An Exploration of the Correlates of Specialization and Escalation: Executive Summary

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The National Institute of Justice
U.S. Department of Justice
810 Seventh Street N. W.
Washington, DC 20531

Todd A. Armstrong
Administration of Justice Department
Arizona State University West
PO Box 37100
Phoenix, AZ 85069-7100

Chester L. Britt
Administration of Justice Department
Arizona State University West
PO Box 37100
Phoenix, AZ 85069-7100

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FINAL REPORT

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Research on specialization (repeating the same offense) and escalation (moving to more serious offenses) has typically focused on the type of crime an offender commits from one time to the next, independent of individual characteristics. The lack of attention given to the effect of offender characteristics on patterns of offending is surprising in light of research on the correlates of crime and delinquency. Research on the correlates of crime and delinquency has identified individual characteristics that are consistently related to the commission of criminal acts. If an individual's characteristics affect the chances of committing a criminal act, then it is reasonable to hypothesize that these characteristics also affect patterns of specialization and escalation. Therefore, this study investigated the impact of behavioral, social, and psychological characteristics on patterns of offending across the criminal career.

The impact of individual characteristics on patterns of offending was explored by Britt (1999), who extended earlier work on offense sequencing by using a series of multinomial logit models to test the effect of behavioral, social, and psychological correlates of crime on patterns of specialization and escalation. Crime types considered included arrests for violence (homicide, rape, assault), robbery, burglary, other property (e.g., larceny, forgery, motor vehicle theft), drug and alcohol, and other miscellaneous offenses. Without taking into account offender characteristics, there was evidence of specialization and escalation comparable to that found in prior research. However, once offender background characteristics were controlled for the effect of prior offense type on subsequent offense type was significantly reduced. These findings indicate (1) the background characteristics of offenders are important predictors of offense type and (2) the background characteristics of offenders help to explain patterns of offending across

the criminal career. Specifically, age, race, the family environment, peer relationships, and drug and alcohol abuse all proved to be important predictors of offense type.

Data and Method

In order to add to the body of knowledge on the effect of individual and social characteristics on patterns of specialization and escalation the current work replicated and extended the work of Britt (1999) using data from the Predicting Parole Performance in the Era of Crack Cocaine study (Haapanen and Sknovold, 1999). The youth participating in this study were housed under the supervision of the California Youth Authority (CYA) in the 1980's. The data include extensive background, behavioral, and social information on two samples. The first sample is a random sample (N = 2,200) of wards released from the CYA in Fiscal Year 1981-82 (i.e., July 1981 - June 1982). The second sample is a random sample (N = 2,200) of wards released in Fiscal Year 1986-87 (i.e. July 1986 - June 1987). These data were gathered from four sources: (1) Youth Authority electronically stored ward data files; (2) Youth Authority hard-copy ward Master Files; (3) California Department of Justice Criminal History files; and (4) California Vital Statistics. Data for the 1981-82 release sample contain information for each ward on all arrests occurring prior to December 31, 1991. For the 1986-87 release sample, the data contain information on all arrests occurring prior to December 31, 1990. To test for patterns of specialization and escalation among repeat offenders, each sample of offenders was restricted to those who have a minimum of ten arrests.

There are two general research questions that motivate the statistical analyses. The first research question is "Do offender background characteristics affect patterns of offending across the criminal career?" The second research question asks, "Do offender

background characteristics have time-varying effects on patterns of offending across the criminal career?" This research question focuses analyses on whether such characteristics as age, aggression, or family environment have time-stable or time-varying effects on offense sequencing.

The following characteristics were included in the test of the effect of the correlates of crime on patterns of offending: family environment and relationships, age at first delinquent contact, age at time of arrest, school performance, aggression, gang affiliation, drug and alcohol abuse, and offense type. Offense type was operationalized as the type of arrest offense. The offense type variable had seven categories: violence (i.e., homicide, rape, assault), robbery, burglary, other property (e.g., larceny, forgery, motor vehicle theft), drug, alcohol, and other miscellaneous offenses.

Research questions were tested using four conceptually distinct multinomial logit models (Long, 1977). Model 0 provides a naïve baseline model that assumes the probability of each type of crime is fixed across each of the ten arrests. This model is equivalent to estimating mean probabilities for the seven offense types over ten arrests. Model 1 adds a measure indicating the arrest number (i.e., first, second, etc.). This model estimates the probability of committing each of the seven offense types for each of the ten arrests. Model 2 adds offender background characteristics to Model 1 to address the first research question: Do offender background characteristics affect patterns of escalation and specialization? Model 3 adds interaction effects of background characteristics with time to Model 2 to address the second research question: Do background characteristics have time-varying effects on patterns of escalation and specialization?

Findings

Separate analysis were conducted for three groups: (1) all cases, (2) the 1981 sample, and (3) the 1986 sample. Results for these different groups were nearly identical. Therefore, only the results based on the group including all cases are presented here. Table 1 displays overall model fit statistics and difference of chi-squares test. Model 0 is an intercept only model. Table 1 shows that including a variable quantifying arrest number (Model 1) provides a significant improvement in our ability to predict offense type over the intercept only model (difference of $\chi^2 = 1735.96$, df = 54, $p<.001$). To determine which individual characteristics would be included in Model 2, a series of basic models were estimated. Characteristics whose inclusion resulted in a significant improvement in model fit were: school discipline, drug abuse, alcohol abuse, previous violence, age at first arrest, age at arrest, gang membership, family violence, family control, and prior threats of aggression. Table 1 shows that including the above characteristics of offenders (Model 2) results in a significant improvement in model fit (difference of $\chi^2 = 4517.42$, df = 66, $p<.001$). Model 3 includes the characteristics of offenders considered in Model 2 and the interaction effect of age and arrest number along with the interaction effect of race with arrest number. These interaction terms allowed the effect of age and race to vary by arrest number. Table 1 shows that the addition of the interaction terms results in a statistically significant improvement in the overall fit of the model (difference of $\chi^2 = 235.98$, df = 108, $p<.001$).

The predicted probabilities, for the different offense types, under Model 0 are presented in Table 2. Other property offenses were the most common, followed by burglary, other miscellaneous, violent, alcohol, drug and robbery offenses. The predicted

probabilities for offense type by arrest number are presented in Figure 1 (based on Model 1). The predicted probabilities for offense type by arrest number, while controlling for individual characteristics, are presented in Figure 2 (based on Model 2). Predicted probabilities for offense type by arrest by race, while controlling for individual characteristics and allowing the effect of age and race to vary by arrest number, are presented in Figures 3 and 4 (based on Model 3).

