

Predictors of recidivism across major age groups of parolees in Texas

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Abstract

Previous studies on predictability of parole outcome have mainly focused on two age categories - adults (as a whole) and juveniles - with little attention paid to the possible differences in predictors of recidivism among subdivisions of adult inmates' age groups. Considering the "invariant" relationship found between age and recidivism across societies, cultures, and various demographic groups, research on the effect of age on recidivism using subdivisions of adult age groups would enhance knowledge concerning predictors of parole outcome. Using a sample of 12,894 adult parolees in Texas, this study examined the predictive accuracy of the Texas parole guidelines and attempted to identify group-specific predictors, if any exist, for four major age groups. Findings from this study provided some evidence that significant predictors of parole outcome differ across age groups. The number and types of predictors that influenced parole outcome varied across each age group and also differed from those found in the Texas parole guidelines. With these findings, a need for revision of the Texas parole guidelines appears to be valid. Age-group specific parole guidelines that reflect such differences in predictors across age groups could enhance the predictive accuracy of parole outcome which, in turn, would improve the success rate of parole release.

About the Authors

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Introduction

The prison system in the United States has been operating under increased pressure. The number of inmates in state and federal prisons and jails has almost quintupled between 1980 and 2006, jumping from 320,000 to more than 1.5 million in prisons and from 190,000 to 766,000 in local jails (Bureau of Justice Statistics 2008). As prison and jail populations and expenditures continue to increase, states and counties have sought ways to control offenders in the community while ensuring public safety and holding offenders accountable.

As a result of such efforts to control the correctional population, about 70 percent of adult criminals are currently under probation and parole in the United States (Glaze and Bonczar 2007). Consequently, the (re)incarceration of these probationers and parolees for both new crimes and violations of the conditions of their release has been one of the leading drivers of the increase of the prison population in most states (Greenfield, Beck and Gilliard 1996). As states continue to rely on probation and parole as a means of controlling the prison population and as political pressure accumulates regarding associated public safety risks, the prediction of “likely recidivists” becomes increasingly important.

In this regard, policy makers and practitioners have tried to establish more scientific and accurate guidelines for the identification of parole success or failure and, consequently, for better parole decision-making. The Texas parole guidelines, which have been mandated by state law since 2001, are a product of these efforts. In 2004, an evaluation of the Texas parole guidelines was conducted with a data set of 6,598 inmates who were paroled under the guidelines in 2002 (Munson, Joo and Martinez 2006). The study found that some predictors in the parole guidelines impacted parole success with various levels of significance, while others had little or no impact.

For example, current age was found to have the strongest relationship with parole success. As expected, as the offender became older, he or she was less likely to fail in parole. Other predictors such as age at first conviction and disciplinary conduct did not influence parole success.¹ This study demonstrates that more specific and detailed parole guidelines are necessary to predict the results of parole more accurately.

Previous studies on predictability of parolee recidivism have mainly focused on two age categories - adults (as a whole) and juveniles - with little attention paid to the possible differences in predictors of recidivism among subdivisions of adult inmates' age groups (e.g. Gendreau, Little and Goggin 1996). However, as suggested in numerous studies, there exists an "invariant" relationship between age and recidivism across societies, cultures, and various demographic groups (Gendreau, Little and Goggin 1996; Gottfredson and Gottfredson 1994; Gottfredson and Hirschi 1990; Hanson and Bussiere 1998; Hirschi and Gottfredson 1983; Langan and Levin 2002; Laub and Sampson 2003).

Considering the importance of age in predicting future criminality or recidivism, it is plausible to believe there may be significant differences in predictors of recidivism across different age groups of adult parolees. If significant differences in parole success or failure rates across major age groups exist, and factors affecting parole outcome are also significantly different, it would be reasonable to develop separate parole guidelines for different age groups of adult parolees to enhance their predictive accuracy. Therefore, research on the effect of age on recidivism using subdivisions of adult age groups would enhance knowledge concerning predictors of parole outcome.

¹ Also, the study implied that in addition to the variables in the parole guidelines, the discretion of the parole division and the Board of Pardons and Paroles may have impacted the results of parole. From this study, it can be said that discretion by decision makers still exists in spite of the guidelines. More accurate parole guidelines could minimize the intervention of discretion by the parole division or BPP.

