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WITH DIFFERENT BACKGROUNDS

by

Yoshikazu Yuma, Yuichiro Kanazawa

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Yoshikazu Yuma<sup>†</sup>, Yuichiro Kanazawa<sup>‡</sup>

Chief Psychologist in Classification office within Chiba prison<sup>†</sup>

Institute of Policy and Planning Sciences  
The University of Tsukuba<sup>‡</sup>

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## Abstract

In this article, we studied the relative effectiveness of training school programs to community-based programs on Japanese juvenile delinquents with different criminogenic needs and risk levels using a proportional hazards model. At the first incarceration, we found that the recommended treatment based on delinquents' characteristics and the actual treatment in the training schools were effective for predicting recidivism. Their interaction, however, was not significant in this regard. We also found that social bond covariates such as social status and attachment to both parents appeared to reduce recidivism. We concluded that, based on criminogenic assessment, early intervention by a training school program was effective for preventing first-time offenders' future delinquency in Japan. At the second or later incarceration, however, the five covariates had no significant effects. These social bond covariates being insignificant may be explained by the shifting nature of shaming, in that it may be reintegrative at the first incarceration, but stigmatizing the reincarcerated afterwards even in Japanese society.

*Keywords:* Correctional treatment, Cox's proportional hazards model, Japanese juvenile delinquents, Recidivism

## INTRODUCTION

Effective correctional treatment is one of the most important goals of the criminal justice system. For a treatment to be effective, some authors have argued for matching types of

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<sup>†</sup>Correspondence: 2-45-7 Asumiga-oka, Midori-ku, Chiba, Chiba 267-0066, Japan.  
E-mail Address:yuma-y@mx2.nisiq.net

offenders with types of treatments (Andrews, 1980; Andrews and Bonta, 1994; Andrews et al., 1990a; Greenwood and Turner, 1993; Hepburn and Albonetti, 1994; O'Donnel et al., 1979). In this article, we study the relative effectiveness of training school programs to community-based programs on Japanese juvenile delinquents with different criminogenic needs and risk levels using a proportional hazard model. We measure effectiveness by the time from release from correctional institutions (juvenile classification homes or training schools) to reincarceration to juvenile classification homes.

There have been three types of researches that evaluate the effectiveness of treatments but on two distinct populations, adult and juvenile. Some researches sought to establish which type of treatment was more effective in a certain population (Type I). Other researches aimed to find out if a particular treatment of interest worked on offenders with different characteristics (Type II). The remaining researches focused on the relationship between offenders' characteristics and the types of treatments (Type III).

There have been a few researches of Type I on adult offenders. Nirel et al. (1997) evaluated the effectiveness of "service work" relative to imprisonment in Israel and found that "service work" was more effective in reducing recidivism in imprisonment. Baumer (1997) found that the risk of recidivism of persons released from the Malta's prison was dependent upon the prison directors whose disciplinary policy they were subjected to. He suggested that the effectiveness of treatments be affected not only by the types of treatments but also by the treatment environments, even if offenders had similar characteristics.

Gottfredson and Barton (1993), for example, represents the research of Type I on juvenile delinquents. They studied the relative effect of a training school program to a community-based program in the state of Maryland on recidivism. They found that non-institutionalized group's recidivism was significantly higher than that of institutionalized group's for property crimes. They concluded that the training school program could reduce the recidivism more effectively than the community-based program. Greenwood and Turner (1993) evaluated the relative effectiveness of the special residential program to traditional training school programs for delinquents with serious criminal history and found that there was no significant difference between the two programs in terms of the

rate of arrests and self-reported delinquency. They suggested that the failure to produce a lower recidivism rate might be blamed more on the inconsistent implementation of the experimental program than the design of the program.

One of the Type II researches on adult offenders is Dejong's work (1997). She tested the effects of imprisonment between first-time arrestees and experienced offenders. She concluded that a sentence of incarceration increased the probability of rearrest for first-time arrestees, while longer incarceration predicted longer time until rearrest for experienced offenders. MacKenzie (1991) studied recidivism of the parole performance of offenders released from adult boot camp and suggested that "individual attributes such as age, criminal history, and other risk factors were particularly important in determining the failure of offenders during community supervision".

Visher et al. (1991) studied the recidivism of serious juvenile offenders paroled from California Youth Authority institutions. They suggested that it was more effective to assign different levels of intensity of parole supervision to the delinquents with different ranges of rearrest risk. These researches of Type II assumed implicitly the interaction between offenders' attributes and types of treatments, although they did not test that effect directly as the researches of Type III.

Andrews (1980), Andrews and Bonta (1994), Andrews et al. (1990), and Hepburn and Albonetti (1994) represent the small number of researches of Type III. The first three papers reviewed a series of deliberate and explicitly experimental investigations of the causal and practical significance of differential association theory. These papers pointed out that there was an interaction between types of clients (e.g. prisoners versus volunteers) and types of programs (e.g. Community Discussion Group versus Community Recreation Group) in recidivism or antisocial attitude change. Andrews in his 1980 paper concluded that, without consideration of such an interaction, "correctional programming may inadvertently produce not simple *zero* impact - but perhaps *negative* impact - on correctional clients." Hepburn and Albonetti in their 1994 paper analyzed the effects of offender characteristics and two types of intervention among drug offenders. They found that the survival time to a petition to revoke probation was about the same for those offenders placed in an intervention plan consistent with assessed need as for inconsistently



placed offenders.

We found only one paper, O'Donnell et al. (1979), addressing the problem of the interaction in juvenile offenders. They found that, in terms of arrest rate of juveniles, the effects of a companionship program was positive and significant among high risk cases, albeit not always among lower risk cases.

Many of the researches of Type II and III entertained the possibility of interactions between offenders' characteristics and types of treatments. Greenwood and Turner (1993) went so far as to claim that the design of effective programs for chronic delinquents "must be comprehensive in their ability to deal with each youth's multi-faceted needs and individually tailored to suit each youth's capabilities and strengths". Assuming appropriate matching of an offender's characteristics with a treatment improves the relative effectiveness of the treatment in Japanese delinquents, we statistically evaluate the effectiveness of two major rehabilitative treatments in Japan, probation and training school, for juvenile delinquents with different criminogenic needs and risk levels.

## **JAPANESE JUVENILE JUSTICE SYSTEM**

The Penal Code stipulates that the minimum age at which a juvenile is held criminally responsible is fourteen in Japan. Under the Juvenile Law, "juvenile" is a person under twenty years old and "delinquent" is a "juvenile" (1) who is alleged to have committed an offence, or (2) who is prone to commit an offence (a status delinquent). In 1995, the total number of juvenile delinquents adjudicated at the family courts, excluding traffic professional negligence, was 124,507, out of which there were only 795 status delinquents, or only 0.6 percent.

When an offence involving juveniles is committed, police conduct initial investigations. They refer those juveniles who are alleged to have committed the offence and who are at least fourteen years old to the public prosecutor. The public prosecutor refers the case to the family court when the evidences show that the delinquent is likely to have committed the offence.

When the judge of the family court deems protective custody is necessary, s/he places

the juvenile at the juvenile classification home, where the legally permissible term of confinement is four weeks. In 1996, family courts placed only 13,140 delinquents (five percent) at juvenile classification homes. In the juvenile classification home, clinical psychologists record the family and educational background, job history and criminal history of the juvenile through interviews and also conduct psychological tests to evaluate her/his personality. They assess the various characteristics of the juvenile, especially criminogenic needs, risk for future delinquency, and probability of rehabilitation. The juvenile classification home sends back a recommendation for the appropriate treatment program to the family court.