Differences between Figure 1 and Figure 2 represent the effect of controlling for offender background characteristics. These differences demonstrate that when offender background characteristics are taken into consideration trends in probability across arrest virtually disappear. Additionally, the probability of an arrest for a burglary offense is greatly increased, while the probability of an arrest falling in any other offense category is substantially decreased. These results show that offender characteristics have an important impact on offense type. Figures 3 and 4 display the probability of committing each of the seven offenses for white and non-white offenders, respectively. Patterns are remarkably similar across racial group. Results displayed in Figures 3 and 4 are similar to those presented in Figure 2, demonstrating that when the effect of race and age are allowed to vary across arrest number the predicted offense probabilities still remain consistent across the arrest sequence considered.

The predicted probabilities presented in Figures 1, 2, 3 and 4 were used to calculate the probability of repeating the same offense, (specialization) the probability of switching to a more serious offense (escalation) and the probability of switching to a less serious offense (deescalation). Tables 3, 4, and 5 present the probability of specialization, escalation, and deescalation based on Model 1. Table 6, 7, and 8 present

these probabilities based on Model 2 (controlling for individual characteristics). Tables 9, 10, and 11 present these probabilities based on Model 3 (controlling for individual characteristics and allowing the effect of age and race to vary by arrest). A comparison of Tables 3, 4, and 5 with Tables 6, 7, and 8 reveals the effect of offender characteristics on offense patterns. The inclusion of these characteristics causes offense switching patterns to be concentrated around burglary and other property offenses. Tables 9, 10, and 11 allow a comparison of the offense switching patterns of whites and non-whites. Results are nearly identical for these groups. While there is some minor evidence that offense switching varies by race across the ten arrests considered, these patterns are obscured by the overwhelming low probability of offense switching that occurs in the majority of cases.

The inclusion of offender background characteristics in Model 2 allows the estimation of the direct effect of offender characteristics on the probability of different offense types. The effect of age at arrest on crime type is displayed in Figure 5. Figure 5 shows that as age at time of arrest increases, only the probability of being arrested for an other property offense increases. Figures 6 through 9 present the effect of specific individual characteristics on offense type. In each case the odds presented are relative to an arrest for a miscellaneous other offense. Figure 6 displays the effect of race on the odds of being arrested for each offense type. Figure 7 presents the effects of substance abuse on the odds of being arrested for the different offense types. Figure 8 displays the effect of prior deviant behavior on odds of type of offense. Finally, the effects of family control and gang association on the odds of type of offense are presented in Figure 9. Collectively, these figures show that individual characteristics are related to offense type.

Race, substance abuse, prior violence and gang membership all have a substantial influence on the odds of certain offense types occurring.

Figures 10 through 16 display the race-specific probabilities of a violent offense, robbery offense, other property offense, drug offense, alcohol offense, and other miscellaneous offense, respectively. Since the age of the offender at the time of arrest was also estimated as an interaction effect with arrest number it is necessary to account for age at each of the ten arrests. To simplify the information presented in Figures 10 through 16, the mean age at each arrest for the sample was used in the calculation of the probabilities for each offense type. These figures show that in some cases there are important differences in the race-specific probabilities for each offense type.

Summary

These results demonstrate that offender background characteristic have an important influence on the prediction of offense type. When offender background characteristics are taken into consideration variation in the probability of offense type across offense transition is all but eliminated. Additionally, controlling for offender background characteristics had the effect of concentrating the probability of an offense occurring in two offense types: burglary and other property. As a product of this the likelihood of repeating an offense became very high for these two offense categories, while the probability of repeating any of the other offense categories was next to zero. The concentration of offense probability also had an effect on offense switching patterns. This concentration caused patterns including a burglary offense or other property offense to have probabilities that were elevated relative to patterns that did not include a burglary offense or other property offense. Most importantly these results indicate that the

background characteristics of the offender are useful predictors of the types of offense that may be committed over time.

Conclusions

The current study and the work of Britt (1999) both found that individual characteristics have an important impact on offense sequences. However, there are some important differences in the results of the respective studies. Britt (1999) found that the inclusion of the background characteristics of offenders lead to a reduction in the overall pattern of specialization and escalation. In contrast, the current work found that the inclusion of background characteristics resulted in the concentration of evidence for specialization and offense switching. When the individual correlates of offending were included in models, the probability of a burglary offense and the probability of an other property offense were greatly elevated relative to probability of any of the other offense types. As a consequence, the probability of repeating these offense types as well as escalating to them or deescalating from them was also elevated, while the probability of specializing in or switching from the other offense types was nearly zero.

Differences between the current study and that of Britt (1999) also emerged with regard to the impact of allowing the effect of age and race to vary across offense number. When Britt (1999) allowed the effects of age and race to vary across offense number the predicted arrest probabilities for each of the offense types varied across the offense sequence. When the effects of age and race were allowed to vary across offense number in models estimated with data used in the current study, predicted arrest probabilities for each of the offense types were relatively consistent across the offense sequence.

It is important to not let differences between this work and the work of Britt (1999) obscure the significance of the fact that both find that the inclusion of the individual correlates of offending have a dramatic effect on patterns of specialization, escalation and deescalation. Prior tests of specialization rely on offense transition matrices. These tests consider the effect of a given offense type at time *t* on offense at time *t+1*, they do not consider the effect of the characteristics of the individual or of the environment. The current work and that of Britt (1999) both show the importance of the effect of individual correlates on the probability of a given offense type and on offense patterns. Based on these results it seems that tests of specialization relying on offense transition matrices do not include information that is important in the prediction of offense type. This clearly demonstrates the need for the continued exploration of statistical techniques that will allow the estimation of the effect of the individual correlates of crime on the patterning of offending.

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Table 1: Model Fit Statistics.

Model	-2 log likelihood	Number of Parameters	df
0. Intercept Only	100269.74	6	26871
1. Arrest Number	98533.78	60	26817
2. Offender Background Characteristics	94016.36	126	26751
3. Age and Race Interaction Effects	93780.38	234	26643

Table 2: Predicted Probabilities for Each Offense Type.

Type of Offense	Mean Predicted Probability
Violent	.128
Robbery	.055
Burglary	.199
Other Property	.227
Drug	.099
Alcohol	.117
Other Miscellaneous	

Table 3: Predicted Probabilities of Repeating the Same Offense (Model 1): Arrest Transitions 1 Through 9.

Type of Offense	Arrest Transition									
	1	2	3	4	5	6	7	8	9	Mean
Violent	0.011	0.006	0.008	0.016	0.017	0.017	0.017	0.020	0.024	0.015
Robbery	0.002	0.003	0.003	0.003	0.003	0.003	0.004	0.004	0.003	0.003
Burglary	0.070	0.059	0.047	0.041	0.041	0.034	0.030	0.026	0.021	0.041
Other Property	0.086	0.080	0.067	0.052	0.045	0.043	0.039	0.034	0.032	0.053
Drug	0.003	0.005	0.006	0.007	0.008	0.011	0.014	0.018	0.022	0.010
Alcohol	0.025	0.024	0.021	0.016	0.013	0.010	0.009	0.006	0.006	0.015
Other Miscellaneous	0.005	0.012	0.021	0.031	0.039	0.044	0.050	0.056	0.059	0.035

Table 4: Predicted Probabilities of Escalation for Each Offense Type (Model 1): Arrest Transitions 1 Through 9.

