

# Homicide by men in Japan, and its relationship to age, resources and risk taking

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Initial receipt 28 May 2004; final revision received 6 December 2004

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## Abstract

Homicide is predominantly committed by and against men, especially young men, all over the world. This has been documented in many societies across various times and cultures and has been considered to be one of the universal patterns of homicide. However, the homicide rate in Japan has decreased drastically since the end of the Second World War, owing to a huge decrease in the homicide rate by men in their 20s, and as a result, the usual peak in the age-related homicide curve completely disappeared in recent Japan. When homicide rates are calculated for each cohort of men, however, age effects remain clear, regardless of the actual homicide rates. I investigated the relevance of sociocultural factors hypothesized to affect the risk proneness of men in relation to age.

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*Keywords:* Homicide; Male–male competition; Life-history strategy; Risk assessment

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## 1. Introduction

Homicide is predominantly committed by men against men. Rates of killing are invariably several times higher among men than among women across societies (Daly & Wilson, 1988). In addition, there is an age-related pattern which is also very robust across societies, whereby

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rates of homicide by men rise sharply after puberty to a peak in the early 20s and then decline less steeply (e.g., [Daly & Wilson, 1988](#); [Hirschi & Gottfredson, 1983](#)).

Common motives when men kill men are seemingly trivial conflicts over social status, face, pride, and reputation, as well as conflicts over material resources. An evolutionary explanation for these patterns is that natural selection has shaped young men to be more risk prone and to discount the future more than other people do: Prior to their own reproduction, young men are relatively likely to adopt risky behavioral options in social confrontations because they have higher potential reproductive gains and/or less to lose than older men ([Daly & Wilson, 1997](#); [Rogers, 1994](#)). If this is the case, the age pattern in homicide will be maintained irrespective of the overall homicide rate, and this expectation is supported by the almost identical age curves for homicide in the United States, Canada, and Britain, despite huge differences in these nations' total homicide rates ([Wilson & Daly, 1993](#)).

Japan presents an anomaly to this widespread pattern. The homicide rate in Japan has decreased steadily since 1955, due to a dramatic decrease in homicides by young men. There is no peak in the age-related homicide rate curve in contemporary Japan, and the so-called "universal age-related pattern" has completely disappeared. I believe that this is the first reported case where age differences in homicide rates have become so inconspicuous.

In this paper, I first describe this chronological change and then investigate several socioeconomic factors to explain this Japanese anomaly. The Japanese pattern suggests that sometimes the age effect on homicide rate can be superseded or masked when dynamic social change occurs and when the change does not have the same effects on different age groups. Finally, I propose a model to incorporate factors related to men's decision making regarding whether to adopt risky behavioral options in the face of social confrontation.

The social and economic situation in Japan has changed enormously since the end of the Second World War. Several studies in other countries have addressed the ways in which social factors can affect age-related homicide rates ([Greenberg, 1985](#); [O'Brien, Stockard, & Isaacson, 1999](#); [Savolainen, 2000](#)), but in each case, the usual pattern of higher homicide rates among young men than among older men persisted. Japan presents an exception and is thus an excellent vehicle to examine the social and economic mediation of age effects.

## **2. Methods**

I used the National Annual Crime Statistics issued by the Police Department, and the Vital Statistics issued by the Ministry of Health, to calculate overall homicide rates and age-related homicide rates. Data from the National Annual Crime Statistics include the (1) numbers of homicide cases reported, (2) numbers of homicide arrests, (3) numbers of perpetrators in each age category (14–15, 16–17, 18–19, 20–24, 25–29, 30–39, 40–49, 50–59, 60–69, 70–79, and over 80 years old) and sex, and (4) several socioeconomic status variables for the perpetrators, although these are not fully consistent over years (e.g., they include income in some years, but not in others).

