humans evolved for millions of years. Behavior that stems from evolved psychological mechanisms (such as criminal behavior) is therefore often maladaptive in the current environment, which is so vastly different from the ancestral environment. In particular, the psychological mechanism that compels young men to be violent and steal from others assume that there are no third-party enforcers of norms in the form of the police and the courts (because such things did not exist in the ancestral environment). The fact that criminals today can have lower reproductive success than law-abiding citizens is immaterial for the claim that the psychological mechanism that produces criminal behavior was once adaptive in the ancestral environment.

The logic of the theory requires that this psychological mechanism have evolved *before* informal norms against violence and theft emerged in the protohuman primate society in the course of evolution. Such psychological mechanism could not

have emerged after the emergence of norms against violence and theft, because then men would not be able to attract mates by eliminating competitors through violence and accumulating resources through theft. In the context of such informal norms, men with tendencies toward violence and theft would be ostracized and would not have attained greater reproductive success.[2] In fact, the norms against violence and theft probably emerged *in response to* men's evolved psychological mechanism that compels them to behave in antisocial ways. The fact that violent and predatory acts that would be classified as criminal if committed by humans are quite common among nonhuman species that do not have informal norms against such acts (Ellis, 1998) supports this speculation.

I suggest that the age–genius curve looks similar to the age–crime curve because the same psychological mechanism that compels men to commit crimes also compel them to make great scientific contributions and express their genius in other forms. This also explains why men far outnumber women both in crime and in various expressions of genius. Miller (1999, 2000) argues that the production of jazz music, modern paintings and books is an example of "cultural display" designed to attract mates. I contend, counterintuitive though it might sound at first, that the same psychological mechanism that compels men to engage in cultural display in order to attract mates, by producing cultural products or making scientific discoveries, also compel other men to engage in criminal activities. *Both crime and genius are expressions of young men's proximate competitive desires, whose ultimate function in the ancestral environment would have been to increase reproductive success.*

I contend that *productivity* (observable expressions of genius such as scientific discoveries, jazz albums, paintings, and books) is a function of two components: Genius and effort. *Genius* (or talent in some endeavor), while unobservable, clearly varies between individuals. Some have it, others do not. Further, different people have genius in different endeavors. J.D. Salinger could not have been the fifth Beatle; Paul McCartney could not have written *The Catcher in the Rye*. *Effort*, I contend, results from competitiveness, and all men have the universal age profile of competitiveness, which is probably identical to the age–crime curve and peaks in late adolescence and early adulthood. From this perspective, genius per se does not have to decline with age. It is instead the life-course fluctuations in effort (competitiveness) that makes productivity fade with age. Paul McCartney probably still has the genius which would allow him to write another *Yesterday*; he just does not feel like it, especially after his recent remarriage (see below).

Crime may be thought of as the "default" expression of male competitiveness, in two senses. First, unlike scientific and artistic endeavors, crime (young men killing each other to get access to available women) probably happened in the ancestral environment. (Our ancestors might have had primitive art and music, but they certainly did not produce CDs, portraits, and books.) Second, once again unlike scientific and artistic endeavors, criminal behavior does not require any special talent (or "Genius" in the equation: Productivity = Genius + Effort). This is why I believe the age–crime

[2] I thank Barbara J. Costello and Allan Mazur for independently making this point.

curve more closely resembles the age profile of competitiveness in men's life course than the age–genius curves. Crime is the product of men's competitiveness when they have no genius (that is, when genius = 0 in the equation Productivity = Genius + Effort). This is consistent with the well-known fact that criminals on average have lower intelligence than noncriminals.

Today, men can express their competitiveness (''effort'') in evolutionarily novel ways in science, music, art and literature, *if* they have talent (''genius'') in these endeavors. This is probably why the age–genius curves (in Figs. 1–4) peak somewhat later than the age–crime curve (Fig. 5). Productivity in arts and sciences, unlike crime, requires men to respond to evolutionarily novel stimuli and situations, and their response to such evolutionarily novel environments might be delayed. Their evolved psychological mechanism (competitive urge) may not respond to evolutionarily novel pursuits such as science and art as quickly or reliably. This is similar to the fact that our desire to reproduce, which we share with and inherit from our ancestors, is expressed much later in our lives (in terms of actual reproduction), compared to our ancestors, in the evolutionarily novel environment of post-industrial, monogamous society with compulsory education and reliable contraception. Likewise, the competitive urge of men who lack talent in any endeavors is expressed earlier in the evolutionarily familiar, default form of crime and violence, but the same competitive urge of men who have talent in some endeavors is expressed somewhat later in evolutionarily novel forms of science, music, art and literature.