The judge also appoints the family court probation officer and authorizes her/him to conduct an investigation on the delinquent's social environment by means of interviews with the delinquent and her/his parents or guardians. The officer evaluates the appropriateness of dispositions for the delinquent and sends a report to the judge.

The judge makes a final decision based on the evidence submitted by the police and/or the public prosecutor, the recommendation by the juvenile classification home, the report by the family court probation officer, and the testimony at the hearing. Her/his decision is also influenced by her/his judgement on whether due process of law is being followed to protect the basic human rights of the juvenile. As a result, there are discrepancies between psychologically recommended treatments by the juvenile classification homes and actual treatments, that is, legal dispositions of the family courts.

Of many dispositions, the most frequently administered ones are to place the juvenile under probationary supervision (probation for the rest of the article) of the probation office or to commit the juvenile to a training school (training school for the rest of the article). They respectively constitute forty-two and twenty-three percent of all delinquents released from juvenile classification homes in 1996. The number of delinquents sent to the training schools is not influenced by the capacity of the training schools, because no training schools have a problem of over-crowding in Japan.

Based on the combinations of psychologically recommended treatments and actual treatments, each delinquent was classified into one of four categories: (1) The psychologically recommended treatment by the juvenile classification home is probation and the

actual treatment formulated by the family court is also probation, (2) probation recommended but sent to training school, (3) training school recommended but placed on probation, and (4) sent to training school as recommended.

Probation officers and volunteer probation officers cooperate in carrying out probation in Japan. In practice, however, the roles and responsibilities of the two officers are not clearly separated (Shikita and Tsuchiya, 1990:220).

There were 854 probation officers who were engaged in the supervision of juvenile and adult offenders in 1990, when the latest data are available. They are full-time officials employed by the Ministry of Justice and are required to have proficiency in the area of medical science, sociology, psychology, education and/or other disciplines relevant to treatment of offenders. On the other hand, the volunteer probation officers are non-permanent officials of the National Government, but they are not on the payroll of the Government as the name suggests. There were 48,801 of them in 1996. The average caseload of a probation officer is approximately ninety-two cases with the assistance of eighty volunteer probation officers at a given time in 1994.

A probation officer identifies problems of the delinquent with interviews and filed documents and makes a rehabilitation plan at the initial stage. S/he also assigns a volunteer probation officer to the delinquent. The volunteer probation officer supervises the delinquent based on the plan and sends a monthly report to the probation officer. The probation officer may directly supervise the delinquent if s/he thinks her/his intensive intervention is necessary.

The legally prescribable period of supervision is two years. If the delinquent becomes twenty-years old during the period, her/his supervision is terminated. An early discharge from probation for satisfactory behavior has been extensively administered, especially in recent years. Satisfactory behavior consists of observing several conditions: living at a specified residence; holding a lawful job; avoiding involvement in criminal conduct; refrain from criminogenic association; obtaining a prior approval for a change in residence or a travel exceeding a week. In 1996, early discharged juveniles constituted seventy-seven percent of the juvenile probationers. In 1989, eighty-two percent of probationers disposed for non-traffic violations were actually released within two years since they were placed

on probation. Among traffic-related cases, eighty percent were released within one year during the period.

There were fifty-four training schools in Japan in 1997, which typically offered group therapy, counseling, vocational training and academic education. There were 2,086 instructors in the training schools as of fiscal 1995 and the daily average number of juveniles in the training schools was 2,945 in 1996. The number of delinquents per an instructor is one to two on the average.

The residential programs are divided into three categories in terms of confinement periods: the special short-term program, the general short-term program, and the long-term program. The average confinement periods are about two to three months, five months, and twelve months respectively. The different categories of treatment programs have the different educational curricula and no training schools have both the long-term program and the general or special short-term program. A training school makes an individual correctional plan taking account of the delinquent's needs. The family court can not only determine a disposition (e.g. probation or training school) but decide a category of the training program. After release from the training schools, almost all the delinquents (ninety-seven percent in 1996) are paroled with supervision at about the same intensity as the probation.

## DATA

### SAMPLE

The Correction Bureau within the Ministry of Justice in Japan maintains a database on all the delinquents placed at juvenile classification homes in Japan since 1988 (the CB data for the rest of this article). A clinical psychologist records and enters individual CB data at the juvenile classification home and the Correction Bureau compiles them at the end of each year.

We decide to focus on the class of 1991 whose number amounted to 12,644 cases, a sizable number in our judgement. We define the class of 1991 to be the group of the delinquents who were placed at juvenile classification homes for the first time in 1991

and were assessed by clinical psychologists. We chose them partly because their juvenile correctional histories have been completely recorded: The family court has primary jurisdiction only for delinquents of fourteen-years old or older and they leave the Japanese juvenile justice system at twenty. Since we have the CB data through December 31st, 1997, we are able to observe the complete correctional histories of the class of 1991. For the class of 1991, possible censoring occurs only when delinquents are not reincarcerated until twenty-years old, die or move to different regions within Japan. The second reason why we chose the class of 1991 is that these are the latest available data with a six-year follow-up period: It has been argued that psychological profiles of juvenile delinquents are rapidly changing and social pressure to produce their criminal behaviors is being intensified in Japan, because the traditional extended family, which has been functioning as a sort of “shock-absorber”, is being replaced by the “nuclear-family” with a small number of children. Some have argued that a society comprised of such families is depriving young people of chance to informally communicate and to play with people of different generations. See for example Ako (1998).

The CB data were independently recorded on each delinquent each time s/he was placed at the juvenile classification home. Since her/his name and address were kept confidential, we need to match a recidivist’s first record with her/his succeeding ones, comparing some personal and criminogenic information about the delinquent in the CB data. See Appendix 1 for the matching algorithm in detail.

Prior to case-matching, we excluded some cases to be discussed below so that we could focus on the effectiveness of the two programs, that is, “placed on probation” and “sent to training schools” on recidivism.

First we excluded the data of juveniles under fourteen-years old or over nineteen-years old at their release (1,040 cases or 8.2 percent of the class of 1991), because family courts did not have primary jurisdiction over them. We also excluded delinquents who had psychotic disorders (164 cases or 1.3 percent), because they were thought to respond differently to the treatments. We excluded status delinquents (795 cases or 6.3 percent), who had not committed an offence. We excluded delinquents who were neither placed on probation nor sent to training schools (3,284 cases or 26.0 percent) and who were neither

recommended to be placed on probation nor to be sent to training schools by juvenile classification homes (379 cases or 3.0 percent). Finally we excluded delinquents whose estimated time at risk were negative or zero (we described them later in this article). There were thirty-two or 0.3 percent of such cases. Since there were some cases coming under two or more categories, altogether 4,608 cases (2,976 delinquents) were excluded from the CB data. We call the criteria used for excluding cases as the exclusion criteria in order to differentiate them the criteria used for case-matching.

Validity of the exclusion criteria is subject to change as the delinquent is repeatedly placed at the juvenile classification home. For example, at the fifth incarceration, ten of sixteen cases or 62.5 percent were excluded because they were sent to the adult justice system. These delinquents, however, could not be excluded at the fourth incarceration because they were to remain in the juvenile justice system at that time.