To examine this possibility, the present study analyzed parole data from the Texas Department of Criminal Justice (TDCJ) to determine if any significant differences exist in predictors of recidivism among four major age groups of adult parolees. Using the same variables as the evaluation of the Texas parole guidelines (Fabelo 2001), this study first examined the predictive accuracy of the Texas parole guidelines. Secondly, the researchers attempted to identify group-specific predictors, if any exist, for each major age group. The results of this study could enhance the effectiveness of parole guidelines in predicting parole outcome, and help criminologists, policy makers, and practitioners understand the necessity to reconsider existing uniform parole guidelines.

Literature review

Many states that still utilize parole have established certain types of parole guidelines mostly using actuarial predictors. Recently, decisions on probation and parole have been converted from traditional dependence on case studies into actuarial tables based on statistically identified factors that predict the offenders' future risk more accurately (Glaser 1985). In this regard, a number of studies have been conducted to determine the validity of those predictors.

Gendreau, Little and Goggin (1996), for example, from a meta-analysis of 131 studies on adult recidivism from 1970 to 1994, found that factors such as demographic characteristics (e.g., age, gender, race, socio-economic status), criminal history, criminogenic needs, and family-related variables were significant in predicting parole outcome. In a meta-analysis of 64 studies, Bonta, Law and Hanson (1998) also found that variables related to criminal history (e.g., adult criminal history, juvenile delinquency, and antisocial personality) and some demographic variables including age, gender, and marital status significantly predicted recidivism for nonviolent offenders. For violent crimes, criminal history predictors had the strongest

relationship with recidivism.

Among previous studies, researchers have consistently found that age is one of the most significant predictors of future criminality. The inverse relationship between age and involvement in crime has been one of the oldest and most widely accepted phenomena in criminology (Bonta, Law and Hanson 1998; Gendreau, Little and Goggin 1996; Hanson and Bussiere 1998; Hirschi and Gottfredson 1983). Hirschi and Gottfredson (1983) showed that crime peaks at an adolescent age and declines thereafter. They asserted that “the age distribution of crime is invariant across social and cultural conditions” (1983, p.554). Gottfredson and Hirschi (1990) argued more specifically that criminality will decrease steadily regardless of offense type after a person has aged past his or her prime time (16 to 18 years of age) to commit criminal activity. This has been supported by various statistics, including official arrest reports, self-reports of offense, and victim reports (Sampson and Laub 1992).

Steffensmeier, Allan, Harer and Streifel (1989) also found that older offenders have lower rates of offending than younger offenders and are less likely to recidivate. The relationship between age and crime is sufficiently robust, although there are some variations in age-crime distributions by time and types of crime. Tittle and Grasmick (1997) found that the trend of crime or delinquency appears to be an inverted “j” pattern. Crime or delinquency increases throughout the adolescent years, reaching its maximum in late adolescence or early adulthood, and then decreases steadily after that period. Laub and Sampson’s (2003) comprehensive study also indicated that crime in general, and violent crime in particular, decreases with age.

Many researchers have offered various causal explanations for the relationship between age and crime.² Akers (1973) argued that the cause of the age-crime relationship is the result of a

² In general, it has been understood that as offenders get older, they tend to become more averse to risk so that they are less likely to commit crime.

decrease in exposure to delinquent peers, which coincides with an increase in associations with non-delinquent peers. Hirschi and Gottfredson (1983) insisted that criminal propensity simply decreases as one gets older, although the mechanism to account for such an effect of age cannot be provided. Life course criminologists argued that social factors such as salient life events (e.g., job, marriage, moving to lower risk areas, and military service) may cause changes in deviant or criminal trajectories of adolescents who are not life-course persistent (Gibbens 1984; Knight, Osborn and West 1977; Moffitt 1993; Osborn 1980; Rand 1987; Sampson and Laub 1990). Unlike other life course theorists, Sampson and Laub (1990) insisted that social ties to informal social controls such as family, community, and work have a stronger effect on criminality over the life course than salient life events themselves. Although there is a lack of agreement over the cause of the age-crime relationship among criminologists, the existence of a strong “invariant” relationship between age and criminality has been consistent throughout previous studies on this subject.