Consistent with this reasoning, there is evidence to show that criminals, whose productivity peaks early, also marry earlier than noncriminals. In their prospective longitudinal study of 500 delinquents and 500 nondelinquents in the Boston area, Glueck and Glueck (1968) show that delinquent men on average marry earlier than their nondelinquent counterparts. For instance, more than twice as many delinquents marry at age 18 or younger as nondelinquents do (7.4% vs. 3.6%) while a larger proportion of nondelinquents postpone their first marriage until after 25 than do delinquents (33.8% vs. 28.1%) ($\chi^2 = 11.01$; $p < .05$) (Glueck & Glueck, 1968, p. 82, Table VIII-3).[3]

In the ancestral environment, most (if not all) competition between men was physical and its potential costs included death and physical injury. This is why men become increasingly less competitive as they age, because they must shift their reproductive effort from mating to parenting once they have children, and dead or injured men do not make good fathers (see Fig. 6). This is no longer true in the current environment, where men compete in scientific and artistic endeavors. There are no physical costs to competition in these evolutionarily novel endeavors; scientists do not literally perish when they fail to publish. However, men's competitive urge, adapted to the ancestral environment and the default form of competition (crime

[3] One reviewer points out that criminals mostly pursue resources, not status, whereas artists and scientists mostly pursue status, not resources. This difference in reproductive strategy can also potentially account for the difference in age peaks between crime and genius curves, *if* it takes men longer to attain status than resources.

and violence) nonetheless compels them to desist from competition as they get older, if more gradually than was the case in the ancestral environment. Their evolved psychological mechanism compels them to act as if competition always carries physical costs.

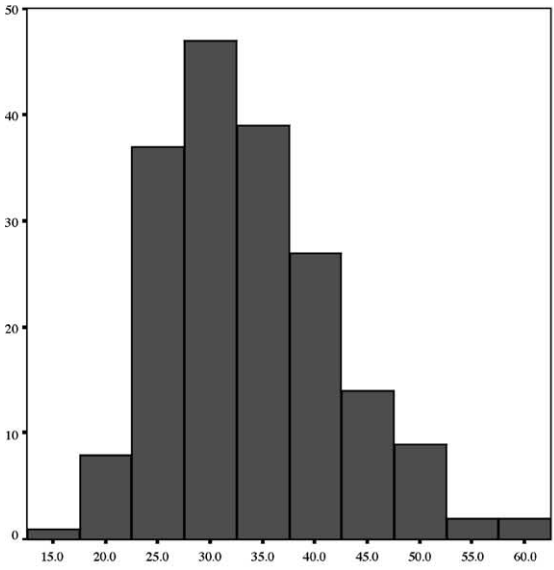
Miller (1999, 2000) argues that women judge men's underlying genetic quality by their "cultural displays" of artistic expressions. In the course of sexual selection, women have been selected to be attracted to men whose competitive urge manifests itself in arts and sciences. Men who can win the Nobel prize or the Grammy are obviously more capable than those who cannot. These men will, therefore, make better fathers and providers for their offspring, even though their competitive urge will soon decline after marriage and parenthood, and their productivity will fade. However, fathers do not have to win the Nobel prize or the Grammy every year to earn sufficient resources to make parental investment into the offspring. Their superior genetic quality has already been demonstrated when they were young and highly competitive. This is why highly competitive and successful men (in whatever endeavor) attract mates; they can bring in more resources and be better fathers even when they are not being highly competitive later in life.