Having excluded all cases mentioned above and completed case-matching reduced 12,644 cases to 6,448 delinquents in the class of 1991. We name this individually based CB data or the ICB data for short. Table 1 shows the number of incarcerations to juvenile classification homes and their percentages. About twenty-five percent were recidivists. See Appendix 1 again for how we made the ICB data in detail.

Table 1: The Number of Incarcerations to juvenile classification homes in the ICB data

<b>the number of incarcerations</b>	<b>the number of delinquents</b>	<b>percentages</b>
1	4,861	75.4
2	1,290	20.0
3	228	3.5
4	56	0.9
5	10	0.2
6	3	0.0
total	6,448	100.0

## DEPENDENT VARIABLE

We define recidivism to be reincarceration to juvenile classification homes and this is the only definition the data would support. Time at risk for reincarceration is defined in three ways. For one-time recidivists, it is the time from release from juvenile classification homes (for probationers) or from training schools (for training school graduates) to the reincarceration. For those who were incarcerated several times, each reincarceration is analyzed separately in order to maintain independence between the sample. For those non-recidivists, it is the time from release to their twentieth birthday. Therefore the follow-up period for individual cases ranged from one day to six years. See Appendix 2 for how we calculated a delinquent's time at risk in detail.

## COVARIATES

We introduce several covariates representing delinquents' socio-demographic background, social bond, criminal history, type of the current delinquency, and treatment and recommendation. Table 2 shows these covariates and how we coded them in detail and Table 3 shows their descriptive statistics.

There are two socio-demographic variables, that is, gender and delinquent's age at release. Age at release is also a control variable for the time of entry into the risk set. As we followed up all the delinquents until their twenty, times at risk for all delinquents were censored when they became twenty years old. Therefore censoring of times at risk depends on age at release. To solve this problem, we include age at release as a covariate in the model. By controlling for the time of entry into the risk set, we can make the censoring mechanism conditionally independent of the duration distribution (Vermunt, 1997:121-122).

The social bond covariates consist of six variables: Whether a delinquent is a student or a regular worker<sup>1</sup>; Whether s/he works hard; Whether her/his parents provide stable

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<sup>1</sup>We examined the model that included two covariates separately; Whether a delinquent is a student and Whether s/he is a regular worker. These covariates, however, showed no significant effects on recidivism. The model including only the covariate, that is, Whether a delinquent is a student or a regular worker, showed the best fit to the data.

Table 2: Covariates and Their Codes

covariates	code
<b>socio-demographic background</b>	
gender	male=1, female=0
age at release	measured in years
<b>social bond</b>	
social status	a student or a regular worker=1, others=0
working hard	yes=1, no=0
stable home environment	stable=1, unstable=0
attachment to father	strong=1, weak or no=0
attachment to mother	strong=1, weak or no=0
attachment to both parents	strong=1, weak or no=0
<b>criminal history</b>	
placed on probation	one or more=1, non=0
sent to training schools	one or more=1, non=0
already on probation	yes =1, no=0
the number of incarceration to JCHs	actual number
age at the first delinquency	measured in years. If the current delinquency is the first one, placed age is used.
<b>type of the current delinquency</b>	
property	yes =1, no=0
violence	yes =1, no=0
drug	yes =1, no=0
<b>treatment and recommendation</b>	
treatment disposed by family courts	training school=1, probation=0
treatment recommended by JCHs	training school=1, probation=0
agreement between treatment and recommendation	agreement=1, no-agreement=0

home environment; Whether s/he has a strong attachment to her/his father; Whether s/he has a strong attachment to her/his mother and Whether s/he has a strong attachment to her/his both parents.<sup>2</sup> In other words, these variables measure if her/his social bond is

<sup>2</sup>We introduced “Attachment to both parents”, based on Rankin and Kern (1994). Since some (for



Table 3: Descriptive Statistics of the First Incarceration

covariates	the first records of	the first records of	the first records of
	all the delinquents	non-recidivists	recidivists
	N=6,448	N=4,861	N=1,587
<b>socio-demographic background</b>			
<b>gender</b>			
male	92.3	90.8	97.0
female	7.7	9.2	3.0
<b>age at release</b>			
average	18.0	18.3	17.4
S.D.	1.2	1.2	1.1
<b>social bond</b>			
<b>social status</b>			
student	9.5	8.5	12.4
regular worker	51.2	52.7	46.5
others	39.3	38.8	41.1
<b>working hard</b>			
yes	49.8	51.8	43.5
no	50.2	48.2	56.5
<b>stable home environment</b>			
stable	54.3	55.6	50.2
unstable	45.7	44.4	49.8
<b>attachment to father</b>			
strong	44.4	45.8	40.0
weak or no	55.6	54.2	60.0
<b>attachment to mother</b>			
strong	65.0	65.8	62.6
weak or no	35.0	34.2	37.4
<b>attachment to both parents</b>			
strong	37.0	38.6	32.1
weak or no	63.0	61.4	67.9
<b>criminal history</b>			
<b>placed on probation</b>			
yes	21.4	22.2	18.9
no	78.6	77.8	81.1
<b>already on probation</b>			
yes	11.9	12.2	11.0
no	88.1	87.8	89.0
<b>age at the first delinquency</b>			
average	14.7	14.9	14.2
S.D.	1.9	1.9	1.7
<b>type of the current delinquency</b>			
property	34.8	32.5	41.8
violence	23.8	24.5	21.8
drug	13.1	12.6	14.5
others	28.3	30.4	21.9
<b>treatment and recommendation</b>			
<b>treatment disposed by family courts</b>			
training school	18.1	19.1	14.9
probation	81.9	80.9	85.1
<b>treatment recommended by JCHs</b>			
training school	33.4	32.4	36.2
probation	66.6	67.6	63.8
<b>agreement between treatment and recommendation</b>			
agreement	82.9	84.6	77.8
no-agreement	17.1	15.4	22.2

strong with institutions such as a school, a place of employment, or a family.

example, Hirschi, 1969) argued that “Attachment to either parent” was a better predictor of delinquency, we examined several models with “Attachment to either parent” included. We found that they had no significant effects on recidivism in our data.

There are five variables that indicate criminal history of a delinquent. The first three variables are, s/he is (1) placed on probation, (2) sent to the training school, and (3) already on probation when placed at the juvenile classification home. These are not only the variables of criminal history but control variables for the effect of prior rehabilitative treatments. The remaining two variables of criminal history are the number of incarceration to juvenile classification homes and age at the first delinquency.

The type of the current delinquency is classified into one of four categories according to the crime s/he committed: property, violence, drug and others.

To evaluate the relative effectiveness of the different treatments with the different criminogenic needs, we need variables to measure types of treatments, types of delinquents' needs and their interaction. We use three variables for them, the treatments disposed by family courts, the treatments recommended by juvenile classification homes, and their combination, that is, agreement between treatments and recommendations. See Appendix 3 for how we chose these covariates in detail.

## METHOD

We use the proportional hazards model by Cox (1972) to examine the effects of covariates on the timing of reincarceration, because the model compensates the bias introduced by the censoring of the data and because we do not wish to be constrained by the particular shape of the hazard function. The model does not require the hazard function to be specified. We choose Breslow's (1974) treatment of ties of the data because it is widely accepted (Allison, 1984:41).

We choose the best fitted model to the data by using a likelihood ratio test after checking proportional hazards assumption. We employ an extended Cox's model which contains product term involving the time-independent variable and some function of time. We assess the proportional hazards assumption by testing for the significance of the product term. The test is carried out using a likelihood ratio statistic. We choose 1-Kaplan-Meier as the function of time, because the test using it is adversely effected if there are outliers and because the test is only mildly effected by the censoring pattern of

the data (StatSci Divison, MathSoft, Inc., 1995). When some variables do not satisfy the proportional hazards assumption, we construct stratified proportional hazards models.