	Arrest Transition								
Type of Offense	1	2	3	4	5	6	7	8	9
Robbery to Violent	0.004	0.003	0.008	0.007	0.007	0.007	0.008	0.009	0.009
Burglary to Violent	0.029	0.015	0.030	0.026	0.027	0.026	0.022	0.027	0.023
Burglary to Robbery	0.014	0.016	0.013	0.010	0.011	0.013	0.011	0.010	0.008
Other Property to Violent	0.032	0.017	0.036	0.031	0.029	0.027	0.027	0.028	0.029
Other Property to Robbery	0.016	0.018	0.015	0.012	0.012	0.013	0.013	0.011	0.010
Other Property to Burglary	0.077	0.066	0.057	0.048	0.044	0.035	0.036	0.028	0.025
Drug to Violent	0.005	0.004	0.010	0.010	0.012	0.012	0.015	0.019	0.022
Drug to Robbery	0.003	0.004	0.004	0.004	0.005	0.006	0.007	0.007	0.007
Drug to Burglary	0.013	0.015	0.016	0.016	0.017	0.016	0.020	0.019	0.019
Drug to Other Property	0.014	0.018	0.019	0.017	0.018	0.019	0.022	0.023	0.025
Alcohol to Violent	0.018	0.009	0.020	0.017	0.017	0.014	0.013	0.013	0.011
Alcohol to Robbery	0.009	0.009	0.009	0.007	0.007	0.007	0.006	0.005	0.004
Alcohol to Burglary	0.043	0.035	0.032	0.027	0.025	0.018	0.017	0.013	0.010
Alcohol to Other Property	0.048	0.042	0.038	0.029	0.026	0.022	0.019	0.016	0.013
Other Miscellaneous to Violent	0.006	0.006	0.016	0.021	0.025	0.027	0.028	0.035	0.038
Other Miscellaneous to Robbery	0.003	0.006	0.007	0.008	0.010	0.013	0.014	0.014	0.013
Other Miscellaneous to Burglary	0.014	0.022	0.026	0.033	0.038	0.035	0.038	0.034	0.033
Other Miscellaneous to Other Property	0.016	0.026	0.031	0.036	0.039	0.042	0.041	0.042	0.043

Table 5: Predicted Probabilities of Deescalation for Each Offense Type (Model 1): Arrest Transitions 1 Through 9.

Type of Offense	Arrest Transition								
	1	2	3	4	5	6	7	8	9
Violent to Robbery	0.005	0.007	0.003	0.007	0.007	0.008	0.008	0.008	0.008
Violent to Burglary	0.026	0.024	0.012	0.026	0.026	0.023	0.023	0.020	0.021
Violent to Other Property	0.029	0.030	0.014	0.028	0.027	0.027	0.024	0.024	0.027
Violent to Drug	0.007	0.008	0.005	0.011	0.012	0.015	0.016	0.018	0.024
Violent to Alcohol	0.015	0.017	0.008	0.016	0.013	0.013	0.011	0.010	0.011
Violent to Other Miscellaneous	0.009	0.013	0.010	0.024	0.026	0.029	0.030	0.032	0.036
Robbery to Burglary	0.011	0.012	0.013	0.011	0.010	0.009	0.011	0.009	0.008
Robbery to Other Property	0.012	0.015	0.015	0.012	0.011	0.011	0.012	0.011	0.010
Robbery to Drug	0.003	0.004	0.005	0.005	0.005	0.006	0.008	0.009	0.009
Robbery to Alcohol	0.006	0.008	0.008	0.007	0.005	0.005	0.006	0.005	0.004
Robbery to Other Miscellaneous	0.004	0.007	0.010	0.010	0.011	0.012	0.014	0.015	0.014
Burglary to Other Property	0.078	0.071	0.056	0.044	0.042	0.041	0.032	0.032	0.027
Burglary to Drug	0.018	0.020	0.018	0.018	0.019	0.023	0.021	0.025	0.024
Burglary to Alcohol	0.041	0.040	0.031	0.025	0.021	0.020	0.015	0.013	0.011
Burglary to Other Miscellaneous	0.026	0.033	0.038	0.038	0.042	0.043	0.039	0.043	0.036
Other Property to Drug	0.019	0.022	0.022	0.021	0.020	0.024	0.026	0.026	0.029
Other Property to Alcohol	0.045	0.045	0.037	0.030	0.023	0.021	0.018	0.014	0.014
Other Property to Other Miscellaneous	0.028	0.036	0.046	0.045	0.045	0.045	0.047	0.046	0.044

Table 6: Predicted Probabilities of Repeating the Same Offense (Model 2): Arrest Transitions 1 Through 9.

	Arrest Transition									
Type of Offense	1	2	3	4	5	6	7	8	9	Mean
Violent	1.2E-06	1.3E-06	1.7E-06	1.8E-06	1.7E-06	1.7E-06	1.6E-06	1.8E-06	2.1E-06	1.7E-06
Robbery	1.4E-06	2.0E-06	2.2E-06	1.9E-06	1.7E-06	2.2E-06	2.5E-06	2.3E-06	2.0E-06	2.0E-06
Burglary	0.592	0.583	0.577	0.595	0.618	0.609	0.609	0.616	0.598	0.600
Other Property	0.037	0.038	0.037	0.033	0.028	0.030	0.029	0.028	0.031	0.032
Drug	6.6E-09	8.6E-09	9.8E-09	9.6E-09	8.9E-09	1.0E-08	1.1E-08	1.1E-08	1.2E-08	9.7E-09
Alcohol	0.001	0.001	0.002	0.002	0.001	0.001	0.002	0.001	0.002	0.001
Other Miscellaneous	2.4E-06	5.8E-06	1.2E-05	1.9E-05	2.3E-05	2.9E-05	3.4E-05	4.0E-05	4.7E-05	2.4E-05

Table 7: Predicted Probabilities of Escalation for Each Offense Type (Model 2): Arrest Transitions 1 Through 9.