5. The comparable effect of marriage on crime and genius

Crime and genius share something else in common: Marriage depresses both. Fig. 7 presents the age–genius curve separately for scientists who were married sometime in their lives ($n = 186$) and for scientists who remained unmarried for their entire lives ($n = 72$). (I used Debus (1968) and Gillispie (1970–1980) to obtain information on the scientists' marital history, but I was not able to ascertain the marital history of 22 scientists.) The histograms clearly show that the age–genius curve holds only for married scientists. The age–genius curve among these scientists is essentially the same as that for the entire sample, but the peak occurs a bit earlier in an even quicker burst (mean = 33.9, median = 32.5; IQR = 11.3).

In contrast, expressions of genius among scientists who never married do not decline sharply. Half as many (50.0%) unmarried scientists make their greatest contributions in their late 50s as they do in their late 20s. The corresponding percentage among the married scientists is 4.2%. The mean peak age among the unmarried scientists is 40.0, the median is 38.5, and the IQR is 16.8. The difference in the mean age between the married and unmarried scientists is statistically significant ($t = 4.83,\ p < .0001$).

Given that science did not exist in the ancestral environment, men's evolved psychological mechanism appears to be rather precisely tuned to marriage as a cue to "desistance." Nearly a quarter (23.4%) of all married scientists make their greatest contributions, and thus "desist," within five years after their marriage. The mean *delay* (the difference between their marriage and their peak) is mere 2.6 years; the median is 3.0 years. It, therefore, appears that scientists rather quickly desist after their marriage, while unmarried scientists continue to make great scientific contributions later in their lives. Similarly, Hargens, McCann, and Reskin's (1978) study demon-



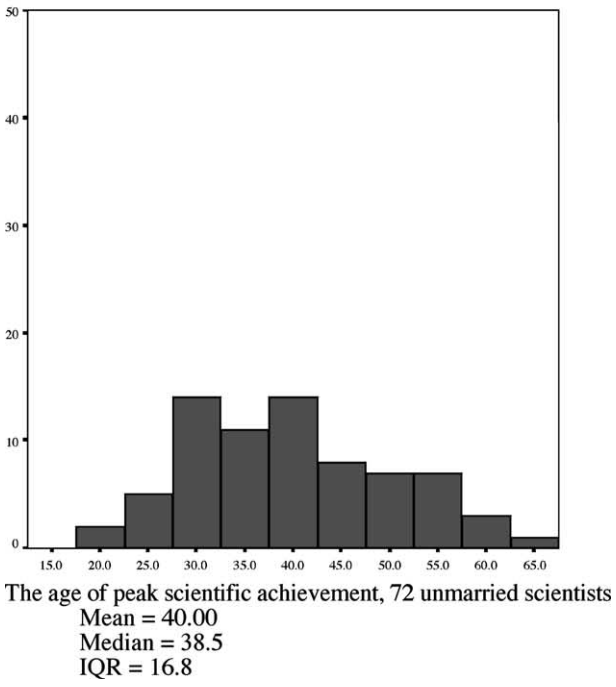


Fig. 7. The age–genius curve among the married and unmarried scientists.

strates that childless research chemists are more productive than those with children.[4]

This is exactly the pattern observed among criminals. Criminologists have known that one of the strongest predictors of desistance from criminal careers is good marriage (Laub, Nagin, & Sampson, 1998; Sampson & Laub, 1993). Criminals who get married, and especially those who maintain strong marital bonds to their wives, subsequently stop committing crime, whereas criminals at the same age who remain unmarried tend to continue their criminal careers.

Sampson and Laub (1993) and Laub et al. (1998) explain the strong desistance effect of marriage from the social control perspective (Hirschi, 1969). Marriage creates a bond to the conventional society, and investment in this bond, in the form of a strong marriage, makes it less likely that the criminal would want to remain in the criminal career, which is incompatible with the conventional life. Marriage also increases the scope and efficiency of social control. Now there is someone living in the same house and monitoring the criminal's behavior at all times. It would be more difficult for the criminal to escape the wife's watchful eye and engage in illicit activities.

However, Sampson and Laub's social control theory, and its explanation of the desistance effect of marriage, could not be the whole answer*if marriage has the same desistance effect on scientists*. Unlike criminal behavior, scientific activities are completely within the conventional society, and are thus not at all incompatible with marriage and other strong bonds to conventional society. Unlike criminals, scientists are not subject to social control (by their wives or otherwise) since scientific activities are not illegal or deviant in any way.