In particular, Glaser and Rice (1959) found that the relationships between crime rates and economic conditions are different among various age groups. With age-specific statistics, they found that adult crime rates vary directly with unemployment while juvenile crime rates vary inversely with unemployment. They attributed these contrasting relationships between economic conditions and crime rates for different age groups to the importance of age and sex role differences in American society as Parsons (1942) had earlier observed. Based on this finding, Glaser (1975) argued that any criminal justice planning should deal with various age groups differently for such planning to be effective.

If it is a widely accepted truth among criminologists that aging diminishes criminality and that the various age groups should be treated differently when considering criminal justice

policies, it would be reasonable to pay more attention to the role of age in predicting recidivism. For parole guidelines, which are used to predict inmates' future criminality in practice, it is more convincing to consider age as a significant predictor. Considering the inverse relationship between age and criminality, it can be expected that the recidivism rate would decrease as a person grows older and that there may be some differences in predictors of recidivism across different age groups.

Studies have examined predictors of recidivism for either adult or juvenile offenders as a whole. A number of studies have identified some predictors of recidivism for the entire adult population regardless of age differences. For example, Gendreau, Little and Goggin (1996), as mentioned above, found that factors such as age, criminal history, companions, family factors, gender, social achievements, and substance abuse are significant and potent predictors of adult recidivism for general crimes. For juveniles, on the other hand, Cottle, Lee and Heilbrun's (2001) meta-analysis of 23 studies found that offense history, family problems, ineffective use of leisure time, delinquent peers, conduct problems, and non-severe pathology were strong predictors of recidivism. A simple comparison of these two studies supports the existence of different predictors of recidivism between age groups, adults and juveniles here. From these findings, it can be inferred that the potential differences of predictors may also exist across major age groups of adult parolees widely dispersed from ages 18 to 60s or above. However, most empirical research has paid little attention to the possible differences in predictors of recidivism across major age groups of adult offenders.

Considering the small number of previous studies on this topic and the importance of the subject, it would be worthwhile to conduct a study to determine if there are significant differences in predictors of recidivism across major age groups of adult parolees and, if so, to

propose age-specific parole guidelines. In this regard, this study included three major goals. First, with data collected from the TDCJ we examined the general validity of the Texas parole guidelines in terms of the statistical significance of each variable and model goodness-of-fit.. Second, the study aimed to determine if there are significant differences in predictors across major age groups of adult parolees. Third, we attempted to identify specific predictors, if any exist, for each major age group. If identified, these predictors could be used for developing more accurate parole guidelines for adult parolees for each age group. This would enhance the decision making process of parole release and, in turn, would contribute to the reduction of recidivism rates.

Methodology

Sample

For this study, 12,894 inmates approved for parole under the Texas parole guidelines between September 2001 and August 2003 were selected. As table 1 demonstrates, the sample was divided into four age groups according to the parolees' ages at the time of release: 18 to 24 (n=1,583), 25 to 34 (n=4,212), 35 to 44 (n=4,297), and 45 and above (n=2,787). The racial composition of this sample was 44.9 percent African-American, 31.2 percent White, 23.6 percent Hispanic, and 0.2 percent other races. The racial compositions of parolees were similar across all age groups. Concerning gender, 88.2 percent of the parolees were male and 11.8 percent were female. The gender compositions were also similar across age groups, although the 45 and older group had a slightly higher proportion of males. Finally, the overall parole success rate within three years after release was 48.5 percent. The age group 18 to 24 years old had the lowest success rate, while 45 and above had the highest, which suggests a negative relationship between age and criminality.

Table 1. Demographic Characteristics of the Sample (N=12,894)

	All Ages	18 to 24 years	25 to 34 years	35 to 44 years	45 and above
Age					
Mean	37.09	22.61	30.09	39.91	51.57
S.D.	10.14	1.55	2.83	2.80	5.88
Race					
White (%)	4,017 (31.2)	452 (29.0)	1,212 (28.8)	1,442 (33.6)	902 (32.4)
Black (%)	5,795 (44.9)	666 (42.1)	1,896 (45.0)	1,918 (44.6)	1,312(47.1)
Hispanic (%)	3,037 (23.6)	459 (29.0)	1,084 (25.7)	924 (21.5)	567 (20.3)
Others (%)	30 (0.2)	3 (0.2)	14 (0.3)	9 (0.2)	4 (0.1)
Gender					
Male (%)	11,368 (88.2)	1,447 (91.4)	3,727 (88.5)	3,675 (85.5)	2,505 (89.9)
Female (%)	1,526 (11.8)	136 (8.6)	485 (11.5)	622 (14.5)	282 (10.1)
Parole Success					
Success (%)	6,254 (48.5)	665 (42.0)	2,146 (50.9)	1,870 (43.5)	1,568 (56.3)
Failure (%)	6,640 (51.5)	918 (58.0)	2,066 (49.1)	2,427 (56.5)	1,219 (43.7)