Type of Offense	Arrest Transition								
	1	2	3	4	5	6	7	8	9
Robbery to Violent	1.1E-06	1.5E-06	2.2E-06	1.9E-06	1.7E-06	1.8E-06	2.0E-06	2.2E-06	2.2E-06
Burglary to Violent	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001
Burglary to Robbery	9.8E-04	1.2E-03	1.1E-03	1.0E-03	1.0E-03	1.3E-03	1.2E-03	1.2E-03	1.0E-03
Other Property to Violent	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Other Property to Robbery	2.5E-04	2.9E-04	2.9E-04	2.5E-04	2.3E-04	2.7E-04	2.7E-04	2.4E-04	2.3E-04
Other Property to Burglary	0.151	0.144	0.151	0.148	0.136	0.126	0.144	0.126	0.134
Drug to Violent	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Drug to Robbery	9.6E-08	1.3E-07	1.4E-07	1.3E-07	1.3E-07	1.5E-07	1.7E-07	1.5E-07	1.5E-07
Drug to Burglary	5.8E-05	6.6E-05	7.5E-05	7.7E-05	7.7E-05	7.0E-05	8.8E-05	7.9E-05	8.3E-05
Drug to Other Property	1.4E-05	1.7E-05	1.9E-05	1.7E-05	1.6E-05	1.7E-05	1.8E-05	1.8E-05	1.9E-05
Alcohol to Violent	3.6E-05	4.1E-05	5.7E-05	5.3E-05	5.2E-05	4.8E-05	4.9E-05	5.5E-05	5.4E-05
Alcohol to Robbery	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Alcohol to Burglary	0.026	0.026	0.031	0.031	0.032	0.028	0.032	0.029	0.029
Alcohol to Other Property	0.006	0.007	0.008	0.007	0.007	0.007	0.007	0.007	0.007
Other Miscellaneous to Violent	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Other Miscellaneous to Robbery	1.5E-06	3.1E-06	4.2E-06	5.4E-06	6.2E-06	8.2E-06	8.7E-06	8.9E-06	9.2E-06
Other Miscellaneous to Burglary	0.001	0.002	0.002	0.003	0.004	0.004	0.005	0.005	0.005
Other Miscellaneous to Other Property	0.000	0.000	0.001	0.001	0.001	0.001	0.001	0.001	0.001

Table 8: Predicted Probabilities of Deescalation for Each Offense Type (Model 2): Arrest Transitions 1 Through 9.

Type of Offense	Arrest Transition								
	1	2	3	4	5	6	7	8	9
Violent to Robbery	1.4E-06	1.6E-06	1.8E-06	1.8E-06	1.7E-06	2.1E-06	2.0E-06	1.8E-06	2.0E-06
Violent to Burglary	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001
Violent to Other Property	2.0E-04	2.1E-04	2.3E-04	2.4E-04	2.2E-04	2.3E-04	2.1E-04	2.1E-04	2.6E-04
Violent to Drug	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Violent to Alcohol	3.6E-05	4.3E-05	4.9E-05	5.7E-05	4.7E-05	5.3E-05	4.9E-05	4.5E-05	6.4E-05
Violent to Other Miscellaneous	2.2E-06	3.1E-06	5.0E-06	6.5E-06	6.6E-06	7.5E-06	7.8E-06	8.3E-06	1.0E-05
Robbery to Burglary	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001
Robbery to Other Property	2.0E-04	2.5E-04	2.9E-04	2.5E-04	2.1E-04	2.4E-04	2.6E-04	2.6E-04	2.7E-04
Robbery to Drug	9.3E-08	1.3E-07	1.5E-07	1.4E-07	1.2E-07	1.5E-07	1.7E-07	1.6E-07	1.7E-07
Robbery to Alcohol	3.6E-05	5.2E-05	6.2E-05	5.9E-05	4.7E-05	5.4E-05	6.1E-05	5.6E-05	6.6E-05
Robbery to Other Miscellaneous	2.2E-06	3.7E-06	6.4E-06	6.8E-06	6.6E-06	7.7E-06	9.7E-06	1.0E-05	1.0E-05
Burglary to Other Property	0.146	0.152	0.143	0.131	0.128	0.144	0.124	0.139	0.138
Burglary to Drug	6.7E-05	7.6E-05	7.5E-05	7.4E-05	7.1E-05	8.8E-05	7.8E-05	8.6E-05	8.5E-05
Burglary to Alcohol	0.026	0.031	0.031	0.031	0.028	0.032	0.029	0.029	0.034
Burglary to Other Miscellaneous	0.002	0.002	0.003	0.004	0.004	0.005	0.005	0.005	0.005
Other Property to Drug	1.7E-05	1.9E-05	2.0E-05	1.8E-05	1.6E-05	1.8E-05	1.8E-05	1.8E-05	1.9E-05
Other Property to Alcohol	0.007	0.008	0.008	0.008	0.006	0.007	0.007	0.006	0.008
Other Property to Other Miscellaneous	0.000	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001

Table 9: Predicted Probabilities of Repeating the Same Offense for Whites and Non Whites (Model 3): Arrest Transitions 1 Through 9

Panel A: Whites

	Arrest Transition									
Type of Offense	1	2	3	4	5	6	7	8	9	Mean
Violent	6.3E-05	7.3E-05	1.1E-04	1.6E-04	1.4E-04	1.5E-04	2.0E-04	3.0E-04	6.0E-04	2.0E-04
Robbery	7.1E-05	5.2E-05	5.7E-05	8.9E-05	8.7E-05	1.6E-04	2.2E-04	2.4E-04	2.5E-04	1.4E-04
Burglary	0.468	0.461	0.450	0.450	0.474	0.457	0.452	0.436	0.388	0.448
Other Property	0.078	0.079	0.080	0.077	0.068	0.071	0.072	0.074	0.089	0.076
Drug	1.1E-05	1.7E-05	2.3E-05	2.0E-05	1.3E-05	2.1E-05	3.1E-05	4.6E-05	1.0E-04	3.2E-05
Alcohol	1.4E-04	1.5E-04	1.3E-04	1.1E-04	9.3E-05	8.1E-05	6.1E-05	4.8E-05	4.8E-05	9.6E-05
Other Miscellaneous	1.9E-05	4.8E-05	1.2E-04	2.1E-04	2.7E-04	3.0E-04	3.0E-04	3.8E-04	4.7E-04	2.3E-04

Panel B: Non-whites

	Arrest Transition									
Type of Offense	1	2	3	4	5	6	7	8	9	Mean
Violent	6.9E-05	1.0E-04	1.6E-04	2.1E-04	2.5E-04	2.9E-04	3.2E-04	4.1E-04	5.1E-04	2.6E-04
Robbery	2.7E-04	5.0E-04	6.5E-04	6.4E-04	7.2E-04	1.0E-03	1.4E-03	1.4E-03	1.4E-03	8.9E-04
Burglary	0.467	0.439	0.420	0.431	0.438	0.408	0.388	0.385	0.362	0.415
Other Property	0.076	0.081	0.084	0.076	0.071	0.077	0.080	0.077	0.084	0.079
Drug	1.4E-05	2.9E-05	4.8E-05	6.6E-05	8.5E-05	1.3E-04	2.3E-04	3.2E-04	4.3E-04	1.5E-04
Alcohol	7.5E-05	8.0E-05	9.5E-05	9.3E-05	7.1E-05	6.3E-05	7.1E-05	5.2E-05	5.0E-05	7.2E-05
Other Miscellaneous	9.0E-06	2.4E-05	5.1E-05	8.9E-05	1.2E-04	1.7E-04	2.6E-04	3.3E-04	4.2E-04	1.6E-04

Table 10: Predicted Probabilities of Escalation for Each Offense Type for Whites and Non-Whites (Model 3): Arrest Transitions 1 Through 9.

