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Evaluating Relative Effectiveness of Training School Programs to Probation on Recividism of Japanese Juvenile Delinquents

by

Yoshikazu Yuma and Yuichiro Kanazawa

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UNIVERSITY OF TSUKUBA
Tsukuba, Ibaraki 305-8573
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Evaluating Relative Effectiveness of Training School Programs to Probation on Recividism of Japanese Juvenile Delinquents *

Yoshikazu Yuma † Yuichiro Kanazawa ‡

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Abstract

In this article we study effectiveness of training school programs relative to probation on recidivism for Japanese juvenile delinquents with differing criminal experiences—early versus late involvement, and first-time as opposed to repeat. We measure effectiveness by the times elapsed from release to reincarceration in the Juvenile Classification Homes. We employ a proportional hazards model to examine the relationship between the form of treatment (probation vs training school)

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†Chief Psychologist in the Classification Office within Kawagoe Juvenile Prison, the Correction Bureau within the Ministry of Justice in Japan, 1508 Minami-Otsuka, Kawagoe, Saitama 350–1162, Japan.

‡Associate Professor of Statistics, Institute of Policy and Planning Sciences, The University of Tsukuba, 1-1-1 Tennohdai, Tsukuba, Ibaraki 305–8573, Japan.

and the times to reincarceration, while controlling differences in socio-demographic background, strength of ties to conventional society, offending history, and current delinquency type. Official crime data obtained from the Ministry of Justice were analyzed. The effect of treatment in training school is generally positive, but is found to be complex. Specifically, institutionalization of the late-starting first-time offenders ($N = 5,675$) and of the early-starting repeat offenders ($N = 158$) is associated with significantly longer times to reincarceration. But for the late-starting repeat offenders ($N = 946$), we do not find any positive effect of training school. Instead the late-starting repeat offenders, if institutionalized previously, tend to have shorter times to reincarceration following their second incarceration. The common expectation shared by many politicians and the public in Japan of across-the-board positive effects for sending all the juvenile delinquents to training school is likely to be erroneous at least if effectiveness is measured by the timing of reincarceration.

INTRODUCTION

Effective correctional treatment has been one of the most important goals of the Japanese juvenile criminal justice system since 1922 when the pre-war Japanese Juvenile Law was first enacted after Anglo-American law. More importance was placed on this goal in 1949 when the modern American juvenile criminal justice system replaced the pre-war Japanese Juvenile Law. Two major programs in the new system, training school and probation, have routinely been updated to incorporate new ideas either developed locally or coming out of the West and have been serving as the foundation of correctional treatment of juveniles in Japan.

Probation in Japan relies heavily on counseling and family therapy, and is thus relatively similar to that in the West. Training schools vary more with culture. For example, since 1922, use of the "Introspection Method" derived from the Buddhist principle that human beings can overcome their inherent imperfections and weaknesses through self-discipline learned from meditation, has been tested thoroughly and found effective in Japanese training schools. We doubt if such methods are popular in the West. On the other hand, since 1949, North American correctional treatment techniques such as Role Playing and Group Counseling have also been instituted in modified form in Japanese training schools nationwide.

Given the cultural differences between the West and Japan, it is of great interest to find out if these two principal programs—training school and probation—have been performing as effectively as in the countries of their origin: North America and Europe.

For juveniles sent to training schools, we measure effectiveness by the time between their release from training schools and their subsequent reincarceration in the Juvenile Classification Homes (JCH). For juveniles on probation, it is measured by the time between their release from and subsequent reincarceration in the JCH. Since almost all training school graduates were paroled with supervision whose intensity was about the same as the probationary supervision, we reason that the times-at-risk—the amount of time during the observed period when the subject is free from confinement—for the trainining school graduates and for those on probation are comparable. Those sent to training schools should therefore take longer to reoffend than those on probation, if receiving a treatment in the form of incarceration in Japanese training school discourages future criminal behavior more than that of probation.

The findings in the West on specific deterrence theory convinced us that it is prudent to entertain the possibility that treatment effect of interventions with delinquent youths is possibly a conditional phenomenon (for deterrence as a conditional phenomenon, see, for example, Claster, 1967; Toby, 1957) contingent upon the strength of ties to conventional society and experience in criminal behavior (for effect of these covariates on deterrence see, for example, Greenberg, 1981; Hirschi, 1969; Matza, 1964; Minor and Harry, 1982; Paternoster et al., 1983; Tittle, 1977; Tittle and Logan, 1973). We thus hypothesize that in Japan, as well as in the West, juveniles with greater ties to conventional society, first-time juvenile offenders, or juveniles starting criminal behavior when they are relatively old might be more easily treated than those with fewer ties to conventional society, those experienced in criminal behavior, or those starting criminal behavior relatively early.

The specific issue we investigate in this paper is therefore the following: Is incarceration of juveniles in the Japanese training school, relative to participation in the probation program, associated with longer times from release to reincarceration, even after the strength of ties to conventional society and experience in criminal behavior are controlled? Is the result consistent with the findings from North America and Europe? If not, why?

JAPANESE JUVENILE JUSTICE SYSTEM

According to the Japanese Penal Code the minimum age at which a juvenile is held criminally responsible is fourteen. Under the Japanese Juvenile Law, a "juvenile" is a person under twenty years old and a "delinquent" is a "juvenile" (1) who committed an offense, or (2) who is deemed likely to commit an offense (a status delinquent). In 1995, the number of cases of

juvenile delinquency heard in family court[1] was 124,507. There were only 795 (0.6%) cases of status delinquency in the records.

When an offense is alleged to have been committed by a juvenile, the police conducts an initial investigation. If the evidence points to her/him, s/he is apprehended and referred to the prosecutor, who in turn brings the case to the family court's attention. When the presiding judge at the family court feels a rehabilitative custody is needed, s/he orders the juvenile to be evaluated in the JCH system. For instance, the Japanese family courts ordered only 12,046 juveniles (10%) to be placed in the JCH in 1995. The legally permissible term of confinement in the JCH is four weeks.[2]

A group of clinical psychologists at the JCH records the juvenile's upbringing, education, work experience, and prior antisocial behaviors, if any, through interviews. Under their supervision, he/she also undergoes thorough psychological tests. The JCH comes back to the family court with a recommendation for her/his treatment based on the likelihood of her/his relapsing into the previous pattern of unlawful behavior and the predicted effectiveness of her/his rehabilitative treatment.

The judge also appoints a family court probation officer and authorizes her/him to study the delinquent's social environment by means of interviews with the delinquent and her/his parent(s) or guardian(s). The officer weighs all possible dispositions and sends her/his report to the judge.

The judge makes a final decision using the evidences submitted by the police and/or the prosecutor, the recommendation by the JCH, the report by the family court probation officer, and the testimony at the hearing. In

[1]Throughout we exclude traffic offenses in all statistics.

[2]The Juvenile Law was revised recently for the first time since 1949. The revised Juvenile Law took effect on April 1 in 2001, in which the permissible term of confinement became eight weeks.

1995, 41% and 27% of all the delinquents released from the JCH were placed on probation and in training schools respectively. The judge's decision is influenced by how premeditated and serious the alleged offense was and by the juvenile's past encounter with the law enforcement. It is also important that the judge sees "due process" is being followed in the investigation phase to protect the rights of the juvenile.

The family court does not necessarily follow treatments recommended by the JCH and tends to order those juveniles to be placed under probationary supervision far more frequently: Of the 6,272 (1,104) who were either on probation or sent to training school at the first (second) incarceration in our data, 1,071 (198) or 17.1% (19.5%) were legally disposed against the recommendations, and of which only 57 (19) were sent to training schools, while the remainig 1,014 (179) were on probation. See Tables 1 and 2.