Variables*Independent variables*

The Texas parole guidelines are composed of two categories: offender’s risk level and offense severity level. Risk level of the offender is a composite index consisting of five static risk factors and five dynamic risk factors. Static predictors are factors of the offender’s past which cannot be changed. They were identified in the Texas parole guidelines as follows: 1) age at first admission to a juvenile or adult correctional facility, 2) history of supervisory release revocations for felony offenses, 3) previous incarceration(s), 4) employment history, and 5) commitment offense. Dynamic risk predictors, which can be changed by other factors, were identified as follows: 1) inmates’ current age, 2) gang membership, 3) educational or vocational training completion while in prison, 4) prison disciplinary record, and 5) current prison custody level. Risk level of the offender is finally combined into one risk category, which ranges from highest to low risk level. On the other hand, offense severity level refers to the seriousness of the offense which led to the current incarceration ranging from highest to low severity level (see Table 2).

Dependent variables

The dependent variable, parole outcome, was measured by recidivism of the parolees. There are several definitions of recidivism: parole revocation due to a technical violation, commission of a new crime, re-arrest, reconviction, and re-incarceration. According to a meta-analysis of 33 studies on recidivism (Wilson, Gallagher and McKenzie 2000), two-thirds of studies used re-incarceration as a measurement of recidivism. Consequently, this study also used re-incarceration as a measure of recidivism. Parole failure was defined as re-incarceration in one of the following facilities: 1) any state correctional facility in Texas (e.g., prison, state jail, or state custody such as an intermediate sanction facility (ISF) or substance abuse felony treatment facility (SAFTF)); 2) local level incarceration (e.g., county jail); or 3) a prison or jail in any other state or the federal government. This study combined all three outcomes into one variable and coded cases into fail (value = 1) if a parolee returned to one of the correctional facilities listed above or success (value = 0) if a parolee did not return to one of the facilities within three years after his or her release from prison.

Table 2. Independent Variables

No.	Variables	Values
1	Age at First Commitment	26 years or older (0)
		18 to 25 years old (1)
		Under 18 (2)*
2	History of Revocations	No revocation (0)*
		One revocation (1)
		More than one revocation (3)
3	Prior incarceration (Juv. & Adult)	None (0)*
		1 – 2 Incarceration (1)
		3 or more (2)
4	Employment History	Employed 6 months prior to prison (0)
		None (1)*
5	Commitment Offense	All other crimes (0)*
		Auto theft, Burglary of vehicle, Burglary or forgery (1)
6	Current Age	Under 25 (3)*
		25 to 34 (2)
		35 to 44 (1)
		45 and older (0)
7	Gang membership	No (0)*
		Yes (2)
8	Completed Education/OJT/Vocational Program	Yes (0) or GED/High School Degree
		No (2)*
9	Disciplinary Conduct	Good time awarded (0)*
		Demoted in class below entry status or lost goodtime in last 18 months (1)
		Demoted in class below entry status and lost goodtime in last 18 months (2)
		Zero balance of goodtime (3)
10	Current Custody Level	Minimum out, Outside trustee, Level I (0)*
		Minimum In, Protective In, Level II and III (1)
		Medium, Close or Admin. Segregation (2)
11	Severity Score	Low (0)*
		Middle(1)
		High (2)
		Highest (3)

* Used as reference categories for logistic regression analyses

Analytical procedure

The dependent variable, parole outcome, was a dichotomous variable (success = 0 or failure = 1) while the independent variables were categorical. It was therefore appropriate to employ logistic regression in order to assess the predictive power of each independent variable over the dependent variable. The data were examined to screen out missing values and outliers and none were found.