Panel A: Whites

Type of Offense	Arrest Transition								
	1	2	3	4	5	6	7	8	9
Robbery to Violent	5.2E-05	1.0E-04	5.7E-05	1.5E-04	7.9E-05	1.6E-04	2.0E-04	3.2E-04	4.5E-04
Burglary to Violent	0.005	0.006	0.008	0.009	0.007	0.010	0.009	0.015	0.018
Burglary to Robbery	0.007	0.003	0.008	0.005	0.008	0.010	0.010	0.011	0.010
Other Property to Violent	0.002	0.003	0.003	0.004	0.003	0.004	0.004	0.006	0.008
Other Property to Robbery	0.003	0.001	0.003	0.002	0.003	0.004	0.004	0.004	0.005
Other Property to Burglary	0.185	0.195	0.182	0.199	0.183	0.169	0.191	0.163	0.176
Drug to Violent	2.1E-05	3.9E-05	4.7E-05	7.4E-05	3.7E-05	5.4E-05	7.8E-05	1.2E-04	2.3E-04
Drug to Robbery	2.8E-05	2.1E-05	4.7E-05	4.2E-05	4.0E-05	5.4E-05	8.4E-05	8.9E-05	1.3E-04
Drug to Burglary	0.002	0.003	0.003	0.004	0.003	0.002	0.004	0.003	0.005
Drug to Other Property	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.002	0.003
Alcohol to Violent	9.2E-05	1.1E-04	1.4E-04	1.4E-04	1.0E-04	1.3E-04	1.2E-04	1.5E-04	1.9E-04
Alcohol to Robbery	1.3E-04	6.0E-05	1.4E-04	8.2E-05	1.1E-04	1.4E-04	1.3E-04	1.1E-04	1.1E-04
Alcohol to Burglary	0.008	0.008	0.008	0.007	0.007	0.006	0.006	0.004	0.004
Alcohol to Other Property	0.003	0.003	0.004	0.003	0.003	0.003	0.002	0.002	0.002
Other Miscellaneous to Violent	2.6E-05	5.4E-05	9.8E-05	1.8E-04	1.6E-04	2.6E-04	2.3E-04	3.8E-04	6.1E-04
Other Miscellaneous to Robbery	3.5E-05	2.8E-05	9.8E-05	1.0E-04	1.7E-04	2.6E-04	2.5E-04	2.8E-04	3.4E-04
Other Miscellaneous to Burglary	0.002	0.004	0.006	0.009	0.011	0.012	0.012	0.011	0.013
Other Miscellaneous to Other Property	0.001	0.002	0.002	0.004	0.004	0.005	0.004	0.005	0.007

Panel B: Non-whites

Type of Offense	Arrest Transition								
	1	2	3	4	5	6	7	8	9
Robbery to Violent	1.3E-04	2.1E-04	3.8E-04	3.6E-04	4.4E-04	4.8E-04	6.8E-04	8.2E-04	8.9E-04
Burglary to Violent	0.006	0.008	0.009	0.010	0.011	0.012	0.011	0.014	0.014
Burglary to Robbery	0.013	0.018	0.016	0.017	0.018	0.024	0.023	0.024	0.023
Other Property to Violent	0.003	0.003	0.004	0.004	0.005	0.005	0.005	0.006	0.007
Other Property to Robbery	0.005	0.007	0.007	0.007	0.008	0.010	0.011	0.010	0.011
Other Property to Burglary	0.190	0.176	0.194	0.186	0.180	0.161	0.186	0.165	0.170
Drug to Violent	3.0E-05	4.9E-05	9.4E-05	1.1E-04	1.5E-04	1.6E-04	2.5E-04	3.7E-04	4.4E-04
Drug to Robbery	6.2E-05	1.2E-04	1.6E-04	1.9E-04	2.5E-04	3.5E-04	5.1E-04	6.4E-04	7.1E-04
Drug to Burglary	0.002	0.003	0.004	0.005	0.006	0.006	0.009	0.010	0.011
Drug to Other Property	0.001	0.001	0.002	0.002	0.002	0.003	0.004	0.005	0.006
Alcohol to Violent	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Alcohol to Robbery	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Alcohol to Burglary	0.006	0.005	0.006	0.006	0.006	0.005	0.005	0.005	0.004
Alcohol to Other Property	0.002	0.002	0.003	0.003	0.003	0.002	0.002	0.002	0.002
Other Miscellaneous to Violent	2.1E-05	4.5E-05	8.6E-05	1.2E-04	1.8E-04	2.0E-04	2.8E-04	3.7E-04	4.5E-04
Other Miscellaneous to Robbery	4.3E-05	1.1E-04	1.5E-04	2.2E-04	2.9E-04	4.2E-04	5.7E-04	6.5E-04	7.2E-04
Other Miscellaneous to Burglary	0.002	0.003	0.004	0.006	0.007	0.007	0.010	0.010	0.011
Other Miscellaneous to Other Property	0.001	0.001	0.002	0.002	0.003	0.003	0.004	0.005	0.006

Table 11: Predicted Probabilities of Deescalation for Each Offense Type for Whites and Non-whites (Model 3): Arrest Transitions 1 Through 9.