Table 1: Actual treatment disposed by the family court versus the treatment recommended by the JCH at the first incarceration

	Recommended Treatment	
Actual Treatment	Training School	Probation
Training School	1,083	57
Probation	1,014	4,118

As these numbers suggest, the family court has consistently been reluctant to send those juveniles to training schools against the recommendations by the JCH. We conjecture that this is because of the court's understanding that sending a juvenile to a training school is highly detrimental to her/his future within the Japanese society.

As these descriptions illustrate, investigating the problems and needs of a

Table 2: Actual treatment disposed by the family court versus the treatment recommended by the JCH at the second incarceration

	Recommended Treatment	
Actual Treatment	Training School	Probation
Training School	677	19
Probation	179	229

juvenile has been very informal throughout the Japanese family court system. Family court proceedings in Japan are being consciously kept removed from those in criminal court despite repeated complaints from conservatives, quite a contrast to juvenile court proceedings in the United States where by the 1980s they were made similar to those in criminal court.[3]

We note that the decision to send delinquents to training schools had been made independent of the capacity of the Japanese training school system during the study period because few of them had a problem of over-crowding.

Probation

Probation officers are full-time employees of the Ministry of Justice with degrees in medicine, sociology, psychology, education and/or other disciplines considered relevant to the treatment of offenders. They receive substantial assistance from volunteers: There were only 854 probation officers supervising both juvenile and adult offenders in Japan in 1990 according to the latest data. There were 48,776 volunteers in 1995. The caseload of a probation offi-

[3]In the new Juvenile Law instituted in April 2001, the public prosecutor can attend the juvenile court proceedings and the victim(s) can also testify against the accused juvenile(s) if the presiding family court judge sees the need.

cer was approximately 92 and s/he was assisted by 80 volunteers on average at a given time in 1994 according to the latest data. Volunteers—officially called volunteer probation officers—are not on the Government's payroll.

A probation officer profiles those delinquents assigned to her/him by interviewing them and by studying their records. S/he then makes a preliminary rehabilitation plan and assigns a volunteer to each one of those delinquents. The volunteer supervises the delinquent according to the plan and sends a monthly report to the probation officer. Probation officers may supervise delinquents if they think intensive direct interventions are necessary. In practice, however, the roles and responsibilities of the probation officer and the volunteer are not so clearly separated (Shikita and Tsuchiya, 1990:220).

Probationary supervision of juvenile delinquents may legally continue up to two years in Japan. If they become twenty-years old during the period, their supervision is terminated.

Probationary supervisions can be and have been shortened quite often in recent years in exchange for a set of satisfactory behaviors on the part of the juveniles. They consist of complying with several stated conditions: living at a declared residence; holding a legitimate job for an extended period of time; avoiding antisocial or criminal behaviors; avoiding association with an individual or a group of individuals that could lead to antisocial or criminal behaviors; and obtaining a prior approval when s/he moves or travels longer than a period of one week. Of the juveniles completing probations in 1995, 75% had had their periods shortened.

Training Schools

There were 54 training schools throughout Japan in 1995. They typically offer group therapy and counseling using the aforementioned techniques, voca-

tional training, and academic education. Nationally there were 2,086 instructors in the training school system and the daily average number of juveniles in the training schools was 2,847 in 1995, 1.36 delinquents per instructor.

There are three treatment programs, each with its own curriculum: the special short-term program; the general short-term program; and the long-term program. The average confinement periods are three, five, and twelve months respectively. Each school makes an individual correctional plan considering the juvenile's needs. The family court decides which training school program the juvenile should undergo.

Almost all the delinquents (95% in 1995) were paroled after release on the condition that they undergo further supervision. The supervision is about as intense as the probationary supervision.

DATA

SAMPLE

The Correction Bureau within the Ministry of Justice maintains a database of all the delinquents placed in the JCH since 1988 (the CB data). In the CB data we focus on one group, which we call the JCH class of 1991, of the delinquents who were in the JCH system for the first time in 1991 and were assessed by its clinical psychologists. There are 12,644 of them, a sizable number for the data in our judgement.

We chose them partly because their complete correctional histories are available: The family court has the primary jurisdiction over the delinquents aged between fourteen and nineteen. Those who were fourteen in 1991 when they were placed in the JCH for the first time became twenty by the end of December 1997, the last month the CB data are available. Censoring

occurred if they had not been reincarcerated until twenty, if they died, or if they moved out of the jurisdictions of the responsible family courts.

We chose them also because they are the most up-to-date data available: Psychological profiles and behavioral patterns of the juvenile delinquents leading them to crime are very different now from those of only a decade ago (Ako, 1998). We see the result of the change in National Police Agency statistics: The annual per-capita incidence of murder, rape, arson, and assault in Japan has climbed by 50% in the last decade. The increase came even though the Japanese population on average has passed the youthful crime-prone years, a maturation that should be producing a drop in crime.

The CB data were independently entered to the database each time a juvenile delinquent was placed in the JCH, but her/his name and address were withheld to protect her/his privacy when the Bureau compiled them. Therefore we need to match her/his first record with the succeeding one(s) to see if s/he is a recidivist, with the information available in the CB data. This record-matching is repeated six times and we identify up to five-time recidivists. See Appendix 1 for the record-matching criteria and algorithm. Applying "record-matching criteria" six times, we reduce 12,644 records to 8,384 delinquents in the JCH class of 1991. We call the data the individual-based JCH class of 1991 data (IJCH1991). Table 3 shows the distribution of the number of incarcerations in the IJCH1991. About 22.0% are recidivists.

We think the record-matching method is justified for the following two reasons: First, few delinquents violated the assumption in Appendix 1 that a delinquent did not leave her/his jurisdiction. For example, at one JCH where about 300 delinquents have been placed yearly and where somewhere between 80 to 90 of whom have been recidivists, only one or two delinquents have left their jurisdiction every year. Second, the rates of recidivism in

Table 3: The number of incarcerations in the JCH in the IJCH1991 data

Incarcerations	The number of delinquents	Percentages
1	6,544	78.0
2	1,362	16.2
3	365	4.4
4	81	1.0
5	27	0.3
6	5	0.1
total	8,384	100.0

the JCH class of 1991 data are very similar to those in the cross sectional data collected by the Research and Training Institute within the Ministry of Justice in Japan (the RTI data for short). Table 4 lists the total and gender specific rates of reincarceration in the JCH class of 1991[4] as well as those in the RTI data. For all the delinquents placed in the JCH, the rate of reincarceration in the JCH class of 1991 is 26.0%, as opposed to 28.9% in the RTI data (RTI, 1992). For male and female delinquents under eighteen, the rates are 39.7% and 17.4%, similar respectively to 36.8% and 22.1% in the RTI data. Considering the differences in calendar years when these two data were collected and in follow-up periods, we think that the rates of recidivism in the JCH class of 1991 are remarkably similar to those in the RTI data. Therefore we believe the matching algorithm is well supported.

As already stated, the Japanese Juvenile Law gives only the family court a power to place a juvenile delinquent in the JCH, but it in principle limits the power to be only applicable for those aged between fourteen and nineteen.

[4]This number includes the people who needed to be excluded. We discuss about them in the latter part of this section.

Table 4: The Rates of Reincarceration in Various Samples

sample	the number of sample	follow-up period	the rate of reincarcerations
all delinquents			
the JCH class of 1991	9,424[a]	until twenty years old	26.0
placed at JCHs in 1991	17,261	cross-sectional data	28.9
male under 18			
the JCH class of 1991	4,489	until twenty years old	39.7
released from JCHs in 1986	8,129	two years and over	36.8
female under 18			
the JCH 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 IJCH1991 data, namely, 8,384, because this includes all the delinquents excluded from the IJCH1991 data.

Since we focus on the JCH class of 1991, there should not be any records of those under fourteen or over nineteen at their releases in our data.