In order to avoid violating the assumption of independence of the models, the proportional hazards model is separately applied to two groups: one which consists of the data of the first time incarceration; the other which consists of the data of the second time or later incarcerations<sup>3</sup>, following Allison(1984:53-56). The proportional hazards model assumes that, for each individual, the multiple intervals are statistically independent. Recidivism is a repeatable event and delinquents who are frequently incarcerated will continue to be frequently incarcerated. This does not necessarily violate the assumption of independence, so long as that dependency is fully accounted for by the explanatory variables included in the model. In most cases, however, there will be good reason to think that the independence assumption is false, at least to some degree (Allison, 1984:54). In our cases, incarceration to juvenile classification homes has various influences on reincarceration and we may not be able to fully control dependency by the explanatory variables. Therefore, we judge it to be safer to apply the proportional hazards model separately to the two groups.

Due to the possibility of heterogeneity of the samples, we divide delinquents into two types in terms of their offending propensity, that is, “early-starters” and “late-starters”, based on Patterson and Yoerger (1993) and Patterson et al. (1989). They argued that there were different kinds of criminals with different offending processes: “Early-starters” had longer criminal careers and more serious problem behavior than “late-starters”. Although some (for example, Gottfredson and Hirschi, 1990; Sampson and Laub, 1993) argued that there was a single process applied to all offenders, we hypothetically accept frequently quoted Patterson and his colleagues’ typology (1993, 1989). We examine whether the effects of covariates on the timing of recidivism are the same among the two types of offenders.

As Dean et al. (1996) pointed out, a key variable implicated in Patterson’s typological approach is the age at which criminal behavior begins, but his theory does not describe

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<sup>3</sup>We applied the proportional hazards model to the data of the second incarceration only. We had the same results as those of the second or later incarceration.

where the line should be drawn between early and late first delinquency. Therefore we tentatively define early-starters as delinquents whose age at the time of the first delinquency was twelve or under and late-starters as delinquents who committed the first delinquency in their teens<sup>4</sup>.

As a consequence, we divided our data into four categories: category 1 which are “early-starters” at the first incarceration; category 2 which are “early-starters” at the second or later incarceration; category 3 which are “late-starters” at the first incarceration; category 4 which are “late-starters” at the second or later incarceration.

## RESULTS

### DELINQUENTS AT THE FIRST INCARCERATION

We first analyze the effects of the covariates on the timing of the reincarceration for the data of the first incarceration of all delinquents. We construct the model stratified by gender and treatment disposed by the family courts, because these covariates do not satisfy the proportional hazards assumption.

Table 4 shows the estimates of the proportional hazards model which is chosen as the best fitted one to the data. All the covariates excluded from this model are not significant.

Two covariates of social bond, that is, social status and attachment to both parents, have significant and negative effects on the timing of recidivism. With regard to “social status”, we observe that a delinquent who is a student or a regular worker is likely to be reincarcerated later. The result on social status is consistent with the prediction from the social control theory (Hirschi, 1969) and the result of empirical studies of Dejong (1997) and Visher and Linster (1990), although the latter two are researches on adult criminals.

We find that “attachment to both parents”, but not on either one of parents, has a significant effect on recidivism. The result is consistent with Rankin and Kern (1994) who found that strong attachment to both parents prevented delinquency more effectively than strong attachment to only one parent. It differs from the argument of Hirschi (1969)

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<sup>4</sup>We examined another threshold for dividing the sample, that is, age eleven and age thirteen and we had the same results with them as that of age twelve.

Table 4: Proportional Hazards Model Stratified by Gender and Treatment at the First Incarceration (N=6,448)

covariates	coef	exp(coef)	se(coef)	Z
<b>age at release</b>	2.06	7.81	0.65	3.15**
<b>square of age at release</b>	-0.06	0.94	0.02	-3.31**
<b>social status</b> (a student or a regular worker)	-0.17	0.85	0.05	-3.21**
<b>attachment to both parents</b>	-0.17	0.85	0.05	-3.01**
<b>age at the first delinquency</b>	-0.06	0.94	0.02	-3.99**
<b>type of the current delinquency</b>				
<b>property</b>	0.30	1.35	0.06	5.42**
<b>drug</b>	0.40	1.50	0.08	5.23**
<b>treatment recommended by JCHs</b>	0.27	1.31	0.06	4.35**
<b>-2(log-likelihood)</b>	24,047**			

\*\* $p \leq 0.01$ .

who claimed that strong ties to both parents did not necessarily provide an effective buffer against delinquency.

Age at the first delinquency has a negative and significant coefficient. This is consistent with many previous researches (for example, Blumstein et al, 1986; Nagin and Farrinton, 1992a, 1992b; Patterson and Yoerger, 1993; Patterson et al., 1989) who found that an early entrance into delinquency was associated with more serious long-term problem behavior.

The effects of the two types of the current delinquency, property and drug, are positive and significant. This indicates that a delinquent who committed either a property or drug offence is likely to be reincarcerated sooner than a delinquent who committed the other types of offences, which consist of violence (23.8 percent), violation of the traffic law (17.1 percent) and others (11.2 percent). The result on property offence is consistent with another Japanese data (Research and Training Institute, 1992), but is not consistent with Dejong (1997) in the United States. In Japan, it is thought that a thief is likely to commit offences repeatedly (for example, Fukushima, 1968), and there is even a special criminal law for thieves committing property offences again and again. Our result seems

to confirm the need for such a measure.

The result of drug offence is consistent with Zamble and Quinsey (1997) who found that recidivists had more substance abuse history than non-recidivists and with Research and Training Institute (1992) who also found that the Japanese delinquents who had committed drug offences had a higher rate of reincarceration than the delinquents who had committed other offences. On the other hand, MacKenzie et al. (1995) found that the effects of drug-related offense on rearrest was negative and significant in boot camp prisoners.

Treatment recommended by juvenile classification homes has a positive and significant coefficient. This shows that the recommendation by juvenile classification homes is effective for predicting recidivism even after controlling socio-demographic background, social bond, criminal history and type of the current delinquency. As mentioned in DATA section, this covariate was based on the assessment by clinical psychologists and recorded each time a delinquent was placed at juvenile classification homes without any risk prediction measures such as Level of Service Inventory (Andrews and Bonta, 1995) and the Wisconsin classification system (Baird, 1981). This result is inconsistent with many previous researches (for example, Jones, 1996; Little and Scineidman, 1959). Jones claimed that such a variable as could change over time was not reliable and that it was not an effective predictor. Little and Scineidman found that there were lack of validity in clinical assessment even among the most highly trained clinicians.

There are two stratification variables in the final model, gender and treatment disposed by the family courts. When the model includes them as covariates, it does not satisfy the proportional hazards assumption (for gender  $\chi^2 = 15.8, df = 1, p < 0.00$ ; for treatment  $\chi^2 = 12.2, df = 1, p < 0.00$ ). In order to avoid this problem, we divided the sample into the four strata by using these variables: stratum 1 which consists of females placed on probation; stratum 2 which consists of females sent to training schools; stratum 3 which consists of males placed on probation; stratum 4 which consists of males sent to training schools.