Panel A: Whites

Type of Offense	Arrest Transition								
	1	2	3	4	5	6	7	8	9
Violent to Robbery	8.5E-05	3.8E-05	1.1E-04	8.9E-05	1.5E-04	1.5E-04	2.1E-04	2.2E-04	3.4E-04
Violent to Burglary	0.006	0.005	0.006	0.008	0.009	0.007	0.010	0.009	0.013
Violent to Other Property	0.002	0.002	0.003	0.003	0.003	0.003	0.004	0.004	0.007
Violent to Drug	3.4E-05	3.2E-05	5.2E-05	4.1E-05	5.0E-05	5.8E-05	8.0E-05	1.1E-04	2.7E-04
Violent to Alcohol	9.8E-05	9.5E-05	1.0E-04	1.2E-04	1.2E-04	9.0E-05	1.0E-04	9.6E-05	1.5E-04
Violent to Other Miscellaneous	4.6E-05	6.6E-05	1.3E-04	1.8E-04	2.4E-04	1.7E-04	2.5E-04	3.0E-04	4.6E-04
Robbery to Burglary	0.005	0.007	0.003	0.008	0.005	0.007	0.010	0.009	0.010
Robbery to Other Property	0.002	0.003	0.001	0.003	0.002	0.003	0.004	0.004	0.005
Robbery to Drug	2.8E-05	4.3E-05	2.7E-05	4.1E-05	2.8E-05	6.4E-05	8.1E-05	1.2E-04	2.0E-04
Robbery to Alcohol	8.2E-05	1.3E-04	5.3E-05	1.2E-04	7.1E-05	9.9E-05	1.0E-04	1.0E-04	1.1E-04
Robbery to Other Miscellaneous	3.8E-05	9.0E-05	6.7E-05	1.8E-04	1.4E-04	1.9E-04	2.6E-04	3.2E-04	3.5E-04
Burglary to Other Property	0.198	0.187	0.198	0.174	0.175	0.193	0.170	0.198	0.195
Burglary to Drug	0.003	0.003	0.004	0.002	0.003	0.004	0.004	0.006	0.008
Burglary to Alcohol	0.008	0.008	0.007	0.007	0.006	0.006	0.005	0.005	0.004
Burglary to Other Miscellaneous	0.004	0.006	0.009	0.010	0.012	0.012	0.011	0.015	0.014
Other Property to Drug	0.001	0.001	0.002	0.001	0.001	0.001	0.002	0.002	0.004
Other Property to Alcohol	0.003	0.004	0.003	0.003	0.002	0.002	0.002	0.002	0.002
Other Property to Other Miscellaneous	0.002	0.002	0.004	0.004	0.005	0.004	0.005	0.006	0.006

Panel B: Non-whites

Type of Offense	Arrest Transition								
	1	2	3	4	5	6	7	8	9
Violent to Robbery	1.4E-04	2.5E-04	2.8E-04	3.7E-04	4.0E-04	6.2E-04	6.5E-04	7.2E-04	8.2E-04
Violent to Burglary	0.005	0.006	0.007	0.010	0.010	0.010	0.011	0.011	0.013
Violent to Other Property	0.002	0.003	0.003	0.004	0.004	0.005	0.005	0.005	0.006
Violent to Drug	3.3E-05	6.0E-05	8.2E-05	1.3E-04	1.4E-04	2.3E-04	2.9E-04	3.6E-04	4.9E-04
Violent to Alcohol	6.1E-05	9.1E-05	1.1E-04	1.4E-04	1.1E-04	1.4E-04	1.5E-04	1.1E-04	1.8E-04
Violent to Other Miscellaneous	3.0E-05	5.5E-05	9.5E-05	1.5E-04	1.6E-04	2.6E-04	2.9E-04	3.6E-04	4.7E-04
Robbery to Burglary	0.010	0.012	0.017	0.016	0.017	0.017	0.023	0.023	0.023
Robbery to Other Property	0.004	0.006	0.007	0.007	0.007	0.008	0.010	0.011	0.011
Robbery to Drug	6.3E-05	1.2E-04	1.9E-04	2.2E-04	2.5E-04	3.8E-04	6.1E-04	7.1E-04	8.7E-04
Robbery to Alcohol	1.2E-04	1.9E-04	2.6E-04	2.4E-04	1.9E-04	2.3E-04	3.1E-04	2.3E-04	3.1E-04
Robbery to Other Miscellaneous	5.7E-05	1.1E-04	2.2E-04	2.6E-04	2.9E-04	4.2E-04	6.2E-04	7.2E-04	8.3E-04
Burglary to Other Property	0.187	0.203	0.181	0.177	0.173	0.196	0.166	0.181	0.178
Burglary to Drug	0.003	0.004	0.005	0.006	0.006	0.009	0.010	0.012	0.014
Burglary to Alcohol	0.006	0.007	0.006	0.006	0.005	0.006	0.005	0.004	0.005
Burglary to Other Miscellaneous	0.003	0.004	0.005	0.007	0.007	0.010	0.010	0.012	0.013
Other Property to Drug	0.001	0.002	0.002	0.003	0.003	0.004	0.005	0.005	0.006
Other Property to Alcohol	0.002	0.003	0.003	0.003	0.002	0.002	0.002	0.002	0.002
Other Property to Other Miscellaneous	0.001	0.002	0.003	0.003	0.003	0.004	0.005	0.005	0.006