There are exceptions, however: First, some juveniles younger than fourteen who had already been in the Child Education and Training Homes needed to be restrained because they often escaped from the institution. Their cases needed to be heard in the family court and the judges tended to seek JCH's psychological assessments of them. Second, some of juveniles placed on probation or sent to the training schools before their twentieth birthdays were ordered to receive the correctional treatments even after they become twenty. Prior to the first through sixth record-matchings, 3,657, 528, 27, 29, 16, and 3 *records* are removed respectively because they belong to one of the two age-related exceptions mentioned above. See Figure A.1.

There are *individuals* we exclude from the IJCH1991 after the record-matching because their inclusion would prevent us from focusing on the main theme, that is, the relative effectiveness: We exclude altogether the juveniles who were judged to have psychotic disorders (111 individuals or 1.3%) because they could respond to the treatments differently from the others.

We exclude the status delinquents (479 individuals or 5.7%) as well: It is important that time-at-risk be precisely determined in event history anal-

ysis. This means that a time origin must be unambiguously defined and the meaning of failure must be entirely clear. The family court became very careful in recent years when deciding whether a juvenile should be labelled as a status delinquent. Nevertheless, they, an overwhelming majority of them were women, were brought into the Juvenile Justice System by the police for noncriminal misbehavior such as having sexual relationships with multiple partners, or running away from home, all against parental supervisions. Arbitrariness involved in such apprehensions and lack of clear meaning of "failure" lead us to believe that their times-at-risk can not be defined as precisely as those for the other delinquents considered in this paper.

Finally we exclude fifteen delinquents whose estimated time-at-risk are negative or zero. They all are the training school graduates and we probably overestimated the length of the programs they underwent in training school. See Appendix 2 for details. With these exclusions, there remain 6,272 non-recidivists and 1,104 one-time recidivists in IJCH1991.

We need to analyze the times to reincarceration subsequent to the first placement in the JCH separately from those following the second because analyzing the combined data would violate the assumption of the model that the times-at-risk be statistically independent. Recidivism being a repeatable event, delinquents who were frequently incarcerated in the past are likely to be reincarcerated in future. This fact alone does not necessarily violate the assumption of independence, so long as the dependency is fully accounted for by the covariates in the model. In most cases, however, there will be a good reason to think that the independence assumption is false, at least to some degree (Allison, 1984:54).

In our cases, incarceration in the JCH had various influences on reincarceration and we may not be able to fully control dependency by inclusion of

covariates. Therefore we need to construct two comparable but separate data sets out of the IJCH1991, one subsequent to the first placement in the JCH (First JCH1991, or FJCH1991) and the other following the second (Second JCH1991, or SJCH1991) so that results on the relative effectiveness from the two data sets can be compared.[5] The records of all the non-recidivists who were either on probation or sent to training schools are included in the FJCH1991. The first and/or second records of one-time recidivists are respectively included in the FJCH1991 and SJCH1991 unless they were neither on probation nor sent to training school on their two JCH placements.

Patterson and Yoerger (1993) and Patterson et al.(1989) argued that there were different kinds of criminals with different offending processes: "Early-starters" have longer criminal careers and more problematic behavior than "late-starters." Although some (for example, Gottfredson and Hirschi, 1990; Sampson and Laub, 1993) have argued that there is a single process which applies to all offenders, we hypothetically accept frequently quoted Patterson and his colleagues' typology (1993, 1989). If the covariates influenced the time to recidivism similarly between the two types of offenders, however, it could be interpreted as an evidence for a single process theory.

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 prescribe where the line should be drawn between early and late first delinquency. Therefore we define early-starter as a delinquent whose age at first delinquency was twelve or younger[6] and divide both the

[5]Data could be obtained similarly from IJCH1991 for the third incarcerations and thereafter, but with much fewer number of the samples.

[6]Age at first delinquency is entered to the CB data by the psychologist at the JCH based on the interview with the delinquent and on the information provided by the delinquent's family court probation officer. We examined age eleven and age thirteen thresholds

FJCH1991 and SJCH1991 into two: late-starting first-time offenders and late-starting offenders with one previous incarceration; early-starting first-time offenders and early-starting offenders with one previous incarceration.

DEPENDENT VARIABLE

Gottfredson and Barton (1993) gave a recent North American example comparable in its purpose to this paper. They studied effectiveness of a training school program relative to a community-based program on recidivism for juvenile delinquents in the state of Maryland. Interestingly, their measurements of recidivism as well as the method to analyze them were different from ours. They measured recidivism in terms of the numbers of arrests—total or crime specific—during short-term (one year following the release) as well as long-term (2.5 years following the release) follow-up periods. Then they regressed these numbers on the variables indicating whether the juvenile completed or partially completed a training school program while controlling on all measures of demographic characteristics and prior criminal activity found to vary significantly by group.

We define recidivism to be reincarceration in the JCH. Other measures of "failure" such as rearrest could broaden the scope of study, but those data are not available in the IJCH1991. More importantly, however, we find it necessary to stick to the stringent definition of recidivism because rearrests in our data can be arbitrary. Notice that, when constructing the IJCH1991, we excluded the status delinquents from our data for the same reason.

Times-at-risk for reincarceration are defined as follows. For a juvenile on probation, the "time origin" is the date of her/his release from the JCH. If

for dividing the sample. We obtained results very similar to those based on age twelve threshold.

s/he was a recidivist, the "failure time" is the date of her/his reincarceration in the JCH and her/his time-at-risk is the time elapsed from the "time origin" to the "failure time." Non-recidivist's time-at-risk is the time elapsed from the "time origin" to her/his twentieth birthday at which point it is censored. Her/his twentieth birthday is calculated from her/his date of birth.

For a juvenile sent to a training school, the time origin should be the date of her/his relelease from the school. Although the dates of release(s) from and reincarceration(s) in the JCH, birthdays, and ages at release(s) from the JCH are all available in the IJCH1991, the dates of release(s) from training schools are not. We estimate them using the type of program—of the three aforementioned training school programs—a particular juvenile underwent and its average length: the former is in the IJCH1991, while the latter come from the Ministry of Justice statistics. Again the "failure time" for a recidivist is the date of her/his reincarceration in the JCH and a non-recidivist's time-at-risk is censored at her/his twentieth birthday.

We reason that times-at-risk for those on probation and the trainining school graduates are comparable: First, as we stated, almost all training school graduates were paroled with supervision whose intensity was about the same as the probationary supervision. Second, we believe that shorter times-at-risk for training school graduates due to their participation in the three to twelve month training school programs can be safely controlled by inclusion of age at release covariate. See Appendix 2 for how we calculate the time-at-risk in detail.

COVARIATES

Other than treatments, several covariates are included to control differences in socio-demographic background, strength of ties to conventional society,

offending history, and current delinquency type.

We include delinquent's gender and age at release as socio-demographic variables. Age at release is also a control variable for the time of entry into the risk set because censoring of times-at-risk depends on the age at release. By including the age at release, we can make the censoring mechanism conditionally independent of the duration distribution (Vermunt, 1997:121-122). We also include the covariate "the age at release squared" because crime rates in Japan increase sharply from age about ten to reach a peak at age fifteen to eighteen and decline sharply afterward.

Marital status, length of education, and employment status were often used as surrogates for strength of ties to conventional society (Sherman and Smith, 1992; Tittle, 1980) presumably because an individual who is married, better educated, and/or employed is more strongly bonded to conventional values. We generally follow this idea, but make two modifications. First we use "home environment" rather than marital status to measure the strength of bonds each of the juveniles felt for her/his family because most of them were simply too young to be married. Second we include "Whether s/he is hardworking" as a variable measuring the strength of the commitment to employment status. Recent literature suggests that simply holding a status may not be so important as the strength of the commitment to that status in influencing recidivism (Sampson and Laub, 1990, 1993) and timing of recidivism (Sampson and Laub, 1993). Altogether we presume that an individual who is raised in a stable family by loving parents, better educated or employed full-time, and/or commits to the school or employment is more strongly bonded to conventional values.