The Japanese homicide statistics analyzed here differ from those used in most studies of homicide elsewhere in three ways. First, the Japanese cases include attempted murders, in

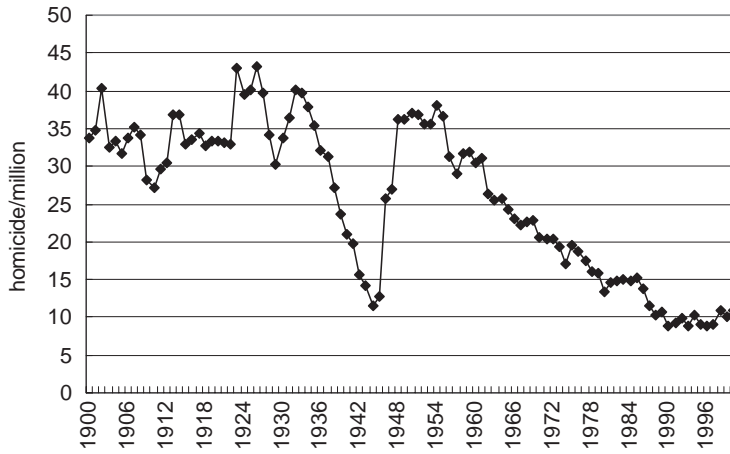


Fig. 1. Changes in the annual homicide rate per million people in Japan during the 20th century.

which a perpetrator made a physical assault on a victim with intent to kill, but did not succeed in doing so. Such attempted murders constitute about half of all the archived homicides, a proportion that remained fairly constant throughout the surveyed years. Second, cases in which killers were deemed lacking in intent to kill, but resulted in killing, are not included in the Japanese archives analyzed here. They are called “lethal assault.” Third, robberies associated with murder are also not included, when the robbery was the main purpose of the crime. They are called “robbery murder.” Those two categories, that is, “lethal assault” and “robbery murder,” are not included in the Japanese archives. Every year, those two categories of killings amount to about 10% to 15% of all homicide.

For a more detailed analysis of the motives and socioeconomic characteristics of perpetrators, I collected 1768 decisions made by the district courts of Sapporo, Aomori, Iwate, Niigata, Kanazawa, Kohu, Urawa, Tokyo, Yokohama, Chiba, Numazu, Osaka, Kobe, Kochi, and Fukuoka on homicide cases from 1989 to 1999. Access to decisions made prior to 1989 was very difficult, but I could access 780 judicial decisions on homicide from the early 1950s, which were compiled and summarized in a report issued by the Legal Training and Research Institute (Irie, 1959). These cases apparently represent a random sample of homicides from all over Japan, which occurred between 1950 and 1954 and for which the first decision was made at the district court by the end of 1955.

There were few cases of recidivism in these data: fewer than 5 of the more recent 1768 cases. Whether this is also true for the older data is unknown because of the lack of identity of the perpetrator in these records.

Data on the gross domestic product of Japan were derived from the economic statistics issued by the Ministry of Economy, Trade, and Industry. Data on unemployment rates, household income, and Gini indices of income inequality (calculated on the basis of total household income after tax redistribution) were derived from the labor and income statistics issued by the Ministry of Health, Labor, and Welfare. Data on college enrollment were derived from statistics issued by the Ministry of Education.

### 3. Results

#### 3.1. Descriptive statistics

##### 3.1.1. Overall chronological changes in homicide rates in Japan

The homicide rate in Japan was between 35 and 50 per million people per annum during most of the first half of the 20th century, except for the brief period during the Second World War. However, it has constantly decreased since 1955 and now is only about 10 per million (Fig. 1). Because half of these are attempted murders, this makes the actual murder rate in recent Japan only about 5 per million, probably one of the lowest in the world (World Health Organization, 2003). Fig. 2 depicts homicide rates per million adults (over 20 years old) per annum from 1955 to 2000. Both men's and women's homicide rates decreased, but the decrease in cases committed by men is far more conspicuous and is furthermore proportionately larger: Men's homicide rate in 2000 was one fifth of that in 1955, whereas women's rate in 2000 was two fifths of that in 1955.