Figure 1 shows the survival curves of the four strata. The four strata have four differently shaped survivor functions, because, as survival time increases, so do the differences

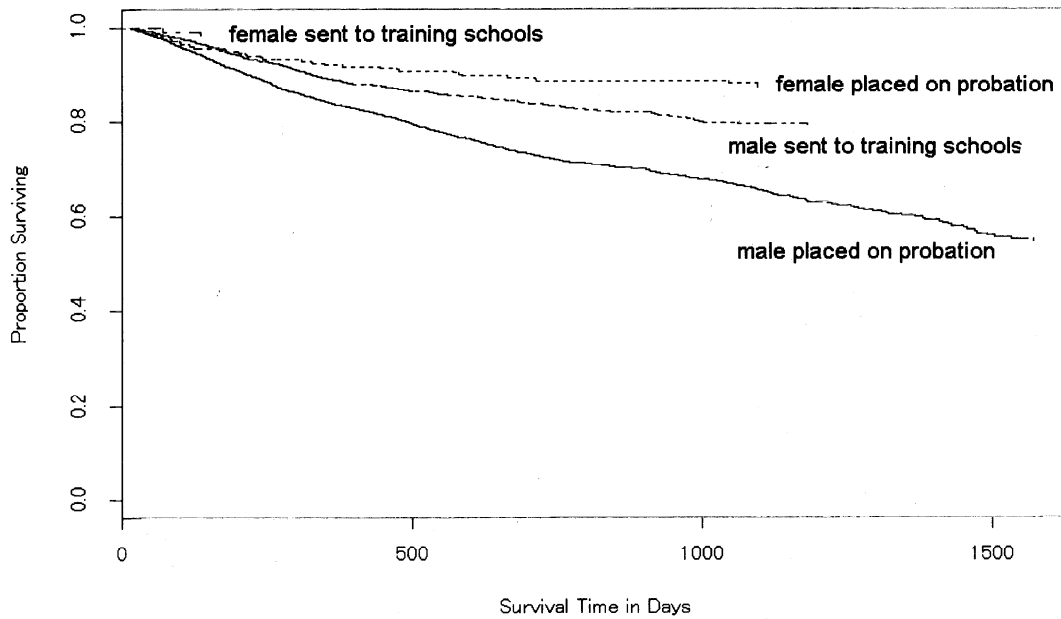


Figure 1: Recidivism of the Delinquents stratified by Gender and Treatment at the First Incarceration

between the four lines. The survival curves of female strata are always higher than those of male strata within the same treatment. Also the survival curves of training schools' strata are always higher than those of probation's strata within the same gender. These relative differences seem to indicate that there are main effects of gender and treatment disposed by family courts. In other words, male delinquents are likely to be reincarcerated sooner than female regardless of types of treatments disposed by family courts and those placed on probation are likely to be reincarcerated sooner than those sent to training schools regardless of the delinquents' gender.

The result that the training school programs are more effective than the community-based programs at the first incarceration is consistent with Gottfredson and Barton (1993). There have been, however, few researches which found the effectiveness of residential treatment, and several meta-analysis researches (Andrews et al., 1990b; Lipsey, 1992; Whitehead and Lab, 1989) found that residential program could reduce subsequent

offending by substantial magnitude, but usually only barely reduced recidivism.

We conclude that, at the first incarceration, treatment and recommendation have effects on the timing of recidivism, but their interaction does not. Thus the delinquents who were placed on probation or who were recommended to be sent to training schools are likely to be reincarcerated sooner than those who were sent to training schools or who were recommended to be placed on probation.

## **“EARLY-STARTERS” AND “LATE-STARTERS” AT THE FIRST INCARCERATION**

In this subsection, we divide the sample into early-starters and late-starters and examine the effects of covariates on the timing of recidivism for each group, because Nagin and Farrington (1992a) and Smith and Brame (1994) suggested that these effects be different for each group.

Table 5 shows the results of the final models of each group at the first incarceration. The final model of the early-starters has no significant stratification variables unlike the model of the late-starters and has mostly different covariates of statistical significance from those of the late-starters. The effects of treatment recommended by juvenile classification homes, however, are positive and significant in both models. This is consistent with the result of the model of all the delinquents.

Treatment disposed by family courts is negative and significant for the early-starters. For the late-starters, gender and treatment disposed by family courts are stratification variables because these variables do not satisfy the proportional hazards assumption (for gender,  $\chi^2 = 15.27, df = 1, p < 0.00$ ; for treatment,  $\chi^2 = 8.5, df = 1, p < 0.00$ ). Figure 2 shows the survival curves of the four strata. The top curve of females sent to training schools is higher than the second curve of females placed on probation. Also the third curve of males sent to training schools is higher than the bottom curve of males placed on probation. We observe that the delinquents sent to the training schools are likely to be reincarcerated later than those placed on probation.

As a result, regardless of delinquents being early- or late-starters, the effect of treat-



Table 5: Proportional Hazards Models for the Early-Starters and the Late-Starters at the First Incarceration

covariates	Early-Starters (N=610)				Late-Starters stratified by Gender and Treatment (N=5,888)			
	coef	exp(coef)	se(coef)	Z	coef	exp(coef)	se(coef)	Z
gender	1.54	4.67	0.71	2.17*				
age at release					2.04	7.70	0.72	2.84**
square of age at release					-0.06	0.94	0.02	-2.98**
social status (a student or a regular worker)					-0.22	0.80	0.06	-3.89**
attachment to both parents					-0.15	0.86	0.06	-2.62**
attachment to father	-0.50	0.61	0.17	-2.98**				
attachment to mother	0.33	1.39	0.15	2.17*				
age at the first delinquency					-0.09	0.91	0.02	-4.02**
type of the current delinquency								
property	0.34	1.41	0.14	2.38*	0.28	1.33	0.06	4.78**
drug					0.42	1.52	0.08	5.17**
treatment recommended by JCHs	0.50	1.65	0.17	2.97**	0.22	1.25	0.07	3.32**
treatment disposed by family courts	-0.55	0.58	0.18	-3.02**				
-2(log-likelihood)	2,346**				20,791**			

\*\* $p \leq 0.01$ .

\* $p \leq 0.05$ .

ment recommended by juvenile classification homes is positive and significant on the timing of recidivism and that the effect of treatment disposed by family courts is negative.

## DELINQUENTS AT SECOND OR LATER INCARCERATION

In this subsection, we analyze the data of recidivists with the second or later incarceration. Table 6 shows the final model of them. This model does not have either covariates of social bond or those of treatment and recommendation because they are judged not to be significant. We observe that, for the delinquents placed at juvenile classification homes again, the timing of their reincarceration is independent of the strength of their social bonds, type of treatments recommended by juvenile classification homes, type of treatments disposed by family courts, and the interaction between recommendations and treatments. Two covariates, that is, “sent to training schools” and “type of current delinquency: violence” are included in the model. This shows that the delinquents who have been sent to training schools or who committed a violent offence are likely to be