Therefore the six indicator covariates measuring the strength of ties to conventional society are the following: whether her/his parents provided a

stable home; whether s/he had a strong attachment to her/his father, mother, or both;[7] whether s/he was a student or employed full-time; whether s/he was hardworking.

We include three indicators and two other variables to control the offending history: whether s/he had been placed on probation prior to the current incarceration; whether s/he had been sent to the training school prior to the current incarceration; whether s/he had already been on probation when placed in the JCH; the number of incarcerations in the JCH; the age at first delinquency. Finally we include four indicator variables to control the current delinquency type: property, violence, drug, and others. Table 5 shows how we code these covariates. Table 6 shows descriptive statistics for the IJCH1991 data.

METHOD

We do not observe a significant number of juvenile delinquents for the full time to reincarceration: They must leave the Japanese juvenile criminal justice system when they reach twenty, an age at which an individual is legally considered as adult in Japan. We employ a proportional hazards model (Cox, 1972, 1975)—a standard technique of event history analysis—to account for such incomplete observation of the failure time. Within this framework, we regress the times to reincarceration on the variables indicating whether the juvenile was on probation or sent to a training school, while controlling differences in socio-demographic background, strength of ties to conventional

[7]We included "Attachment to both parents" after Rankin and Kern (1994). We also examined several models with "Attachment to either parent" included because Hirschi (1969) and others have argued that it was a better predictor of delinquency. We did not find the variable to be significantly correlated with recidivism in our data.

Table 5: Covariates and Their Codes

Covariate	Code
Socio-Demographic Background	
Gender	Male=1, Female=0
Age at Release	Years
Strength of Ties to Conventional Society	
Stable Home	Stable=1, Unstable=0
Attachment only to Father	Strong=1, Weak or None=0
Attachment only to Mother	Strong=1, Weak or None=0
Attachment to Both Parents	Strong=1, Weak or None=0
Employment Status	Student or Employed Full-Time=1, Other=0
Hardworking	Yes=1, No=0
Offending History	
Previously Placed on Probation	Yes=1, No=0
Previously Sent to Training School	Yes=1, No=0
Currently on Probation	Yes =1, No=0
The Number of Incarceration in the JCH	Actual Number
Age at First Delinquency	Years
Current Delinquency Type	
Property	Yes =1, No=0
Violence	Yes =1, No=0
Drug	Yes =1, No=0
Treatment	
Treatment Disposed by the Family Court	Training School=1, Probation=0

Table 6: Descriptive Statistics for the IJCH1991 data

Covariates	All the Delinquents N=8,384	Non-recidivists N=6,544	Recidivists N=1,840
Socio-Demographic Background			
Gender			
Male	88.9	87.5	93.9
Female	14.1	12.5	6.1
Age at Release			
Average	18.2	18.0	18.7
S.D.	1.3	1.3	1.0
Strength of Ties to Conventional Society			
Stable Home			
Stable	52.2	54.8	43.0
Unstable	47.8	45.2	57.0
Attachment only to Father			
Strong	42.8	44.2	37.9
Weak or None	57.2	55.8	62.1
Attachment only to Mother			
Strong	62.8	64.0	58.4
Weak or None	37.2	36.0	41.6
Attachment to Both Parents			
Strong	36.0	37.3	31.4
Weak or None	64.0	62.7	68.6
Employment Status			
Student	10.8	12.9	3.2
Employed Full-Time	49.5	48.1	54.7
Other	39.7	39.0	42.1
Hardworking			
Yes	48.5	47.9	50.7
No	51.5	52.1	49.3
Offending History			
Previously Placed on Probation			
Yes	22.5	13.3	55.3
No	77.5	86.7	44.7
Previously Sent to Training School			
Yes	5.7	–	25.9
No	94.3	–	74.1
Currently on Probation			
Yes	33.9	21.9	76.8
No	66.1	72.1	23.2
The Number of Incarceration in the JCH			
Average	1.3	1.0	2.3
S.D.	0.6	0.0	0.7
Age at First Delinquency			
Average	14.6	14.8	14.0
S.D.	1.9	2.0	1.7
Current Delinquency Type			
Property	31.5	31.2	32.5
Violence	23.2	23.3	23.1
Drug	13.1	12.1	16.6
Other	32.2	33.4	27.8
Treatment			
Training School	21.5	15.1	22.6
Probation	53.1	61.8	44.1
Other	25.4	23.1	33.3

society, offending history, and current delinquency type. We use the model because it compensates for the bias introduced by the censoring of the data. We chose Breslow's (1974) treatment of tied events (Allison, 1984:41).

Suppose, for example, receiving a treatment in the form of incarceration in the Japanese training school has a large positive effect early but the effect trails off. In other words, incarcerations in the training school might influence how many of those incarcerated juveniles are free of further criminal behavior up to some time point, but once they are "rehabilitated" it has no influence beyond that time point. If this kind of time-dependence exists in the treatment covariate, the fitted model will underestimate the true effect of treatment for a short period of time, and overestimate it for a long period of time. For this reason the proportional hazards model does not apply to these time-dependent covariates in general.

We test time-dependence in covariates and, if it exists, we stratify by the covariates if they are categorical. The test uses so-called the Schoenfeld residuals (Schoenfeld, 1982) available for each of the failure times and the included covariates. Grambsch and Therneau (1994) showed that the scaled Schoenfeld residuals for i-th individual have average $g(t_i)\theta$ where the term $g(t)\theta$ represents the nature of time-dependence. If incarceration has a large beneficial effect early but the effect trails off, the scaled Schoenfeld residuals for the covariate "treatment" would be negative at first but positive later. We can numerically calculate the correlation between $g(t_i)$ and the scaled Schoenfeld residuals and perform a chi-squared test of $\theta = 0$ for each covariate. It should be noted that the stratified models prevent a significance test for the stratification variables. Given that the treatment variable often requires stratification, we must emphasize the fact that one cannot always use statistical means to establish differences between the treatments.

Once the proportional hazards model is sufficiently extended to allow for non-proportional hazards to exist between levels of time-dependent categorical covariates, we choose the best fitted model by a likelihood ratio test.

RESULTS

Analysis begins with an examination of the effects covariates have on the times to reincarceration for the late-starting first-time offenders ($N = 5,675$) and for the late-starting offenders with one previous incarceration (late-starting repeat offenders for short, $N = 946$). It is repeated for the early-starting first-time offenders ($N = 597$) and for the early-starting offenders with one previous incarceration (early-starting repeat offenders, $N = 158$) as well. These analyses examine suggestions by Nagin and Farrington (1992a) and by Smith and Brame (1994) that the effects covariates have on the timing of recidivism are different for late- and early-starting offenders. Throughout, an individual with higher estimated coefficient values was more likely to be reincarcerated sooner than someone with lower values. We start with the late-starting offenders because they formed approximately 90% majority in our data.