Three models were employed to discover potential differences in parole outcomes across four major age groups. In Model 1, the general validity of the Texas parole guidelines was examined in terms of the statistical significance of each variable in the guidelines. Parole outcome was regressed on all independent variables to determine which variables were significant in predicting recidivism. In particular, if current age as a categorical variable (18-24, 25-34, 35-44, and 45+) is significant in predicting parole outcome, the researchers may assume that membership to one of these age groups can make a difference in the prediction of parole outcome. This would also suggest potential differences in significant predictors across major age groups.

Model 2 used all the variables in model 1 except current age. The categorical current age from the original Texas guidelines was replaced by the current age of inmates measured on an interval scale. The replacement of the categorical age with the interval-scale age was intended to test the relationship between age and parole outcome more precisely. This model intended to reconfirm the established relationship between age and criminality using a different scale to measure age. In model 3, the variable current age was excluded from the model. Instead, the original sample was divided into four subsamples based upon the parolees' ages (18-24, 25-34, 35-44, and 45+). All other variables were included in this model. The logistic regressions were

conducted again to discover whether there were any differences in significant predictors across the four age groups and if so, the variations in the power of the significant predictors for each age group.

Findings

Model 1

Model 1 included all variables used in the Texas parole guidelines including ten risk factors and a severity score. In this model, the variable current age was used as a categorical variable (e.g., 18-24, 25-34, 35-44, and 45 & above) as in the Texas parole guidelines. Model 1 functioned as a baseline model for comparisons with other models and examined which variables significantly predicted parole success or failure in general and whether the current age variable affected parole outcome in particular. Hosmer and Lemeshow test indicated that this model was statistically sound. The chi-square test showed that the model significantly predicted group membership and correctly classified 61.5 percent of subjects.

The results of logistic regression on parole outcome in model 1 (see Table 3) indicated that nine variables were significant in predicting parole outcome: age at first admission, history of revocations, prior incarceration, employment history, commitment offense, education or training in prison, disciplinary record, current age, and offense severity. However, the two remaining variables (e.g., gang membership and current custody level) did not have any significant association with parole outcome.

Of the significant variables, current age was found to be highly significant. Compared to the youngest age group (i.e., 18-24), older age groups were estimated to have substantially lower rates of parole failure (35%, 31%, and 63% lower percentages for 25-34, 35-44, and 45+ age groups, respectively). In fact, as shown in Table 1, while the age group 45 and above had the

lowest parole failure rate (43.7%), the age group with the highest parole failure rate was the 18 - 24 age group (58%). This finding confirms the invariant relationship between age and criminality. In general, the overall rate of failure was 51.5%, which means that more than half of parolees were reincarcerated within three years of their release. This might indicate that the current parole guidelines do not adequately predict parole success.

Table 3. Logistic Regression for Model 1 (N=12,894)

Variable	B	S. E.	Exp(B)
Age at First Admission (Under 18) ^a			.
18 to 25 years	-.154*	.073	.857
26 years or older	-.166*	.080	.847
History of Revocations (No Revocation)			
One revocation	.454***	.052	1.575
More than one	.870***	.060	2.387
Prior Incarceration (None)			
1 – 2	.340***	.046	1.406
3 and above	.527***	.074	1.694
Employment History (None)			
Employed 6 months prior to prison	-.167***	.042	.846
Commitment Offense (Non-Property)			
Property Crime	.347***	.048	1.415
Current Age (Under 25)			
25 - 34	-.436***	.063	.647
35 – 44	-.372***	.071	.689
45 and above	-.998***	.081	.369
Gang Membership (No)			
Yes	.334	.196	1.397
Education/Training in Prison (No)			
Yes	-.089*	.041	.915
Disciplinary Record (Goodtime awarded)			
Demoted or Lost	.326**	.108	1.385
Demoted and Lost	.296	.174	1.345
Zero balance of Goodtime	-.265	.596	.767
Current Custody Level (Minimum out, Level I)			
Minimum in, Level II, III	.029	.044	1.029
Medium, Segregation	-.102	.123	.903
Offense Severity (Low)			
Medium	.047	.050	1.048
High	-.045	.054	.956
Highest	-.371***	.075	.690

a. Reference category in parenthesis.