I believe an evolutionary psychological theory provides a more parsimonious explanation for the desistance effect of marriage for both crime and science in the form of a single psychological mechanism that compels young men to compete and excel early in their adulthood but subsequently turns off after the birth of their children. Further, there seems to be a biochemical microfoundation to the desistance effect of marriage. David Gubernick's unpublished experiment (discussed in Blum, 1997, p. 116) demonstrates that the testosterone levels of expectant fathers precipitously drop right after the birth of their children. Mazur and Michalek (1998) show that marriage decreases, and divorce increases, men's testosterone levels. If high levels

[4] Contemporary readers might suggest that unmarried scientists continue to make scientific contributions much later in their lives because they have more time to devote to their careers. Unmarried, and therefore childless, scientists do not have to spend time taking care of their children, driving them back and forth between their soccer practices and ballet lessons, or doing half of the household chores, and that's why unmarried scientists can continue making great contributions whereas married scientists must desist. This is precisely Hargens et al.'s (1978) interpretation of the negative correlation between parenthood and productivity among research chemists. I would remind the readers, however, that almost all the scientists in my sample lived in the 18th and 19th century, when married men made very little contribution in the domestic sphere and their wives did not have their own careers. Hargens et al.'s data come from 1969 and 1970, when this was probably still true to a large extent. I would, therefore, contend that, if anything, married scientists probably had more (rather than less) time to devote to science, because they had someone to take care of their domestic needs at all times.

of testosterone predispose men to be more competitive, then the sudden drop in testosterone after their marriage and the birth of their children might provide the biochemical reason why men's psychological mechanism to commit crime or make great scientific discoveries "turns off" when they get married and become fathers, and simultaneously why the same mechanism does not "turn off" when the men (be they criminals or scientists) do not get married.

Now there are other phenomena which exhibit similar age distributions, such as automobile accidents, and other risk-taking behavior. In fact, men who engage in crime and deviance are also prone to have accidents and engage in risk-taking behavior (Hirschi & Gottfredson, 1994). Criminologists have known that criminals do not specialize; men who engage in one type of crime also engage in many others. I believe it is entirely possible that different types of crime and deviance, accidents and other forms of risk-taking behavior are all manifestations of the same underlying psychological mechanism that compels young men to be highly competitive. For one thing, we know from automobile insurance statistics that marriage depresses men's tendency to have automobile accidents.

6. Conclusion

Perhaps the tragic life of the French mathematician Évariste Galois (1811–1832) best illustrates my argument (Singh, 1997, pp. 210–228). Despite the fact that he died at age 20, Galois made a large number of significant contributions to mathematics. (His work was integral to Andrew Wiles' celebrated proof of Fermat's Last Theorem in 1994.) Galois was involved in an affair, and the woman's fiancé challenged him to a duel. The night before the duel, Galois stayed up all night and wrote down all of his mathematical ideas on paper. (It is due to these notes, written on the last night of his life, that many of Galois' ideas survived to the posterity.) From other comments written on the paper, next to a series of mathematical notations, however, it is clear that Galois spent the night, intensely thinking about the woman over whom he was to have a duel the next morning. *Something* compelled this young man of 20 to produce so many brilliant mathematical ideas in one night and then go to a duel the next morning, ready to kill or be killed over a woman. It is my contention that the same psychological mechanism was responsible for both.

If the age–crime curve and the age–genius curve have similar shapes, and if marriage has the desistance effect on both crime and genius, then it is highly unlikely that social control theory of criminal behavior and desistance (Laub et al., 1998; Sampson & Laub, 1993), or, for that matter, *any theory that is specific to criminal behavior*, can hold the whole key to why men commit crimes and why they desist. Following Daly and Wilson (1988) and Kanazawa and Still (2000), I argue that a single psychological mechanism is responsible for making young men highly competitive during early adulthood and then quickly making them desist after their marriage in later adulthood. It is my contention that both crime and genius are manifestations of young men's competitive desires to gain access to women's reproductive resources, which, in the ancestral environment, would have increased their reproductive success.

Acknowledgments

I thank Barbara J. Costello, Steven W. Gangestad, Travis Hirschi, Rosemary L. Hopcroft, Christine Horne, Alan S. Miller, Joanne Savage, and Dean Keith Simonton for their comments on earlier drafts.