##### 3.1.2. Age-related homicide rates by men

Fig. 3 portrays changes in homicide by Japanese men over time, by showing age-related rates for each 5-year interval since 1955. The 1955 data exhibit the familiar pattern of a steep rise in the late teens and early 20s followed by a decline. However, homicides by young men fell steadily and dramatically after 1955, and the peak in young adulthood disappeared by 1990. By 1975, the rate in the 25–29 age category surpassed that of men 20–24. In 1980, the highest rates were by men in their 30s, and in 1990 by men in their 40s. In 2000, the homicide rate for men in their 50s was actually higher than that for men aged 20–24. In 1955, the rate for men in their 20s was 2.12 times that of men in their 30s; by 2000, this ratio had fallen to 0.78. Thus, the decline in homicides by young men is the major cause of the overall decline in Japanese homicide.

##### 3.1.3. The motives of homicide by men

Although each homicide has its own background and course of events specific to the case, we can divide the cases into a few categories based on the nature of the conflict. Aside from

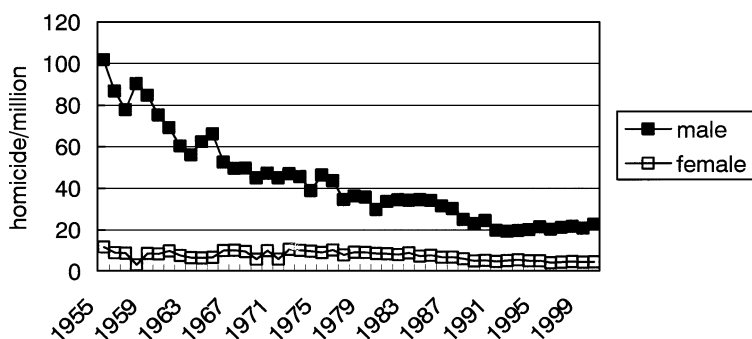


Fig. 2. Changes in the annual homicide rate per million adult males and females over 20 years old from 1955 to 2000 in Japan.

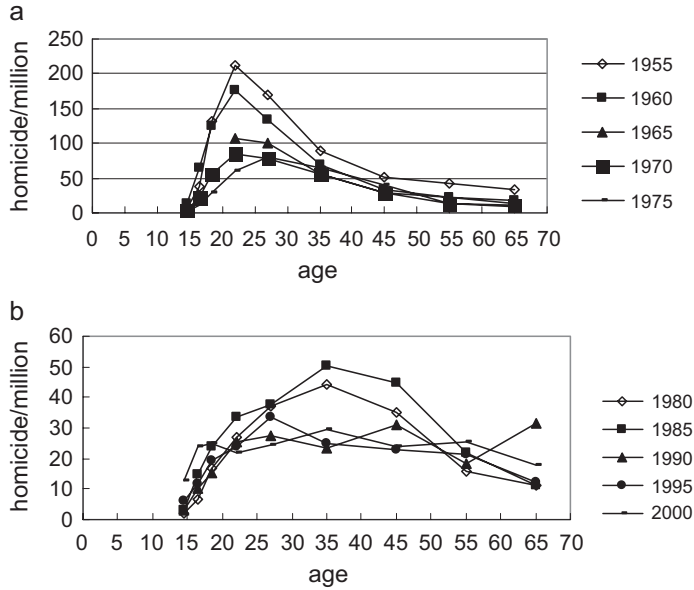


Fig. 3. Changes in age-related homicide rates per million male population in Japan: (a) 1955 to 1975; (b) 1980 to 2000.

the few cases where the perpetrator carefully planned the killing (e.g., to get life insurance money, or in revenge killings by Yakuza, the Japanese “mafia”), most of the homicides occurred rather spontaneously in the context of some superficially trivial dispute. Even when there has been trouble between the two parties for a while, the immediate cause of killing is usually one incidence of heated dispute over the sustained conflict, and what is at stake in such disputes is often face, pride, or social status (Daly & Wilson, 1988). Other conflicts include those over business and money, as well as those involving sexual jealousy. All of these can be regarded as conflicts in which men are fighting to impose control over others.