LATE-STARTING OFFENDERS

Table 7 contains the estimates of the best fitted proportional hazards models for the late-starting first-time offenders stratified by gender and treatment[8]

[8]Two covariates—gender and treatment—did not satisfy the assumptions of proportional hazards: The null hypotheses that time-dependence did not exist were rejected for gender ($\chi^2(1) = 8.93, p < 0.01$) and for treatment ($\chi^2(1) = 6.70, p < 0.01$). Therefore we stratified them into four groups: Stratum 1 for females sent to training school, 2 for females on probation, 3 for males sent to training school, and 4 for males on probation.

and for the late-starting repeat offenders stratified by property offense.[9]

Table 7: Proportional Hazards Models for the Late-Starting First-Time and Repeat Offenders

	Late-Starting First-Time Offenders (N=5,675)			Late-Starting Repeat Offenders (N=946)		
Covariates	**coef**	**exp(coef)**	**Z**	**coef**	**exp(coef)**	**Z**
Socio-Demographic Background						
Gender	Stratified			1.05	2.87	2.05*
Age at Release	2.17	8.72	2.91**	4.88	131.16	2.24*
Age at Release Squared	-0.06	0.94	-3.02**	-0.15	0.86	-2.41*
Strength of Ties to Conventional Society						
Attachment to Both Parents	-0.16	0.85	-2.83**			
Employment Status	-0.23	0.79	-4.00**			
Offending History						
Previously Sent to Training School				0.46	1.58	2.38*
Age at First Delinquency	-0.10	0.90	-4.36**			
Current Delinquency Type						
Property	0.27	1.31	4.42**	Stratified		
Drug	0.40	1.50	4.86**	0.58	1.79	3.08**
Treatment	Stratified					
-2(log-likelihood)			20,162.87**			2382.26**

**$p < 0.01$.
*$p < 0.05$.

Late-Starting First-Time Offenders

Figure 1 shows a plot of the estimated survival curves for the four strata. In this figure the curves end at different points, because the longest times-at-risk are different for the four strata (136, 1,096, 1,060, and 1,570 days for stratum 1 to 4 respectively). Nevertheless the figure shows that the training school strata are above those of the probation strata throughout within the same gender, indicating treatment had major effects on recidivism: The male and female late-starting first-time offenders on probation are more likely to

[9]The null hypothesis that time-dependence did not exist was rejected for property offense ($\chi^2(1) = 4.90, p < 0.05$).

recidivate quickly than their respective counterparts sent to training schools.

The result that training schools are more effective than probation at the first incarceration is consistent with a study by Gottfredson and Barton (1993) of juveniles in the state of Maryland, though their measurements of recidivism as well as the method to analyze them are different as we stated in **DEPENDENT VARIABLE** subsection and their results apply to both first-time and repeat offenders. They found that during the year following release, and during the 2.5 years following release, the previously institutionalized groups had fewer total arrests.

The results of studies in the West comparing the effectiveness of institutionalization with that of community-based treatments are far from conclusive, however. Martinson (1974), Lipton et al. (1975), and Wright and Dixon (1977) in the 1970s found little evidence to support the efficacy of any interventions with delinquent youths. They favored community-based treatment programs as a cost-effective alternative to institutionalization. Several meta-analytic studies (Andrews et al., 1990; Lipsey, 1992; Whitehead and Lab, 1989) in late 1980s and early 1990s found that a number of programs—residential and non-residential—could reduce subsequent offending rates by a substantial magnitude, but usually only barely reduced recidivism. A recent study by Dejong (1997) testing propositions from specific-deterrence theory for male arrestees detained in New York City also found that incarcerations did not have a statistically significant effect on timing of rearrest for the naive adult arrestees.

We hypothesize at the beginning that, in Japan as in the West, treatment effect of interventions with delinquent youths is dependent on the juvenile's socio-demographic background, strength of ties to conventional society and experience in criminal behavior. So we include them into the model as con-

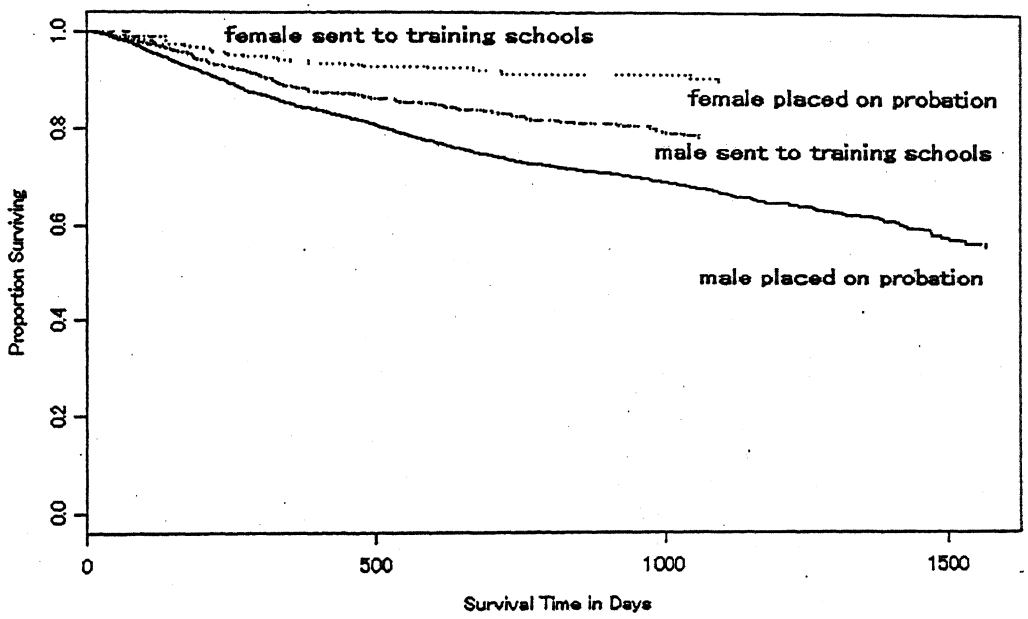

Figure 1: Recidivism of the Late-Starting First-Time Offenders Stratified by Gender and Treatment

trolling covariates. To further scrutinize our tentative finding on institutionalization versus community-based placement for the late-starting first-time offenders, we now look for irregularities in the behavior of these controlling covariates and see if they are in line with other studies in the West or Japan. If these covariates behave inexplicably and differently from all the prior studies, then our method of record-matching the Correction Bureau data into the individually-based JCH class of 1991 data (IJCH1991) as well as our tentative finding based on the IJCH1991 must be questioned.

Figure 1 shows that the female strata curves are always above those of the male strata, indicating the male late-starting first-time offenders are more likely to be reincarcerated sooner than the female counterparts. This result is consistent with many previous studies.

Seven other covariates in Table 7 are significantly correlated with the late-starting offenders' time to reincarceration. For example, the value of the exponent for the covariate, employment status, is less than 1 (0.79) with the coefficient -0.23. This means that those employed full-time/students are more likely to be reincarcerated later than those who are not. Similarly, the individuals with attachment to both parents, and those who entered into delinquency at an older age are less likely to recidivate quickly. Conversely, the property or drug-related offenders are more likely to be reincarcerated sooner than those who committed the other types of offenses.[10]

Negative coefficient for the employment status is consistent with the studies by Dejong (1997) and by Visher and Linster (1990), though these studies were on adults. We find that "attachment to both parents,"but not to either one of parents, has a significant preventive effect on recidivism. This is

[10]The other types of offenses included violence (24.5%), traffic law violation (18.1%), and all the rest (53.5%) in the CB data.

consistent with Rankin and Kern (1994) in which they found that strong attachment to both parents prevented delinquency more effectively than strong attachment to one of the parents. It fails to confirm the claims of Hirschi (1969) that strong ties to both parents did not necessarily provide an effective buffer against delinquency.

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

The positive coefficient for the property offense covariate differs from an American study on adults by Dejong (1997). Her negative coefficient was reported to be statistically insignificant, however.

The positive coefficient for the drug-related offense covariate is consistent with Zamble and Quinsey (1997) in which they found that recidivists had more substance abuse history than non-recidivists. For boot camp prisoners, however, MacKenzie et al. (1995) found that past experience of drug-related offense had a significantly preventive effect on rearrest.

These coefficients describes patterns of juvenile recidivism in Japan generally in agreement with that in the West in terms of socio-demographic background, strength of ties to conventional society and experience in criminal behavior. In the area where they differ, our results may point to uniquely Japanese patterns, but they are at least consistent with one previous Japanese study of a similar nature. For example, our positive coefficient for the property offense covariate confirm a Japanese study by the aforementioned RTI (1992) and the Japanese National Police Agency statistics, both of which have consistently shown that property offenders tend to recidivate. See Fukushima

(1968). Our positive coefficient for the drug-related offense covariate also agrees with another finding by the RTI (1992) that the Japanese juvenile drug-related offenders had a higher rate of reincarceration than the other delinquents.