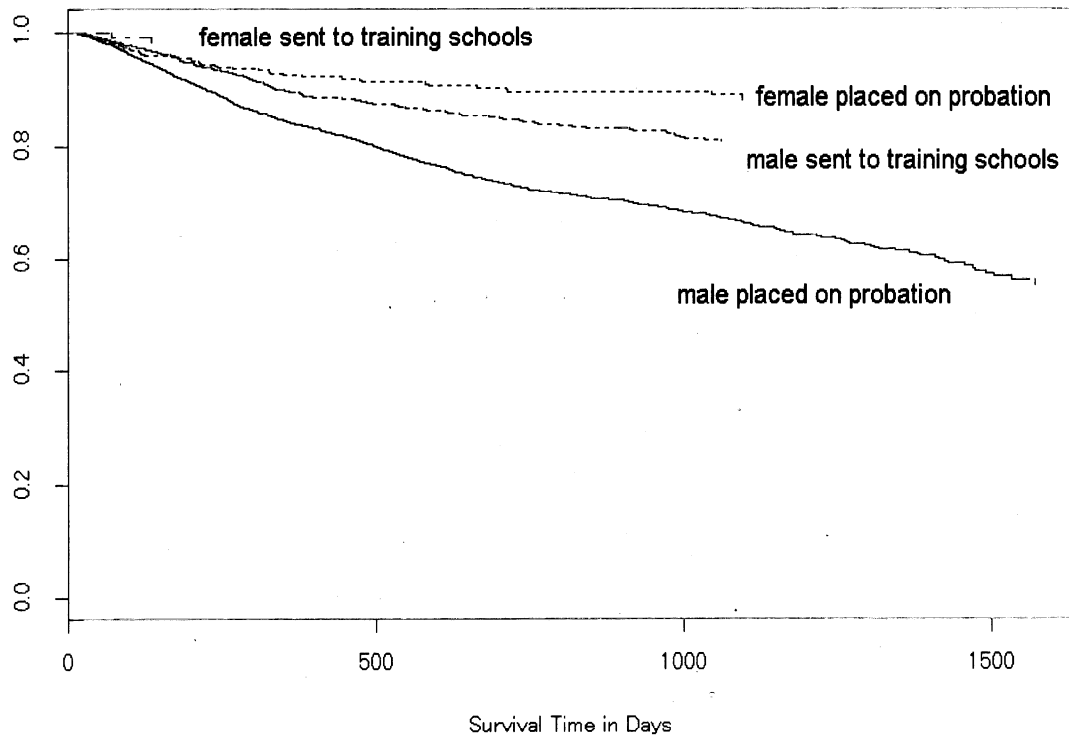


Figure 2: Recidivism of the Late-Starters stratified by Gender and Treatment at the First Incarceration

reincarcerated sooner among the recidivists. The signs of the other covariates included in this model are the same as those included in the previous models of the first incarceration.

## “EARLY-STARTERS” AND “LATE-STARTERS” AT THE SECOND OR LATER INCARCERATION

We examine the effects of covariates of two different samples, early-starters and late-starters, separately. Table 7 shows their estimates of proportional hazards models. For the early-starters, only three covariates are significant and the signs of them are the same as the models with all the delinquents at the second or later incarceration. Gender is excluded from the model, because there were only three female delinquents in this group. For the late-starters, property offence is a stratification variable, because a likelihood ratio test for proportionality is significant ( $\chi^2 = 5.60, df = 1, p < 0.02$ ). Figure 3 shows

Table 6: Proportional Hazards Model for the Second or Later Incarceration (N=1,588<sup>a</sup>)

covariates	coef	exp(coef)	se(coef)	Z
gender	1.05	2.86	0.34	3.06**
age at release	6.53	688.39	1.57	4.16**
square of age at release	-0.20	0.82	0.04	-4.45**
sent to training schools	0.51	1.66	0.12	4.15**
<b>type of the current delinquency</b>				
property	0.67	1.96	0.16	4.30**
violence	0.44	1.56	0.18	2.52**
drug	0.74	2.09	0.18	4.00**
<b>-2(log-likelihood)</b>	<b>5,176**</b>			

\*\* $p \leq 0.01$ .

a: This number can be obtain by summing delinquents' numbers of the first and the second columns from the second incarceration to the sixth incarceration in Appendix Figure A.1.

the survival curves of the late-starters stratified by property offence. The curve of non-property offence is always higher than that of property offence. This shows that the delinquents who committed property offences are likely to be incarcerated sooner.

Table 7: Proportional Hazards Models for the Early-Starters and the Late-Starters at the Second or Later Incarceration

covariates	Early-Starters (N=256)				Late-Starters stratified by Property Offence (N=1,332)			
	coef	exp(coef)	se(coef)	Z	coef	exp(coef)	se(coef)	Z
gender					1.18	3.26	0.37	3.22**
age at release	9.48	13052.41	3.45	2.75**	5.83	341.76	1.82	3.20**
square of age at release	-0.28	0.76	0.10	-2.87**	-0.17	0.84	0.05	-3.42**
<b>type of the current delinquency</b>								
property	0.61	1.84	0.25	2.46**				
drug					0.76	2.14	0.20	3.87**
violence					0.45	1.57	0.19	2.40*
<b>-2(log-likelihood)</b>	<b>766**</b>				<b>3,624**</b>			

\*\* $p \leq 0.01$ .

\* $p \leq 0.05$ .

The model of the early-starters has no stratification variables unlike the model of the late-starters and it has mostly different covariates from that of the late-starters. In both models, however, there are no significant effects of the three covariates: treatment

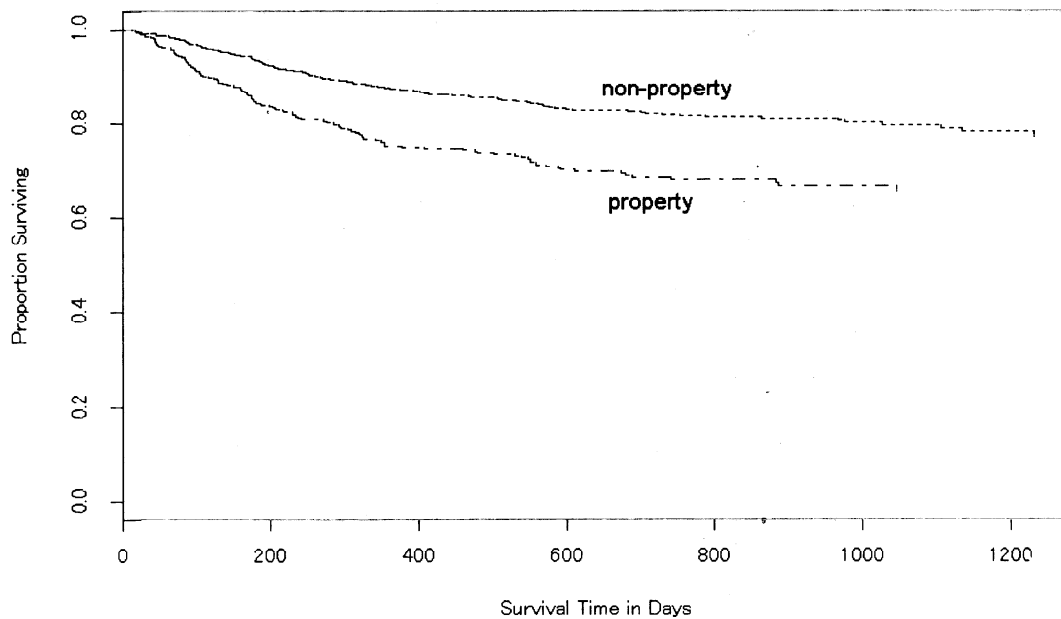


Figure 3: Recidivism of the Late-Starters stratified by Current Delinquency at the Second or Later Incarceration

recommended by juvenile classification homes; treatment disposed by family courts; their interaction. We find that, for the recidivists, neither three variables have any effects on delinquents' recidivism regardless of types of offenders.