Of the 780 cases from the early 1950s, 273 involved men killing other men. As for the recent cases, I extracted 699 such cases from the 1990s data. Proportions in each motive category in these two periods are portrayed in Table 1. Despite the large difference in rates of homicide between these periods, men’s motives for killing changed little: altercations over

Table 1

Proportion of each motive category in homicides committed by men in Japan in the 1950s and 1990s

Motives	1950s ( $N=273$ )	1990s ( $N=699$ )
Face, status (%)	69.6	61.2
Business conflict	10.3	4.3
Dispute over money	8.4	10.7
Jealousy conflict	10.6	9.9
Self-defense	0.0	3.6
Others	1.1	10.3

social status, face, and pride constituted more than 60% of the cases both in the 1950s and in the 1990s.

### *3.2. A risk-assessment model of homicide*

The prevailing explanation for the typical pattern whereby homicide rates peak in the late teens and early 20s is that young men just prior to the onset of their own reproduction have more to gain and less to lose by taking risky behavioral options in social conflict than do older men. If they win a confrontation, they can gain higher social status or a tough reputation, which may be very important to their future reproduction.

If age were the essential factor, the pattern of age-related homicide rates would not change even when the overall homicide rate of a society changed, but this was not the case in Japan. However, it could still be the case that age is a major determinant of men's risk proneness, but that age effects in homicide disappeared because certain social changes had different effects on different age cohorts ("generations") and the data were presented cross-sectionally.

By winning social confrontations, men can gain status or reputational benefits that increase their ability to control other people and enhance their resource-holding ability, and this, in turn, increases their expected reproductive success. Hence, suppose that a man has two behavioral options in social confrontations: a risky option that could lead to homicide and an alternative that entails no such risk. If the man takes the risky option and wins, he will gain a lot, in resource-holding ability and expected reproductive success, and he will be able to retain his current resources, if he has any, but if he loses, he cannot improve his resource-holding ability and he jeopardizes his current resource holdings, if any. If he instead chooses the non-risky option, he can, at best, end the confrontation and maintain his status quo, but he will not increase his resource-holding ability, and he may have to incur reputational or other costs to resolve the confrontation without risk.

I propose that, if a man has few or no resources, it is beneficial for him to take the risky option in a social confrontation, because, if he wins, he can build up higher resource-holding ability, which will lead to higher future reproductive success, and he has little to lose if he loses. Taking the non-risky option cannot improve his resource-holding ability and may actually damage it by giving him a reputation of weakness, or may otherwise impose a cost he cannot afford. However, for a man with a lot of resources, the risky option is less appealing because his resource-holding ability is already high, he will jeopardize his current resources if he loses, and he can afford to pay the cost of adopting the non-risky option that will maintain his status quo.

I argue that this scenario works for every man, regardless of his age. However, because both the costs and benefits of the risky behavior are usually higher for young men than for older men, due to their higher reproductive value, the effect of current resources on the probability of taking a risky option is larger among young men than among older men. Young men with no current resources will be much likelier to resort to risky options than do older men with no current resources, but when a young man has resources, he will be ready to switch to a risk-avoiding option because the cost to his future reproductive success, when he loses, is higher than that for older men. This model suggests that young men are more

Table 2

Distribution of each economic class among male homicide offenders and among the general Japanese population, averaged from 1955 to 1963

Economic class	Homicides (%)	General population (%)
Very poor	6.97	6.25
Poor	61.3	25.9
Moderate	30.8	40.1
Affluent	0.88	20.6
Very affluent	0.03	7.15

sensitive to the valuable resources that they have for their future and change their behavior accordingly. Therefore, if certain social changes had the effect of improving young men's resource status relative to older men, we might observe a cross-sectional pattern in which homicide rates for older men surpassed those for younger men, and we could explain the unusual patterns of age-related homicide rates in recent Japan.