Therefore we accept our tentative finding: The late-starting first-time offenders sent to the Japanese training schools were reincarcerated later than those participated in the probation program.

Late-Starting Repeat Offenders

The pivotal covariate—treatment—in this analysis has no effect on the timing of recidivism for this subsample. Incarceration in training school does not affect how quickly a late-starting repeat offenders recidivates. To validate this tentative finding, we now look for irregularities in the behavior of the controlling variables.

Gender and drug-related offence covariates in Table 7 are significantly correlated with these late-starting repeat offenders' time to reincarceration stratified by property offense: The male or the drug-related late-starting repeat offenders are more likely to recidivate quickly than the female counterparts, or those incarcerated for the other types of offenses respectively. Figure 2 shows a plot of the estimated survival curves for the two strata. The non-property offense strata curve stays above that of the property offense strata. This pattern indicates that the late-starting repeat offenders incarcerated for property offense are more likely to recividate quickly. Note that the behavior of these three covariates—gender, drug, property—is similar to that for the late-starting first-time offenders.

A late-starting repeat offender sent to training school for the first offence is more likely to recidivate quickly than a late-starting repeat offender on

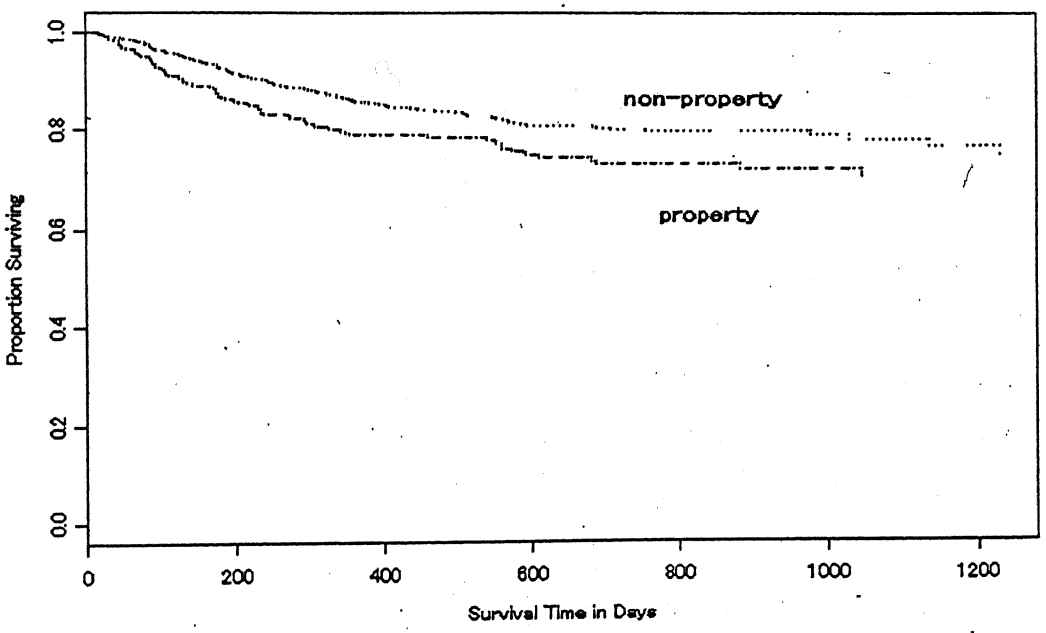

Figure 2: Recidivism of the Late-Starting Repeat Offenders Stratified by Property Offense

probation for the first offence. This is probably because a mechanism is at work similar to the one often observed in white-collar crime deterrence: White-collar potential criminals have much more to lose through sanction than criminals on the street. Thus punishment will deter them more effectively (Braithwaite and Geis, 1982; Geis, 1982). Once incarcerated, however, they perceive the prestige and status they have enjoyed are difficult to regain. This reduces the perceived cost of future illicit behavior and they recidivate (see Weisburd et al., 1995). For the mechanism to work, the late-starting repeat offenders in our data must have ties to conventional society. As Paternoster and Brame (1997) pointed out, late-starting delinquents in general have more social bonds to sacrifice than early-starting counterparts.

We find no inexplicable anomalies in the behavior of these controlling covariates and we conclude that incarceration in training school does not affect how quickly a late-starting repeat offenders recidivates. We will examine the differential effects of training school for the two kinds of late-starting offenders in **CONCLUSION AND DISCUSSION** section.

EARLY-STARTING OFFENDERS

Table 8 contains the estimates of the best fitted proportional hazards models for the early-starting first-time and repeat offenders.

Early-Starting First-Time Offenders

The crucial covariate—treatment—in this analysis has no effect on the timing of recidivism for this subsample. Incarceration in training school does not affect how quickly an early-starting first-time offenders recidivates. We now look for irregularities in the behavior of the controlling variables to validate this tentative finding.

Table 8: Proportional Hazards Models for the Early-Starting First-Time and Repeat Offenders

	Early-Starting First-Time Offenders (N=597)			Early-Starting Repeat Offenders (N=158)		
Covariates	coef	exp(coef)	Z	coef	exp(coef)	Z
Socio-Demographic Background						
Gender	1.41	4.08	1.98*			
Age at Release				13.38	643,000.00	2027*
Age at Release Squared				-0.38	0.69	-2.31*
Strength of Ties to Conventional Society						
Attachment only to Father	-0.54	0.58	-3.15**			
Attachment only to Mother	0.37	1.45	2.46*			
Current Delinquency Type						
Property	0.34	1.40	2.28*			
Treatment				-0.63	0.53	-1.96*
-2(log-likelihood)			2,232.39**			403.94**

**$p < 0.01$.

*$p < 0.05$.

Unlike the models for the late-starting offenders, there is no stratifying covariate for this model. Four covariates in Table 8 are significantly correlated with the early-starting first-time offenders' time to reincarceration. Those attached only to her/his father are less likely to recidivate quickly. On the other hand, the male delinquents, those attached only to her/his mother, and the property offenders are more likely to recidivate quickly than the female offenders, those not attached to her/his mother, those committed the other types of offenses respectively.

The early-starting first-time offenders seems to have difficulty in perceiving their parents as an unit presumably because proportionally more of them came from a dysfunctional family than the late-starting counterparts. While it is easier to understand why "disciplinarian" or "strongly-tied-to-conventional-values" fathers can deter antisocial behaviors, the "nurturing" role of mothers by itself cannot explain why the early-starting first-time of-

fenders with attachment only to her/his mother is likely to recidivate quickly.

Zhang and Messner (1995) wrote that "the one-child family policy (in China) contributes to delinquency by encouraging parents to be too lenient and indulgent in their dealing with their children." As the birth rate dwindles in Japan, Hayashi (1996) and others have argued that the Japanese parents have stopped supervising them properly because they did not wish their few children to have resentment against them. Japanese mothers of these early-starting first-time offenders, though they might have loved their children to the extent that the children felt an affection towards them, might also have failed to educate their children to be a fit member of society. The resulting poor or ineffective socialization may have been one of important causes of delinquency for these early-starters as Paterson et al. (1989, 1993) argued. In the end, their love might have inadvertently been interpreted as an implicit support for what their delinquent children had been doing all along at least in the eyes of their children.

We may be able to regard age at first delinquency as a surrogate for the length of association with delinquent peers especially for late-starting offenders, because the effect of delinquent peers on delinquency can be much stronger for late-starting offenders than for early-starting offenders (Paternoster and Brame, 1997). This may be the reason why age at first delinquency covariate does not have a significant effect on recidivism for the early-starting first-time offenders in our data, while it is significant for the late-starting first-time offenders.