## CONCLUSION AND DISCUSSION

At the first incarceration, there are main effects of the treatment recommended by juvenile classification homes and the treatment disposed by family courts, although there is no significant effect of their interaction. This remains true when we separately applied the model to the early-starters and the late-starters. At the second or later incarceration, however, there are no effects of the three variables in both the early-starters and the late-starters.

We do not find the interaction in any sub-samples partly because an individual correc-

tional treatment plan is well tailored to suit each delinquent's capabilities and strengths at the training schools. The juvenile classification home sends information for a delinquent's treatment to the training school to which s/he is sent. For example, what her/his criminogenic needs are; which type of vocational training s/he needs; which type of social skills s/he needs; how s/he behaves in group setting. The training school makes the plan based on the information, and it tries to treat her/him consistently with the plan. Therefore the training school program works well even when a delinquent's risk level is low or even when the juvenile classification home assesses that s/he should be placed on probation.

We do not find the interaction also because the intensity of probation is too low for our sample. For example, as we explained in JAPANESE JUVENILE JUSTICE SYSTEM section, the average caseload is approximately ninety-two for the probation officers as opposed to one to two for the instructors of the training schools. The intensity of probation is ranked at the bottom level in terms of "frequency of treatment contact" and "mean hours contact per week", should we code it according to the standard of the Lipsey (1992). Therefore probation can no longer reduce recidivism effectively even when the delinquent's risk level is low or even when the juvenile classification home assesses that s/he should be placed on probation.

We find that treatment recommended by the juvenile classification homes is effective for predicting further delinquency at the first incarceration. This is inconsistent with the widely accepted view that subjective or clinical assessment is not reliable and a less powerful indicator for the further delinquency than objective risk prediction instruments. Gendreau et al. (1996) argued that the dynamic risk factors, particularly those of criminogenic needs, must be included in the models of risk prediction and reassessed over time and they recommended the LSI-R (Level of Service Inventory) (Andrews and Bonta, 1995) as a available risk measure. While the psychologists decide the final recommendation based on clinical experience and professional judgement at the Japanese juvenile classification homes, they use various objective instruments such as the intelligence test developed by Tanaka et al. (1995) and the personality test developed by the Correction Bureau (1971). This may be one of the reasons why their recommendation has predictive

power for future delinquency.

Contrary to the results at the first incarceration, no covariates of social bond, treatment and recommendation are significant at the second or later incarceration. While Blumstein et al. (1986) and Smith and Brame (1994) argued that the factors that influenced initial “criminal act” were different from those that determined whether individuals continued to commit crimes, it might be that the factors that influenced initial “reincarceration” at the juvenile classification homes were different from those that determined whether individuals were reincarcerated again.

As Braithwaite (1989:63) pointed out, reintegrative shaming is a feature of Japanese culture, although Japanese society has been rapidly changing as we mentioned in DATA section. Wagatsuma and Rosett (1986) suggested that Japanese society might have been regarding delinquency to be something that emerged from the evil part of delinquents, not from their true selves and that Japanese society permitted delinquents to be reintegrated to the community. If shaming is reintegrative in Japanese society at any time, social bonds are always expected to have negative effects on recidivism (Makkai and Braithwaite, 1994). According to the results of our study, however, there may be reintegrative shaming until juveniles are incarcerated at juvenile classification homes for the first time, but shaming may be stigmatizing for the delinquent afterwards. Once society stigmatizes a delinquent, social bonds can no longer reduce delinquency. We think it plausible that shaming may become stigmatizing to the delinquents who are placed at juvenile classification homes repeatedly even in Japanese society. Our results are consistent with Baumer (1997) who found that the levels and predictors of recidivism in the highly integrated society of Malta was similar to those observed in western countries with much different social and cultural environments and concluded that how reintegrative shaming worked was more complex than the theory posited.

The treatment in Japanese training schools enables delinquents to acquire skills for a job and build interpersonal relationships. When the delinquents acquire these skills, they are likely to have a strong commitment to legitimate social activities and are likely to have a strong attachment to the society. In other words we may be able to regard the training school programs as the treatments which make delinquents have strong social

bonds. Thus the training school programs are effective as long as the society reintegrates delinquents. The effectiveness of the training school programs on recidivism wanes at the second or later incarceration, because the society may no longer hesitate to stigmatize the delinquents.

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## **Appendix 1: CASE-MATCHING ALGORITHM**

In Appendix 1, we explain in further detail how the case-matching was completed. Assuming that a delinquent did not leave her/his jurisdiction, we tried to match a recidivist's first record with her/his succeeding ones, comparing simultaneously the five criteria in the CB data set, that is, (1) gender, (2) birthday, (3) the number of incarceration to juvenile classification homes (JCHs for short), (4) the chronological order between the day released from JCHs of the previous record and the day placed at JCHs of the succeeding record, and (5) the agreement of the latest correctional history, "placed on probation" or "sent to training schools", with that in the previous record. All five criteria must be satisfied because we presume that these variables were recorded correctly due to their importance for the treatment at JCHs.

When we found no succeeding records that matched her/his profile using the five criteria, we regarded her/him to be a non-recidivist. There were 4,861 such cases and thus 4,861 non-recidivists. When we found at least one succeeding record that matched the previous one, the owner of the first record was classified as a recidivist. There were 3,175 such cases. Next, we tried to match the second record of the 3,175 cases of the recidivists with their third one in the same way. As a result, we found that 1,918 cases did not have their third record, and 926 cases had them. The remaining 331 cases were excluded at this stage because the exclusion criteria kicked in as explained in DATA section. Since the 1,918 cases were the first and second records of the delinquents who were placed at JCHs twice, the number of “one-time recidivists” was 959. We repeated this procedure until no delinquents had the succeeding records in the CB data. Figure A.1 shows this process.

In the course of matching, we encountered some situations where we had multiple candidates for the case we were trying to match. When this happened, we used four additional criteria: (1) nationality, (2) the birth order in a delinquent’s family, (3) age at the first delinquency and (4) types of previous delinquency. Next we counted the number of agreements of the succeeding record with the previous record on such criteria. We regarded that the succeeding record was one that had the largest number of agreements. We did not treat the second four criteria in the same way as the first five criteria because the additional criteria were thought to be less important and were likely to be less reliable. Also nationality may change although the probability of this is very slim in Japan. So it may be possible that the “real” succeeding record does not satisfy all the additional criteria.

We think that this method of case-matching is reasonable for the following two reasons. First, there seems to be few delinquents who violated the assumption that a delinquent did not leave her/his jurisdiction. For example, at a certain JCH where about three hundred delinquents are placed every year, eighty to ninety delinquents are recidivists, of which only one or two delinquents leave their jurisdiction. Second, the rates of recidivism in our data are almost the same as those supported by other data. Table A.1 presents the rates of reincarceration in our data without preliminary exclusion process and the