### 3.3. *The potential sociocultural factors affecting men's resource*

The above model suggests that a man's current resource status has a significant effect on his probability of taking risky behavioral options in social confrontations. The most obvious example of the man's resource status is his income. The National Annual Crime Statistics include categorical data on homicide perpetrators' incomes from 1959 to 1963: "very poor," "poor," "moderate," "affluent," and "very affluent." Quantitative definitions for these categories are not stated, thus, it is difficult to compare perpetrators with the population in general, but I divided the general population into five similar categories using household income statistics and compared it with the data on homicides (Table 2). The result suggests that homicides were significantly poorer than the population in general.

Another candidate index of resource status is employment status. Having a permanent job is one indicator of a man's resource-holding ability, and it would also give him a secure prospect of his future. The National Annual Crime Statistics include the employment status of criminals in all years. I calculated the proportion of unemployed among homicide perpetrators and among an age-matched subpopulation sampled from the general Japanese, for the 1970s and 1980s. The proportion of homicide perpetrators who were unemployed was 26.8% in the 1970s and 32.9% in the 1980s, compared with 12.3% and 8.8%, respectively, for the age-matched general population sample. This shows that homicides were significantly more often unemployed than are the general population in both periods, and that employment status became a stronger risk factor in the 1980s.

Lastly, I looked at the completed school records of homicides and the population in general. The completed school record represents the level of investment in education, which is clearly an investment for the future. More schooling means better job opportunities in the future and is thus a valuable asset. I compared the distribution of completed school records among homicides with that among the general population during 1990s (Table 3). People with relatively little education were overrepresented among homicide perpetrators.



Table 3

Distribution of the highest completed level of schooling among male homicide offenders and the male population at large in Japan during the 1990s

The last completed school record	Homicides (%)	All male population (%)
No school	1.1	0.02
In school	0.0	1.4
Obligatory school	60.1	25.1
High school	27.8	45.1
Colleges	10.9	27.2

These results clearly demonstrate that a man's current resource status was an important predictor of whether he would resort to risky behavioral options. The question, then, is whether social and economic changes in Japan after the Second World War had positive effects primarily or solely on the resource status of young men rather than of older men.

One of the most conspicuous changes in Japan after the War is its miraculous economic growth. The GDP of the nation steadily increased, while income inequality (as measured by the Gini index) declined (Fig. 4). This means that people in Japan not only became richer, but that wealth was more evenly distributed. Thus, a substantial proportion of the contemporary Japanese population is well endowed with resources. Meanwhile, the number of children per household decreased from about 5.2 before the War to 1.8 in 1990s; hence, as family size decreased while the parents themselves became richer, competition among children must have diminished such that each child would be endowed with relatively ample resources.

Moreover, the proportion of young men who proceeded to universities and colleges increased from about 13% in 1955 to more than 40% in the 1990s (Fig. 4), meaning that as economic development in postwar Japan proceeded, the proportion of young men with a high investment in education for future prosperity increased. Those men are seeking better job

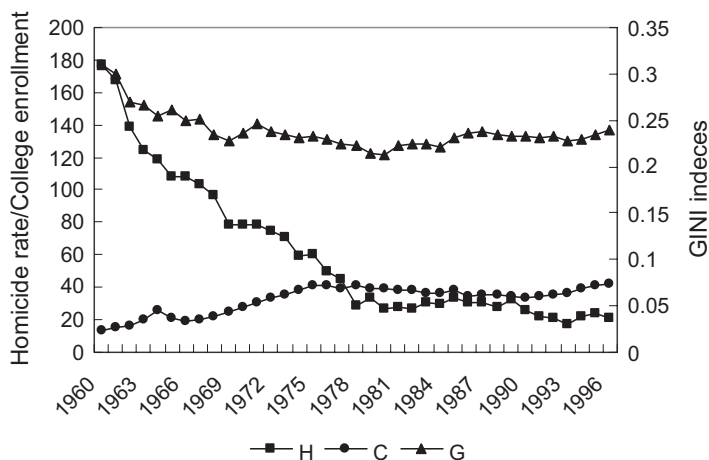


Fig. 4. Changes in annual homicide rates per million males 20 to 24 years old, with concomitant changes in the Gini index of income inequality and college enrollment rates, from 1960 to 1996.