References

Blum, D. (1997). *Sex on the brain: The biological differences between men and women*. New York: Penguin.

Blumstein, A. (1995). Youth violence, guns, and the illicit-drug industry. *Journal of Criminal Law and Criminology, 86*, 10–36.

Brodetsky, S. (1942). Newton: Scientist and man. *Nature, 150*, 698–699.

Cole, S. (1979). Age and scientific performance. *American Journal of Sociology, 84*, 958–977.

Daly, M., & Wilson, M. (1988). *Homicide*. New York: De Gruyter.

Daly, M., & Wilson, M. (1990). Killing the competition: Female/female and male/male homicide. *Human Nature, 1*, 81–107.

Debus, A. G. (Ed.). (1968). *World who's who in science: A biographical dictionary of notable scientists from antiquity to the present*. Chicago: A.N. Marquis.

Ellis, L. (1998). Neodarwinian theories of violent criminality and antisocial behavior: Photographic evidence from nonhuman animals and a review of the literature. *Aggression and Violent Behavior, 3*, 61–110.

Gillispie, C.C., (Editor in Chief.) 1970–1980. *Dictionary of scientific biography (16 Volumes.)* New York: Charles Scribner's Sons.

Glueck, S., & Glueck, E. (1968). *Delinquents and nondelinquents in perspective*. Cambridge: Harvard University Press.

Hargens, L. L., McCann, J. C., & Reskin, B. F. (1978). Productivity and reproductivity: Fertility and professional achievement among research scientists. *Social Forces, 57*, 154–163.

Hirschi, T. (1969). *Causes of delinquency*. Berkeley: University of California Press.

Hirschi, T., & Gottfredson, M. (1983). Age and the explanation of crime. *American Journal of Sociology, 89*, 552–584.

Hirschi, T., & Gottfredson, M. R. (Eds.). (1994). *The generality of deviance*. New Brunswick: Transaction Publishers.

Kanazawa, S. (2001). De Gustibus *Est* Disputandum. *Social Forces, 79*, 1131–1163.

Kanazawa, S., & Still, M. C. (2000). Why men commit crimes (and why they desist). *Sociological Theory, 18*, 434–447.

Laub, J. H., Nagin, D. S., & Sampson, R. J. (1998). Trajectories of change in criminal offending: Good marriages and the desistance process. *American Sociological Review, 63*, 225–238.

Lehman, H. C. (1953). *Age and achievement*. Princeton: Princeton University Press.

Levin, S. G., & Stephan, P. E. (1991). Research productivity over the life cycle: Evidence for academic scientists. *American Economic Review, 81*, 114–132.

Mazur, A., & Michalek, J. (1998). Marriage, divorce, and male testosterone. *Social Forces, 77*, 315–330.

Miller, G. F. (1999). Sexual selection for cultural display. In R. Dunbar, C. Knight, & C. Power (Eds.), *The evolution of culture: An interdisciplinary view* (pp. 71–91). New Brunswick: Rutgers University Press.

Miller, G. F. (2000). *The mating mind: How sexual choice shaped the evolution of human nature*. New York: Doubleday.

Moffitt, T. E. (1993). Adolescence-limited and life-course-persistent antisocial behavior: A developmental taxonomy. *Psychological Review, 100*, 674–701.

Mukerjee, M. (1996). Explaining everything. *Scientific American, 274*, 88–94.

Porter, R. (Ed.). (1994). *The biographical dictionary of scientists* (2nd ed). New York: Oxford University Press.

Poundstone, W. (1992). *Prisoner's dilemma*. New York: Anchor.
Sampson, R. J., & Laub, J. H. (1993). *Crime in the making: Pathways and turning points through life*. Cambridge: Harvard University Press.
Simonton, D. K. (1988). Age and outstanding achievement: What do we know after a century of research? *Psychological Bulletin, 104*, 251–267.
Simonton, D. K. (1997). Creative productivity: A predictive and explanatory model of career trajectories and landmarks. *Psychological Review, 104*, 66–89.
Singh, S. (1997). *Fermat's enigma: The epic quest to solve the world's greatest mathematical problem*. New York: Anchor.