* Statistically significant at the 0.05 level. ** Statistically significant at the 0.01 level.

*** Statistically significant at the 0.001 level.

Model 2

Models 1 and 2 were exactly the same except for the variable current age. In model 2, current age was a continuous variable measured in yearly intervals, while it was a categorical variable in model 1. As mentioned above, this replacement with the interval-scale age was intended to test the relationship between age and parole outcome more precisely. With model 2, this study attempted to discover whether age measured on a continuous scale made a difference in the statistical significance of age and whether the significant predictors were still similar to those in model 1. Concerning the model goodness-of-fit, Hosmer and Lemeshow test indicated that this model was statistically sound. The model was found to significantly predict group membership and correctly classified 62.1 percent of subjects. The result of logistic regression is presented in Table 4. Like model 1, this model also shows the same nine significant predictors with little variations in statistics. Model 2 also supported the negative relationship between age and criminality, which has been supported by numerous previous studies.

Model 3

In model 3, the variable current age was excluded from the model. Instead, the sample was divided into four age groups identical to the age categories in the Texas parole guidelines. For each age group, separate logistic regression was conducted to discover potential differences in significant predictors across age groups. Concerning the model fit, all the age groups in Model 3 were statistically sound with insignificant Hosmer and Lemeshow test results. Statistical models for each age group were fairly accurate in classifying subjects' parole outcome (61.7 percent for age group 18-24, 59.9 percent for age group 25-34, 63.5 percent for age group 35-44, and 60.2 percent for age group 45 and above).

Table 4. Logistic Regression for Model 2 (N=12,894)

Variable	B	S. E.	Exp(B)
Age at First Admission (Under 18)^a			
18 to 25 years	-.149*	.073	.861
26 years or older	-.072	.079	.931
History of Revocations (No revocation)			
One revocation	.449***	.052	1.566
More than one	.894***	.059	2.445
Prior Incarceration (None)			
1 – 2	.382***	.046	1.465
3 and above	.633***	.075	1.883
Employment History (None)			
Employed 6 months prior to prison	-.155***	.041	.856
Commitment Offense (Non-Property)			
Property Crime	.337***	.048	1.401
Current Age (Continuous)			
	-.032***	.002	.968
Gang Membership (No)			
Yes	.339	.196	1.398
Education/Training in Prison (No)			
Yes	-.103**	.040	.902
Disciplinary Record (Goodtime awarded)			
Demoted or Lost	.335**	.108	1.398
Demoted and Lost	.270	.174	1.309
Zero balance of Goodtime	-.345	.595	.709
Current Custody Level (Minimum out, Level I)			
Minimum in, Level II, III	.021	.044	1.022
Medium, Segregation	-.120	.123	.887
Offense Severity (Low)			
Medium	.047	.050	1.048
High	-.033	.054	.968
Highest	-.368***	.075	.692

a. Reference category in parenthesis.

* Statistically significant at the 0.05 level. ** Statistically significant at the 0.01 level.

*** Statistically significant at the 0.001 level.

However, each age group had somewhat different significant variables (see Table 5). For the age group 18 - 24, six variables had a statistically significant association with parole failure: history of revocations, prior incarceration, employment history, commitment offense, education or training in prison, and offense severity. Of these variables, education or training in prison was a significant predictor only for the age group 18 – 24. It can be inferred that educational programs in prison are more beneficial to younger inmates who might, in general, have less criminal history than older inmates. Considering the strong and negative relationship between criminal records and incarceration (Bushway 1997; Grogger 1992; Sampson and Laub 1993), it may be a natural consequence that education and training programs aimed at enhancing job opportunities after release are more effective for younger individuals who have a relatively smaller criminal record.

The age group 25 - 34 had seven variables that were statistically significant in predicting parole outcome: age at first admission, history of revocations, previous incarceration, employment history, commitment offense, disciplinary record, and offense severity. Two variables that had unique predictive power on parole outcome for this age group were age at first admission and disciplinary record, which did not show statistical significance in any other age group. Assuming that the positive relationship between good disciplinary records and favorable parole decisions is valid, it would be very difficult for inmates with poor disciplinary records to receive parole approval. Therefore, the impact of disciplinary record would decrease or disappear when examining recidivism because parolees mainly consist of inmates with positive disciplinary records.