Suppose we wish to find the best model for the early-starting first-time offenders with the covariate "treatment" included, then we obtain Table 9. Notice that all the significant covariates in Table 8 remain in the model and their coefficients change very little in magnitude and in significance, indi-

Table 9: Proportional Hazards Models for the Early-Starting First-Time Offenders with Covariate "Treatment" Kept Included

	Early-Starting First-Time Offenders (N=597)		
Covariates	coef	exp(coef)	Z
Socio-Demographic Background			
Gender	1.42	4.14	2.00*
Age at Release			
Age at Release Squared			
Strength of Ties to Conventional Society			
Attachment only to Father	-0.56	0.57	-3.26**
Attachment only to Mother	0.34	1.40	2.29*
Current Delinquency Type			
Property	0.34	1.40	2.28*
Treatment	-0.25	0.78	-1.54
-2(log-likelihood)			2,229.94**

**$p < 0.01$.

*$p < 0.05$.

cating that "treatment" covariate does not influence the behavior of these other covariates. In Table 9 covariate "treatment" is not statistically significant ($p \approx 0.12$), however. We therefore accept the tentative finding that incarceration in training school does not affect how quickly an early-starting first-time offenders recidivates. But we must do so with some reservation because, with more data, sending them to training schools can turn out to be effective in lengthening the times to reincarceration.

Early-Starting Repeat Offenders

The vital covariate—treatment—in this analysis has an effect on the timing of recidivism for this subsample. Incarceration in training school affects how quickly an early-starting repeat offenders recidivates. We now look for inexplicable behavior on the part of the controlling variables.

Gender is not significantly correlated with the times to reincarceration for the early-starting repeat offenders, though it is for the first-time counterparts. While twenty one females (3.52%) are in the 597 early-starting first-time offenders, there are only two females (1.27%) out of the 158 early-starting repeat offenders, however. The fact that the patterns of behavior of the two females are similar to those of their male counterparts, in our judgment, ought not to be generalized as an evidence to support the interpretation.

Offending history as well as current delinquency type no longer influence whether the early-starting repeat offenders recividate quickly. On the whole few variables show significant effects for the early-starting repeat offenders.

Dejong (1997:571) wrote on her "experienced arrestees" that "for people with few ties longer periods of incarceration are more effective deterrents than shorter ones," possibly because "short confinements may not provide a strong enough dosage to get unbonded people to reevaluate their percep-

tions of the certainty and severity of punishment." We suspect the same reasoning applies but with her "longer periods of incarceration" and "short confinements" for her "experienced arrestees" respectively replaced with our "training school" and "probation" for the early-starting repeat offenders—the most "experienced" delinquents in our data. In this sense our result on treatment is consistent with hers because our early-starting repeat offenders are likely to be the ones with fewest ties to society.

Altogether we find no irregularities in the behavior of these controlling covariates and we conclude that incarceration in training school affects how quickly an early-starting repeat offenders recidivates. The differential effects of training school for the two kinds—first-time as opposed to repeat—of early-starting offenders, if any, may not be as pronounced as those observed for the two kinds of late-starting offenders because we have some reservation on the conclusion for the early-starting first-time offenders as discussed.

CONCLUSION AND DISCUSSION

This study examines the effects of treatment in training school relative to probation on subsequent offending behavior. The effects of the control variables—socio-demographic background, strength of ties to conventional society, offending history, and current delinquency type—are described in **RESULTS** section. We only discuss the effect of strength of ties to conventional society.

Sending the late-starting first-time offenders to training school—the least "experienced" offenders consisting of 77% ($N = 5,675$) of the offenders in our data—as well as the early-starting repeat offenders—the most "experienced" offenders making up 2.1% ($N = 158$)—is associated with longer times to reincarceration in the JCH. The positive effect of training school is far weaker,

but may still be there for the early-starting first-time offenders ($N = 597$). See Table 9. For the late-starting repeat offenders ($N = 946$), we do not find any positive effect of training school. However, if institutionalized in training school previously, they were more likely to recidivate quickly following their second incarceration. As these results suggest, the emerging picture is the one that is far more complex on how treatment in training school should be administered relative to probation. The common expectation shared by many politicians and the public in Japan of across-the-board positive effects for sending all the juvenile delinquents to training school is likely to be erroneous if effectiveness is measured by the timing of reincarceration. It also shows the danger associated with not following Patterson and his colleagues' typology (1993, 1989) and analyzing our data as a whole.

Let us first put forward two general reasons why sending juvenile delinquents to Japanese training schools for treatment can be more effective relative to putting them on probation: First the treatment plan at training school is designed to help them learn to build and maintain interpersonal relationships and acquire job skills. Since the average caseload at training schools is one to two per instructor and since they receive the information on and assessment of the incoming delinquent from the JCH as to the reason for committing the crime, the behavior in group setting, the type of vocational training and social skills s/he is likely to need, for instance, at her/his arrival at the school, the treatment plan can be made to suit each delinquent's needs and mental and/or physical abilities. Training schools at least for now have resources to apply the plan to her/him evenly and consistently. Second, the intensity with which probation is administered is often too low. For example, we quoted in **JAPANESE JUVENILE JUSTICE SYSTEM** section that the average caseload is approximately ninety-two per probation

officer. The intensity of probation is ranked at the bottom in terms of "frequency of treatment contact" and "mean hours contact per week," when coded according to the standard of Lipsey (1992).

Sending the early-starting repeat offenders to training school for treatment is effective because their treatment programs are not only more rigorous but longer, inducing the perceptions of the certainty and severity of punishment. These programs may provide the early-starting repeat offenders with a strong enough dose for treatment not only for building and maintaining interpersonal relationships and for acquiring job skills for future use, but to get them to reexamine themselves and reconsider the life-style leading to their two incarcerations.

Despite the general strength of training school programs relative to probation and in spite of the fact that sending the late-starting first-time offenders to training schools is effective, institutionalizing the late-starting repeat offenders is not. This is probably because the factors that influenced initial "reincarceration"at the JCH are different from those that determined whether individuals are reincarcerated again as Blumestein et al. (1986) and Smith and Brame (1994) argued. One possible answer as to how the factors are different may be found in the offending history covariate—that s/he had been sent to a training school prior to the current incarceration. As we already discussed briefly, the late-starting repeat offenders sent to training school might have learned to deprecate many of their ties to conventional society, which were stronger than those of their early-starting counterparts (Paternoster and Brame 1997). This might have triggered a transformation of self, or life-style; or both leading to elevated criminal careers.

Finally when we compare the results on Table 7 with those in Table 8, we can see that none of the strength-of-ties-to-conventional-society covariates

continue to affect the repeat offenders whether they are late- or early-starting. It is an obvious inference that being incarcerated in the JCH for the second time seriously jeopardized any ties to conventional society left to them, while those incarcerated for the first time were still able or allowed or both to retain at least some of these ties. What we do not know at this moment is whether those juveniles made a decision to withdraw and cut the ties or the Japanese society stigmatized the juveniles incarcerated in the JCH for the second time to the extent that they could no longer expect to have any of the ties, or if both of the mechanism were at work simultaneously.

If the first hypothesis of withdrawal is true, then for repeat offenders the best predictor will be prior behavior and these offenders are likely to recidivate quickly regardless of anything else. If on the other hand, the second hypothesis of social stigma holds, studies on reintegrative shaming by Braithwaite (1989), Wagatsuma and Rosett (1986), and Makkai and Braithwaite (1994) will have an important implication: Treatment in Japanese training schools could have made it possible for even these repeat offenders to build and maintain interpersonal relationships and to acquire job skills. Once they had managed to obtain these skills, they would have presumably been capable of not only having a strong ties to conventional society but having a strong commitment to that ties. However because society had stigmatized them for the second incarceration, whether they were capable of these things made no difference because society would not have accepted them anyway. Further study is needed to investigate the weakness of the mechanism by which ties to conventional society influence the repeat offenders' recidivism.

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Appendix 1.