Figure 1: Predicted Probability for Type of Offense Model 1

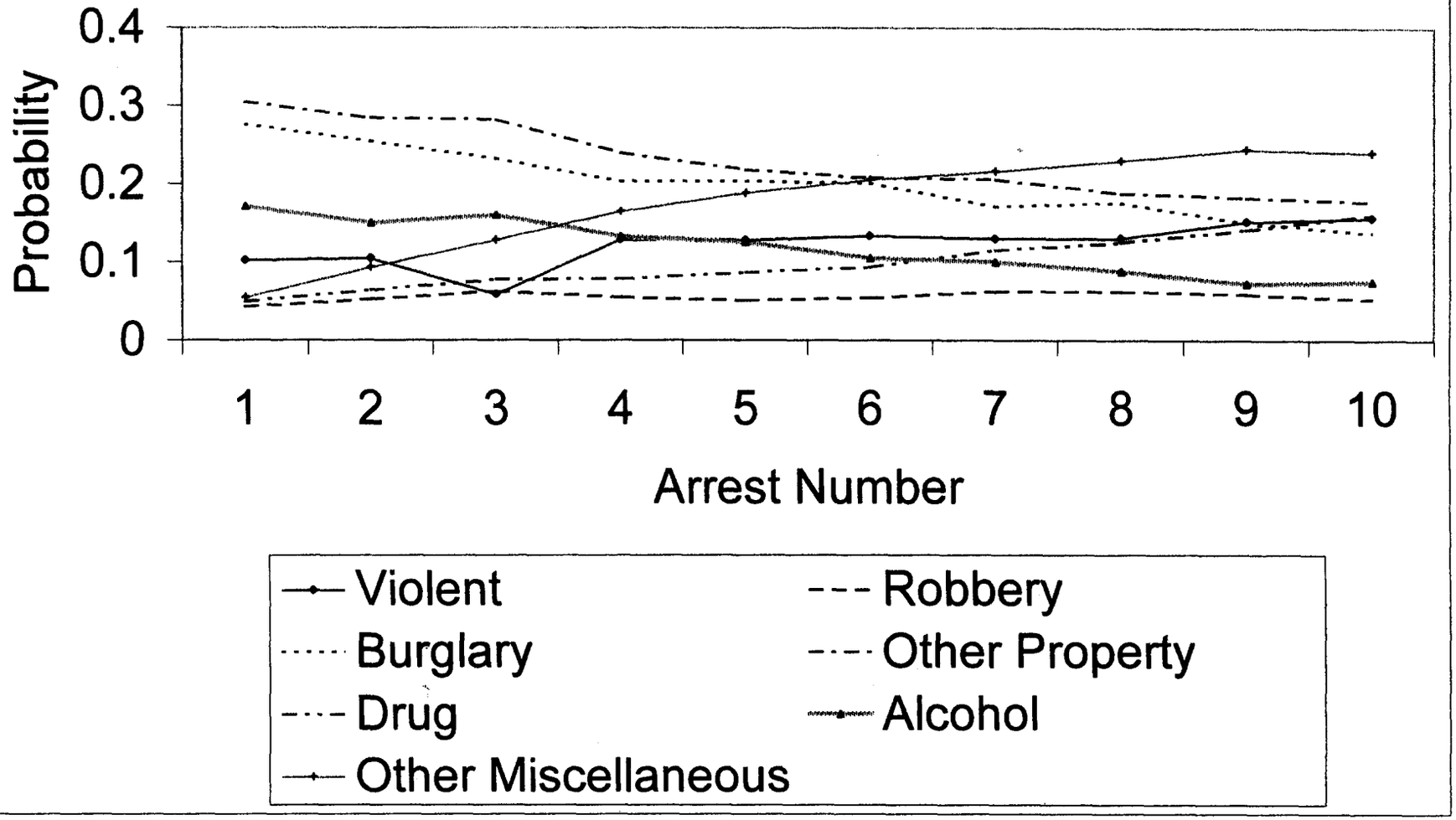
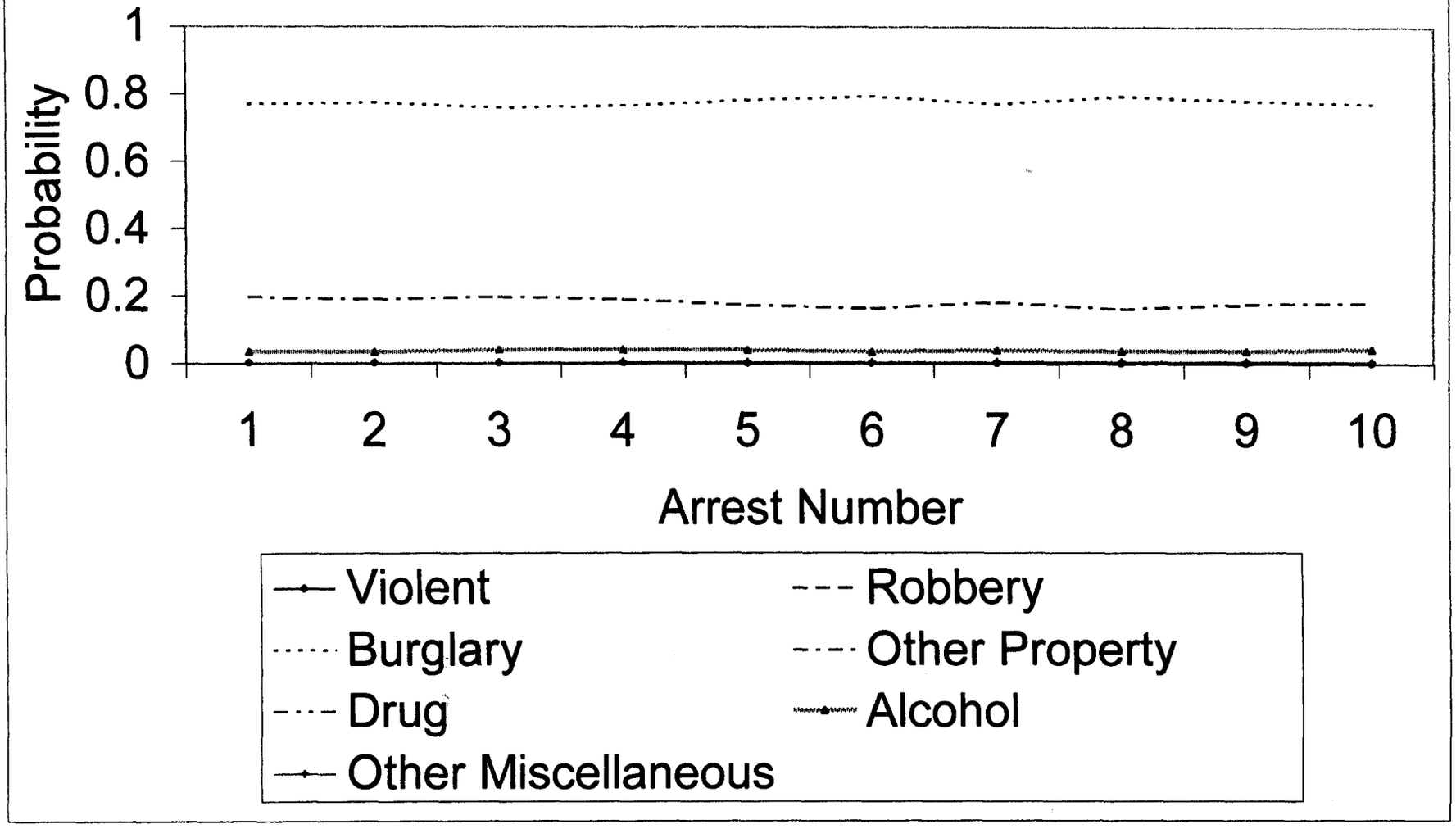