opportunities with their completed school records as an asset and are therefore expected to be highly risk avoiding in social confrontations.

To investigate the relationships among young men's homicide rates, Gini indices, and college enrollment, I ran a multivariate analysis using Gini index and college enrollment rate as independent variables and the homicide rate for 20- to 24-year-old men as the dependent variable. I used 37 data points from 1960 to 1996 because the method for calculating the Gini index was consistent only during those years. The result showed a significant negative effect of college enrollment rate and a significant positive effect of the Gini index on the young male's homicide rate ( $t=-5.39$ ,  $df=36$ ,  $p<.001$  for college enrollment;  $t=3.92$ ,  $df=36$ ,  $p<.001$  for the Gini index). However, the analysis of residuals suggested that there was a structural change in college enrollment rate after around 1985. Indeed, the increase in college enrollment among young men more or less stopped around 1985. Therefore, I tested the regression with a new model which incorporated this structural change after 1985, and the result produced a better fit ( $t=-5.07$ ,  $df=36$ ,  $p<.001$  for college enrollment rate;  $t=5.94$ ,  $df=36$ ,  $p<.001$  for the Gini index;  $F=31.79$ ,  $df=3$ ,  $p<.001$ :  $F$  test for the structural change).

#### 3.4. Age and homicide rate: cohort analysis

Fig. 3 depicts cross-sectional data on homicide rate by age. Although Fig. 3b exhibits an unusual pattern whereby homicide rates by middle-aged men are the highest, these are not the same cohort of men. During periods of dynamic social change like that following the Second World War in Japan, such a cross-sectional depiction may be misleading. I therefore calculated homicide rates by cohort, as shown in Fig. 5, where it is evident that for each of nine cohorts, homicide rates were always highest in the 20s and decreased with age, regardless of the rate differences among cohorts. This implies that when more young men are endowed with resources, they become more and more risk avoiding, but the age effect persists even if it becomes very small.

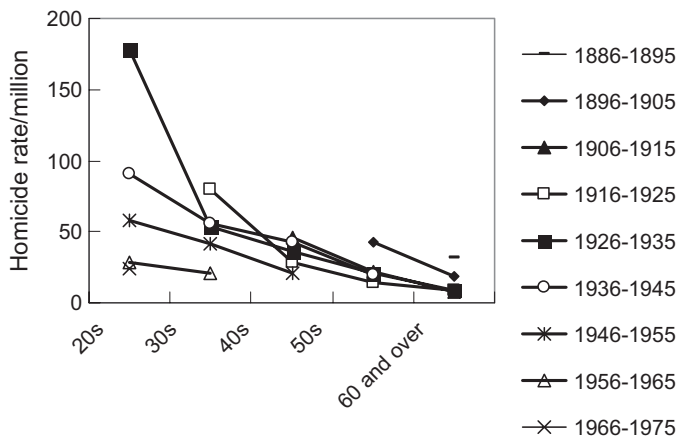


Fig. 5. Age-related homicide rates for nine different cohorts of men in Japan.

#### 4. Discussion

In Japan, the homicide rate has decreased drastically since the Second World War. This should not be surprising, given that Japan experienced huge economic growth with a simultaneous decrease in inequality. It has already been demonstrated that lower levels of inequality are associated with lower homicide rates (e.g., [Daly, Wilson, & Vasdev, 2001](#); [Wilson & Daly, 1997](#)).