Table 5. Significant B and Exp(B) Statistics across Models

Variable	Model 1	Model 2	Model 3			
			18 – 24	25 - 34	35 – 44	45 above
Age at First Admission 18 to 25 years 26 and older	-.154*(.86) -.166*(.85)	-.149*(.86)				
			-.346* (.707)	-.331* (.71)	-.124* (.883)	
History of Revocations One revocation More than one	.454***(1.58) .870***(2.39)	.449*** (1.57) .894*** (2.45)	.265* (1.30)	.466***(1.59) .835***(2.30)	.458***(1.58) 1.042***(2.83)	.752***(2.12) 1.122***(3.07)
Prior Incarceration 1 – 2 3 and above	.340***(1.41) .527***(1.69)	.382*** (1.47) .633*** (1.88)	.370** (1.45) 1.171* (3.22)	.311***(1.37) .624***(1.86)	.336***(1.40) .512***(1.67)	.362***(1.44) .355***(1.43)
Employment History Employed 6 months	-.167***(.85)	-.155*** (.86)	-.358***(.69)	-.165*(.848)		-.263** (.77)
Commitment Offense Property Crime	.347***(1.42)	.337*** (1.40)	.390** (1.48)	.384***(1.47)	.234**(1.26)	.424***(1.52)
Current Age 25 - 34 35 – 44 45 and above	-.436***(.65) -.372***(.69) -.998***(.37)	-.032*** (.97)				
Gang Membership Yes						1.331*(3.784)
Education/Training Yes	-.089**(.92)	-.103** (.90)	-.213* (.80)			
Disciplinary Record Demoted or Lost Demoted and Lost 0 balance of Goodtime	.326** (1.38)	.335** (1.40)		.487**(1.63)		
Current Custody Level Minimum in, Level II, III Medium, Segregation						
Offense Severity Medium High Highest	. -.371***(.69)	-.368*** (.69)	-.781*** (.46)	-.433***(.649)		-.672** (.51)

B and Exp(B) in parenthesis in each field of table.
 * Statistically significant at the 0.05 level. ** Statistically significant at the 0.01 level.
 *** Statistically significant at the 0.001 level.

For the age group 35-44, only three variables were significant predictors for parole outcome. Similar to the age group 25-34, history of revocations, prior incarceration, and commitment offense were also significant predictors for this group. However, employment history and offense severity, which were shared as significant predictors among all other age groups, were not significant predictors for this age group. Considering these variables were significant predictors of recidivism for all other age groups (Bonta, Law and Hanson 1998; Gendreau, Little and Goggin 1996; Quinsey, Rice and Harris 1995), this result is somewhat aberrant. Further research on this unique result with this age group is recommended.

The age group 45 and above showed that five variables were significant in predicting parole outcome. Like the age group 25-34, the variables previous revocation, prior incarceration, employment history, commitment offense, and offense severity were also significant predictors for this age group. One thing that differentiates this group from the age group 25-34 was the disciplinary record variable, which was found to be significant for the 25-34 age group, but not for this group. Overall, the oldest age group would have more positive disciplinary records than all other age groups. This can be explained by the decreasing rate of offending as one gets older (Gottfredson and Hirschi 1990; Steffensmeier, Allan, Harer and Streifel 1989).

Model 3 revealed that only three variables out of the eleven were found to be statistically significant across the four age groups: history of revocation, prior incarceration and commitment offense. All other variables were only significant for specific age groups, showing no significance for other age groups. From these findings, it can be inferred that: 1) some variables, mostly dynamic risk variables, used in the Texas guidelines may not be useful as predictors of parole outcome, and 2) there are some differences in significant predictors across age groups. Findings from model 3 provided some evidence that significant predictors of parole outcome

differ across age groups. The number and types of predictors that influenced parole outcome varied across each age group and also differed from those found in models 1 and 2. With these findings, it would be reasonable to consider designing a more age-specific set of parole guidelines that reflect such differences in predictors across age groups.