In Appendix 1, we explain how we implemented the record-matching. We try to match a juvenile delinquent's first record in the CB data with her/his succeeding ones using the following five criteria:

- Does the gender in her/his record match that in any one of the succeeding records?
- Does the birthday in her/his record match that in any one of the succeeding records?
- Is the number of incarcerations in the JCH that appears in her/his record consistent with that in any one of the succeeding records?
- Does the day s/he was released from the JCH in the record precede the day of placement in the JCH in any one of the succeeding records?
- Does her/his disposition at the family court—"placed on probation" or "sent to training school"—agree with that in the entry "previous correctional history" in any one of the succeeding records?

All of the five criteria must be met because these variables were so important to the JCH to recommend a treatment that we presume they were correct.

When no succeeding record matches her/his record using those criteria, we classify her/him as a non-recidivist. There are 6,544 such records and thus 6,544 non-recidivists. When we find at least one succeeding record that matches, the owner of the first record must be a recidivist, although at this point we do not know how many more times s/he is incarcerated. There are 2,443 such records. Then we check if any of the owners meet "the exclusion criteria" explained in **DATA** section and find out that 528 records need to

be excluded at this stage. Next, we try to match the remaining records of the 1,915 with the succeeding records in the same manner. We find that 1,362 records do not match any one of the succeeding records, but 553 records do. Thus 1,362 one-time recidivists. We repeat these procedures until no delinquents had succeeding records that match in the IJCH1991 data. Figure A.1 shows this process.

In the course of matching, we occasionally encounter situations where we have multiple candidates for the record we are trying to match. When this happened, we use four additional criteria:

- Does the nationality in her/his record match that in any one of the succeeding records?
- Does the answer to the question "Are you a first, second, or third child in your family?" in her/his record match that in any one of the succeeding records?
- Does the age at first delinquency match that in any one of the succeeding records?
- Does the type of delinquency in her/his record match the type of previous delinquency entry in any one of the succeeding records?

Next we count the number of yeses in the four questions above for each of the candidates. We regard that the succeeding record is the one with the largest number of agreements. We do not treat the second four criteria in the same way as the first five criteria because they are thought to be less important and thus likely to be less reliable. So it is possible that the "real" succeeding record did not satisfy all the additional criteria.

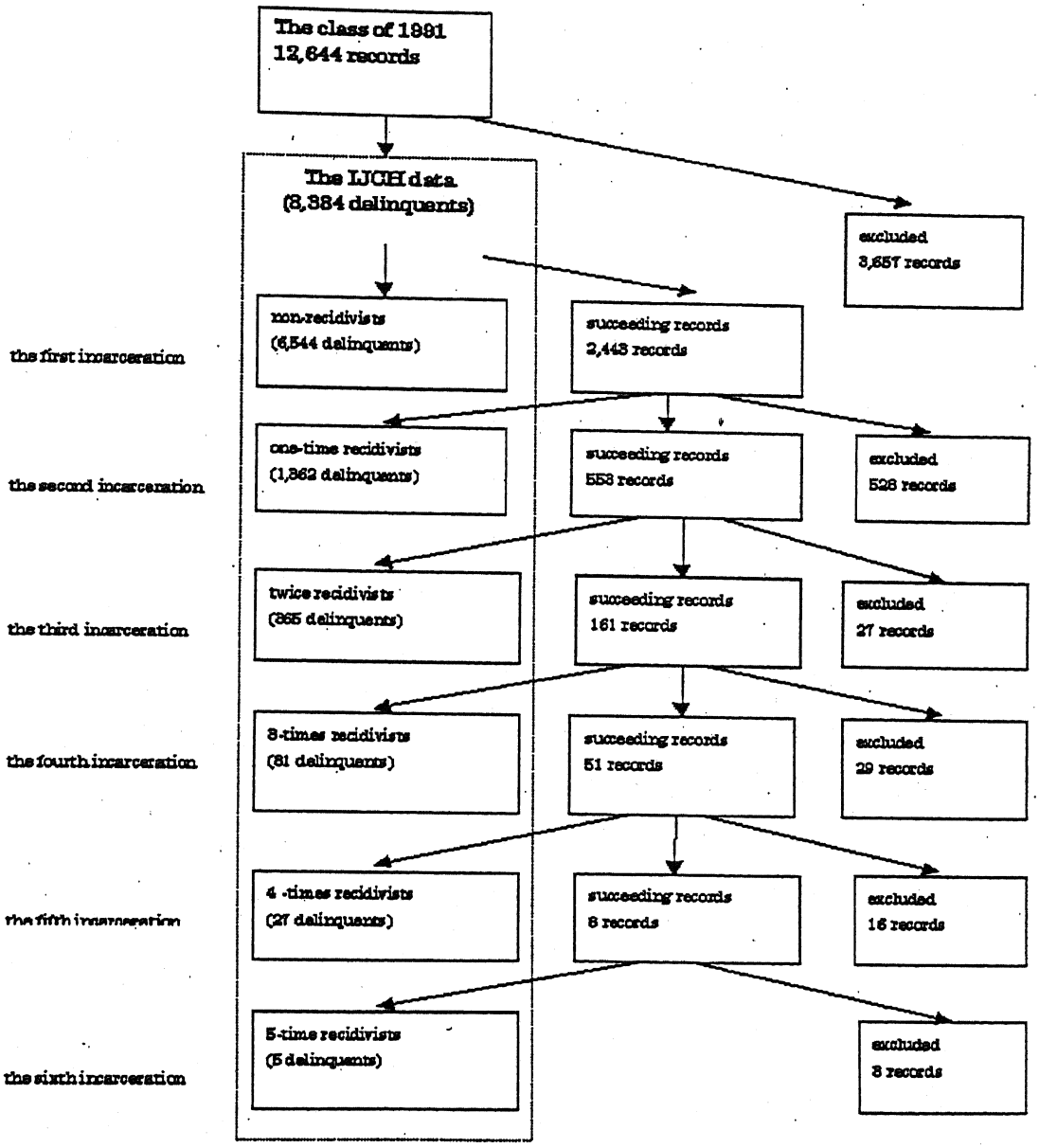

Figure A.1: The Process of Record-Matching in the JCH Class of 1991

Appendix 2.

In Appendix 2, we explain how we estimate time-at-risk of the delinquents sent to training school. We need to know the length of period each delinquent stayed in training school because it must be subtracted from the time between when s/he was released from and reincarcerated in the JCH for recidivist, or time between s/he was released from the JCH and s/he became twenty for non-recidivist. This information is confidential and we need to estimate the time of confinement. Since we know which program a particular juvenile underwent of the three training school programs—the special and general short-term programs, and the long-term program and their respective average lengths—three months, five months, and twelve months, we substitute the average length for the length of period each delinquent stayed in training school.

We think their use is justified for the following two reasons: First, the maximum confinement terms for the three programs are regulated by the Ministry to be four and six months, and two years respectively. The minimum lengths are also regulated in a standard treatment plan each training school makes. Second, each training school practices its standard treatment plan strictly. For example, of the delinquents released from training schools in 1992, 86.2% on the long-term program stayed for between 270 and 450 days, 88.4% on the general-short term program between 120 and 161 days, and 96.5% on the special-short term program less than 98 days (RTI, 1993).

After subtracting estimated confinement time, we have 15 records (0.1% of the JCH class of 1991 data) whose estimated times until reincarceration are negative or zero. As mentioned in DATA section, we exclude these records from the IJCH1991 data following Dejong (1997).

Appendix 3.

We explain how we preliminary select covariates from the IJCH1991 data in Appendix 3. As the IJCH1991 data have 204 variables, we screen them based on the previous studies 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 studies used such covariates as gender, 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 first referral, type of the prior/current offenses, and/or intensity of treatments. We classify these variables into five categories: socio-demographic background; strength of ties to conventional society; offending history; the prior/current delinquency; treatment. Although we think the IJCH1991 data are reliable, we preliminary select at least three variables from each category to be on the safe side. However, we exclude nationality, because only 1.8% of the sample are non-Japanese.