The decrease in the Japanese homicide rate consisted mainly in a huge decrease in killings by young men. The usual age pattern, which has even been called “invariant” ([Hirschi & Gottfredson, 1983](#)), completely disappeared by 1990. Other studies have both shown that the pattern was by no means invariant and investigated the sources of variability (e.g., [Greenberg, 1985](#); [O’Brien et al., 1999](#)), but to the best of my knowledge, there has been no prior report of such a large and rapid decrease in homicides by young men as we have seen in Japan.

Several previous studies have shown that men who kill tend to have few economic and social resources to protect ([Daly & Wilson, 1988, 1990](#); [Wilson & Daly, 1985](#)). This research confirmed the previous results. How is this related to the “effects” of age? From an evolutionary point of view, age is certainly an important factor affecting men’s willingness to take risks, because age is directly connected to reproductive value, and the analysis of age patterns within cohorts ([Fig. 5](#)) confirmed the importance of age: Within each cohort, the homicide rate always decreased monotonically with age, although this effect was small. The change that occurred in Japan suggests that when social situations change drastically with different effects on different generations, we can have a grossly distorted age–crime curve when looked at cross-sectionally.

I presented a hypothesis to explain the relationships between a man’s tendency to resort to risky options in social conflict, his current resources, the effect of winning on his resource-holding ability, and the effect of resource-holding ability on his future reproductive success. Many of the social and economic changes which took place in Japan after the Second World War helped young men acquire more resources. Their parents got richer and the number of children per household got smaller, thus, men of the younger generation were raised in better resource circumstances than were the older generations. Presumably, this made them feel more satisfied in their current condition than did the older generations when they were young.

A related consideration is the resource value of higher investment in education. Considerable amounts of time and money are invested in young men’s higher education, and better school records certainly bring better job opportunities. Moreover, secure employment for life and an age-dependent salary system have been the norm in major Japanese companies throughout the period of high economic growth. These Japanese customs assured that if a young man has a good university certificate and is employed by a company, his job was secure and his salary increased steadily until retirement at about 60 years old, barring misbehavior. This system would provide a young man with unusually secure life prospects if he can maintain a good reputation. This system definitely expanded young men’s “time horizons” ([Wilson & Herrnstein, 1985](#)).

When a young man has few resources, the potential gains from risky option loom large relative to the costs. Therefore, when young men’s resources are considerably smaller than that

of older men's, as is probably the norm in many human societies, homicide rates of men should be highest among late adolescents and early adults. Japanese society used to be like that.

Although risky options always entail a risk of lost resources, this would have more serious effects on young men than on older men because of the former's higher reproductive value. Thus, young men should quickly become risk avoiding as their resource status improves. The rapid social and economic changes during the economic growth after the war in Japan have changed young men's resources and future prospects drastically, and indeed, the decrease in homicide rate was most conspicuous among men 18 to 25 years old.

Just what counts as resources and what kind of resource-holding ability affects future reproductive success depend on culture. In the case of Japanese society, high investment in education was one such resource. However, it may not be the same in other cultures.

## Acknowledgments

I would like to express my sincere gratitude to Martin Daly and Margo Wilson, who invited me to step into the field of evolutionary psychology. My deep thanks also go to Toshikazu Hasegawa for his discussion and support on this work, and to my former assistant, Kohei Tsuji, who helped me with analyzing all the data. Staffs at the district courts of Sapporo, Aomori, Iwate, Niigata, Kanazawa, Kohu, Urawa, Tokyo, Yokohama, Chiba, Numazu, Osaka, Kobe, Kochi, and Fukuoka kindly took their time to sort out homicide cases and made massive copies of them. Martin Daly, Margo Wilson, and two anonymous referees gave me many valuable suggestions to improve the analysis. The research was partially supported by the Ministry of Education, Science, and Culture (basic research fund to Professor Yoshiko Iwai, Senshu University), and by an award to the author from the special research fund for new faculty of Waseda University.

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