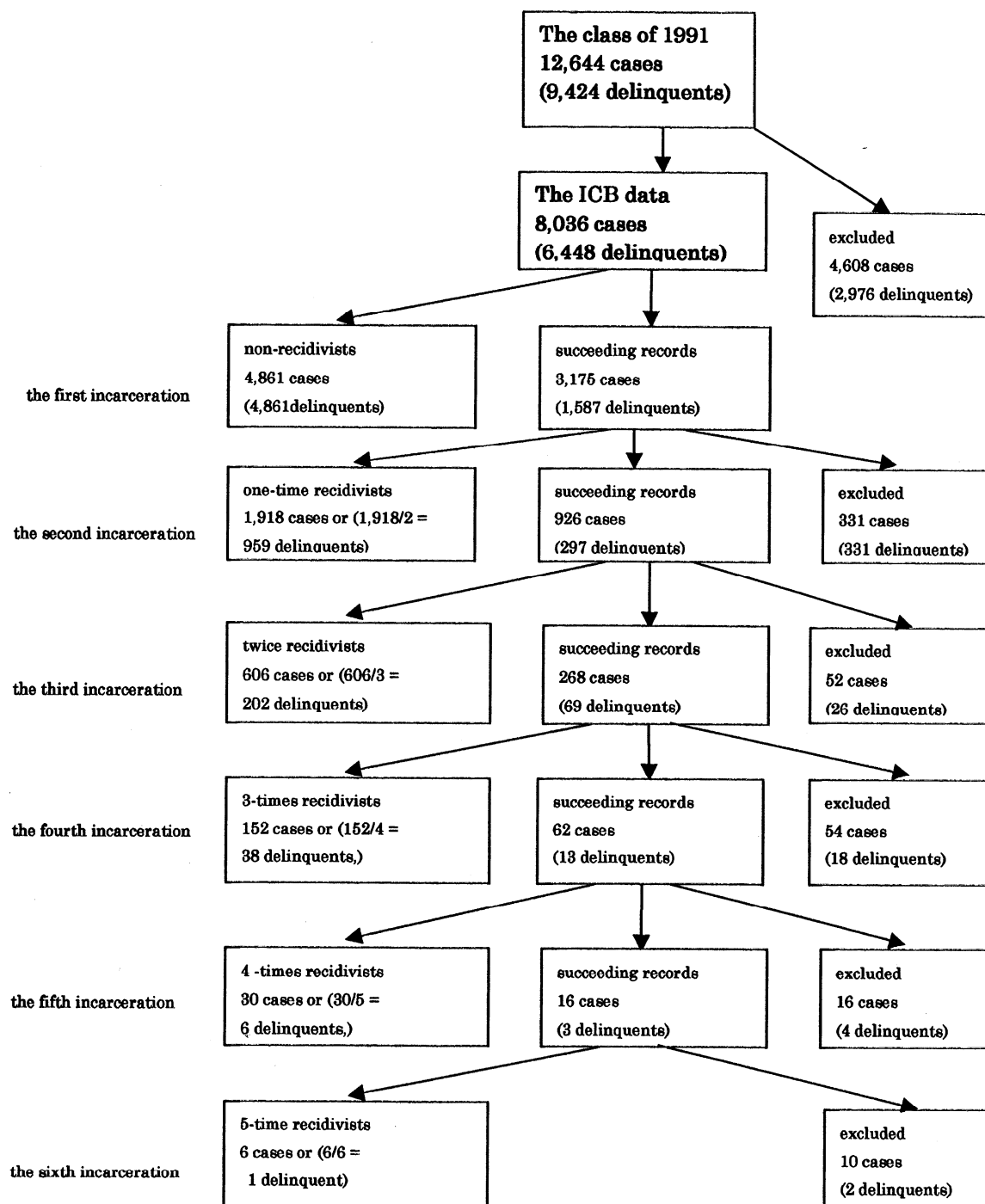


Figure A.1: The Process of Case-Matching in the Class of 1991

Table A.1: The Rates of Reincarceration in Various Samples

sample	the number of sample	follow-up period	the rate of reincarcerations
<b>all delinquents</b>			
the class of 1991	9,424 <sup>a</sup>	until twenty years old	26.0
placed at JCHs in 1991	17,261	cross-sectional data	28.9
<b>male under 18</b>			
the class of 1991	4,489	until twenty years old	39.7
released from JCHs in 1986	3,129	two years and over	36.8
<b>female under 18</b>			
the class of 1991	651	until twenty years old	17.4
released from JCHs in 1986	1,730	two years and over	22.1

a: This number is different from that of the ICB data, namely, 6,448, because this includes all the delinquents excluded from the ICB data.

data of Research and Training Institute within the Ministry of Justice in Japan (RTI for short). For all delinquents placed at JCHs, the rate of reincarceration in the class of 1991 is 26.0 percent. On the other hand, in RTI's cross-sectional data (RTI, 1992), the rate is 28.9 percent. For male delinquents under eighteen years old, the rate is 39.7 percent in our data, similar to 36.8 percent in RTI's data. The rate of female delinquents under eighteen years old is 17.4 percent in our data as opposed to 22.1 percent in RTI's data. Considering the differences of the years of collecting data and the follow-up period, these figures indicate that the rates of recidivism in our data are consistent with those of RTI's data, thus we think the matching algorithm is reasonably well supported.

## Appendix 2: ESTIMATION OF CONFINEMENT TIME

In Appendix 2, we explain how we estimated time at risk of the delinquents who were sent to training schools. Information on the length of period for which each delinquent stayed in the training school is required because those period must be subtracted from the time between when s/he was released from and readmitted to JCHs for the recidivists, or time between s/he was released from JCHs and s/he became twenty years old for the non-recidivists. Since this information is kept confidential, we need to estimate the time of confinement.

We employed the average length of time of the particular category of the training schools' programs according to which a delinquent was treated as the time of confinement because maximum and minimum length of period for each category of the program is

fixed. There are three such programs, namely, the special and general short-term programs, and the long-term program: The maximum confinement term is prescribed on each category of the programs in the regulation, that is, four months, six months, and two years respectively; The minimum confinement term of each category is also prescribed in a standard treatment plan each training school makes.

We employed the average length also because each training school practices its standard treatment plan strictly. For example, for the delinquents who were released from training schools in 1992, 86.2 percent of delinquents from training schools with the long-term program stayed between 270 days and 450 days, 88.4 percent with the general-short term program stayed between 120 days and 161 days, and 96.5 percent with the special-short term program stayed within 98days (RTI, 1993).

As mentioned in DATA section, after subtracting estimated confinement time, we had thirty-two cases (0.3 percent of the class of 1991) whose estimated time until reincarceration were negative or zero. We excluded these cases from the ICB data following Dejong (1997).

### **Appendix 3: SELECTION OF COVARIATES**

We explain how we chose the covariates from the ICB data in Appendix 3. As the ICB data have 204 variables, we decided which variables should be used, based on the previous researches on recidivism published in *Criminology* for the last five years (Baumer, 1997; Deen et al., 1996; Dejong, 1997; Gendreau et al., 1996; Gottfredson and Barton, 1993; Gottfredson and Gottfredson, 1994; Joo et al., 1995; MacKenzie et al., 1995). These researches used such covariates as sex, race/ethnicity, age at release, high school grade, being married, being employed as a full-time worker, the number of the prior arrest/incarceration, age at the first referral, type of the prior/current offences, intensity of treatments. We classified these variables into five categories: socio-demographic background; social bond; criminal history; the prior/current delinquency; treatment. Considering the reliability of the variables in the ICB data, we chose the three or more variables from each category. We excluded nationality, because non-Japanese consist of only 1.8 percent.

Among five categories of covariates, social bond may reveal the characteristics of Japanese delinquents by having stronger effects on recidivism in Japan than in many western countries. According to the theory of reintegrative shaming (Braithwaite, 1989), social bonds reduce crime when shaming is more reintegrative rather than stigmatization (Makkai and Braithwaite, 1994). As Braithwaite (1989:63) pointed out, reintegrative shaming is a feature of Japanese culture. Thus we expect that these variables of social bond reduce recidivism more effectively in our Japanese sample than in that of western countries.