Summary and Discussion

With data from the TDCJ, this study first examined the predictive accuracy of the Texas parole guidelines in terms of the model goodness-of-fit and the statistical significance of each variable. Then, the researchers attempted to identify different predictors, if any exist, of parole outcome across four adult age groups and the strength of those predictors. In model 1, current age as a categorical variable was found to be one of the most powerful predictors of parole outcome. Similarly, model 2, using interval-scale age, reaffirmed that age was a significant variable in identifying parole outcome. In order to determine if there were group-specific predictors, model 3 divided the sample into four different subsamples according to age. Model 3 indicated that there were some differences in the number and types of significant predictors across each major age group. Findings from model 3 support this study's argument that different age groups may have different predictors when projecting parole outcome.

The analysis produced six significant predictors for the youngest age group (18 – 24): history of revocations, prior incarceration, employment history, commitment offense, education or training in prison, and offense severity, with education or training in prison being a significant predictor for only this age group. Therefore, education or training in prison should be more actively applied to younger inmates, to whom it seems to be most effective. At a minimum, it would at least be reasonable that more weight be placed on this item in the parole guidelines for this age group. However, history of revocation did not have any predictive power for this age

group. This could be attributed to the fact that inmates at this age are mainly first time offenders and previous parole revocations are rare. Consequently, a small number of prior revocations would rarely have a significant impact on parole outcome. Therefore, if specific parole guidelines for this group are designed, this variable may be reconsidered or excluded.

The age group 25 - 34 also showed a different set of significant predictors for parole outcome from both models 1 and 2 and all other age groups in model 3. Seven variables (i.e., age at first admission, history of revocation, prior incarceration, employment history, commitment offense, disciplinary record, and offense severity) were found to be significant for this age group. Age at first admission and disciplinary record were unique predictors for this age group. For the age group 35 – 44, consistent with findings of other age groups in model 3, three static risk variables (history of revocation, prior incarceration, and commitment offense) were found to be significant in predicting parole outcome. Employment history and offense severity, however, had no impact on parole outcome, which was a unique aspect to this group. For the age group 45 and above, four static variables and one offense severity variable were found to be significant in predicting parole outcome: history of revocation, prior incarceration, employment history, commitment offense, and offense severity. This result is almost identical to that of age group 25-34, except for the variable disciplinary record. For older age groups, disciplinary record as well as education or training in prison appears to have less meaning than for other younger age groups and might not have any significant effect on parole outcome.

According to the findings of this study, not all of the variables in the current Texas parole guidelines have significant predictive power on parole outcome. Some dynamic variables such as gang membership and current custody level were found not to have any statistical significance in predicting parole outcome across all models. It was also found that there are notable differences

in significant predictors across major age groups of adult parolees. Each age group has its own specific set of significant predictors that affects parole outcome. These results are supportive of our argument that it is necessary to provide age-group specific parole guidelines to better predict parole outcomes for each major age group.

In general, as indicated by statistically sound model goodness-of-fit in model 1, the Texas parole guidelines have provided a relatively good risk management criterion in predicting parole outcomes. However, when acknowledging the existence of these differences in predictors across major age groups of adult parolees, a need for revision of the Texas parole guidelines becomes valid. Age-specific guidelines for different age groups could enhance the predictive accuracy of parole outcome which, in turn, would improve the success rate of parole release. Therefore, it seems necessary to consider developing age-group specific parole guidelines by adding and/or dropping some variables and/or weighing each predictor differently across major age groups.

However, this study has limitations. First, although this study found significant differences in powerful predictors across models of major age groups, statistical significance for these differences across models could not be estimated due to the limitation of logistic regression. Therefore, a more advanced statistical model might be necessary for future research to address this limit.

Second, considering the fact that there may be more significant predictors excluded in the Texas parole guidelines that should be included in this study (e.g., parolees' SES, marital status, family-related variables, etc.), there may exist wider differences in significant predictors across major age groups of adult parolees. Therefore, a study with more meaningful predictors is needed to further develop more specific and detailed parole guidelines. Finally, the present study examined the difference in significant predictors across major age groups. For future studies, it

would be interesting to examine the potential differences of predictors after controlling for other major demographic characteristics such as race and gender. With this additional information, more specific parole guidelines could be added to the findings of this study. However, some ethical issues would need to be addressed including the sensitivity of discussing race and gender in the parole guideline policies, as it could cause some concern for racial or gender discrimination. From this point of view, this study has provided a good starting point. It is necessary to conduct further research on the same topic with more sophisticated research designs and analytical methods.

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