Figure 2: Predicted Probability for Type of Offense Model 2



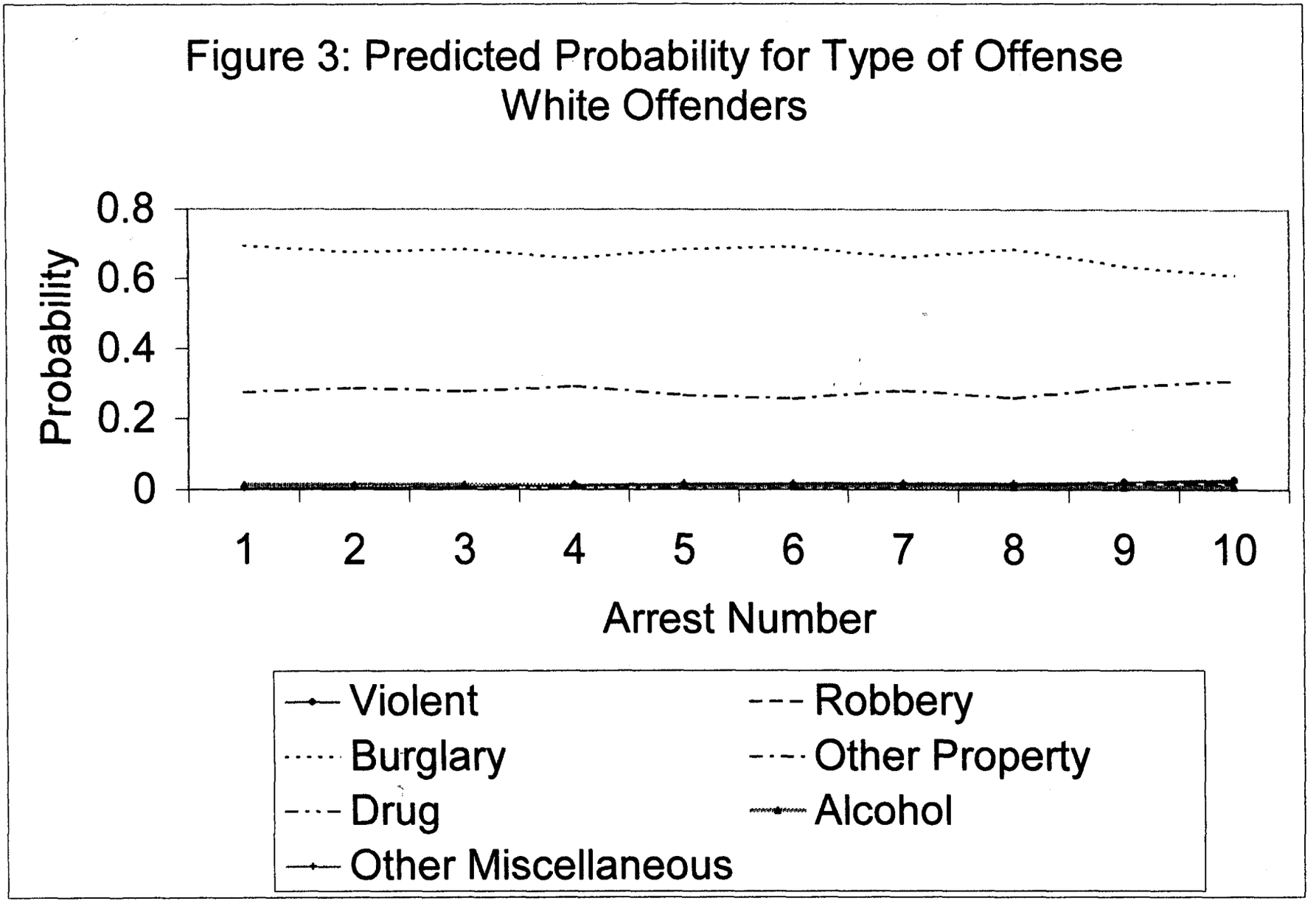


Figure 4: Predicted Probabilty for Type of Offense
Non-white Offenders

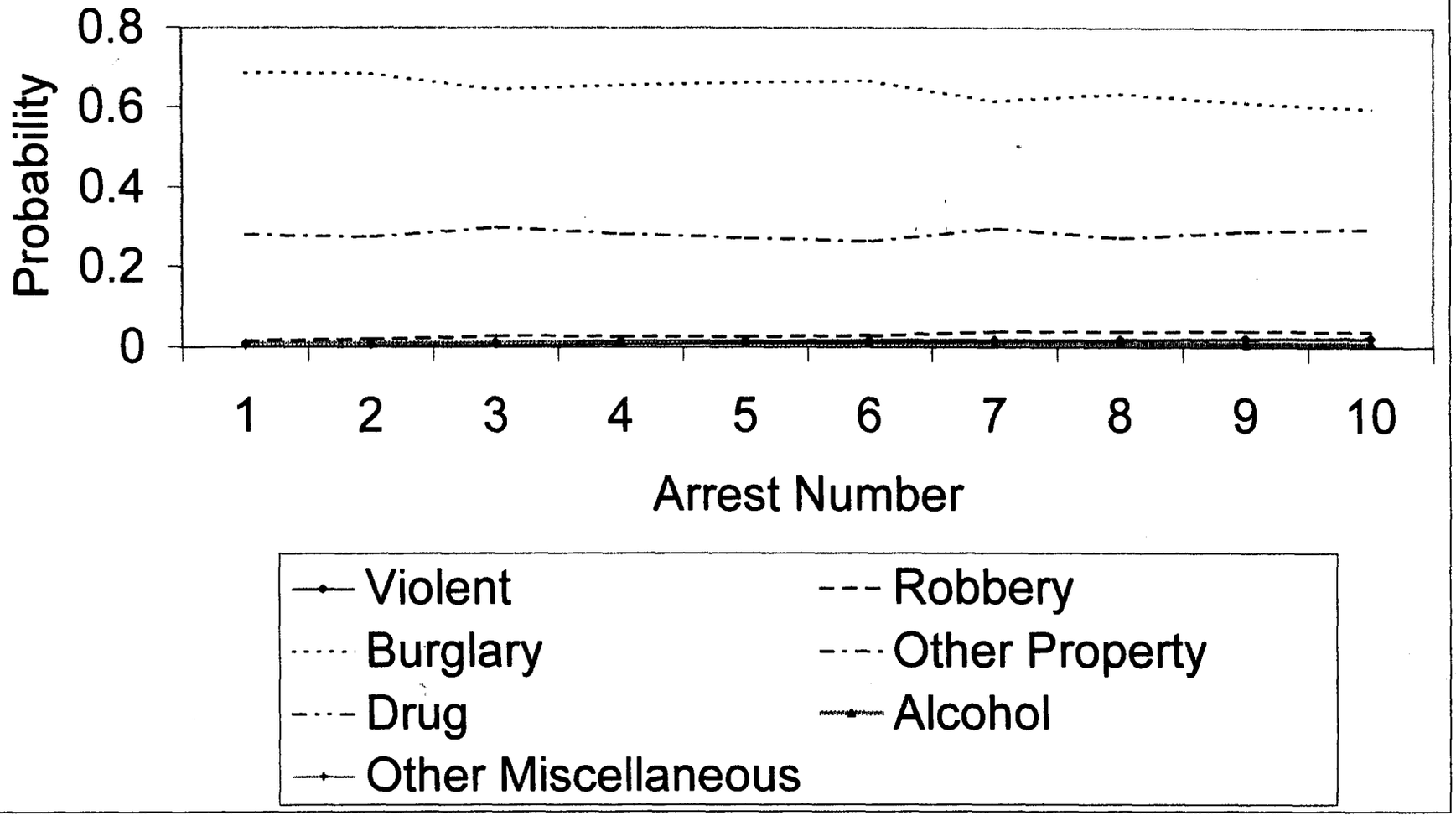
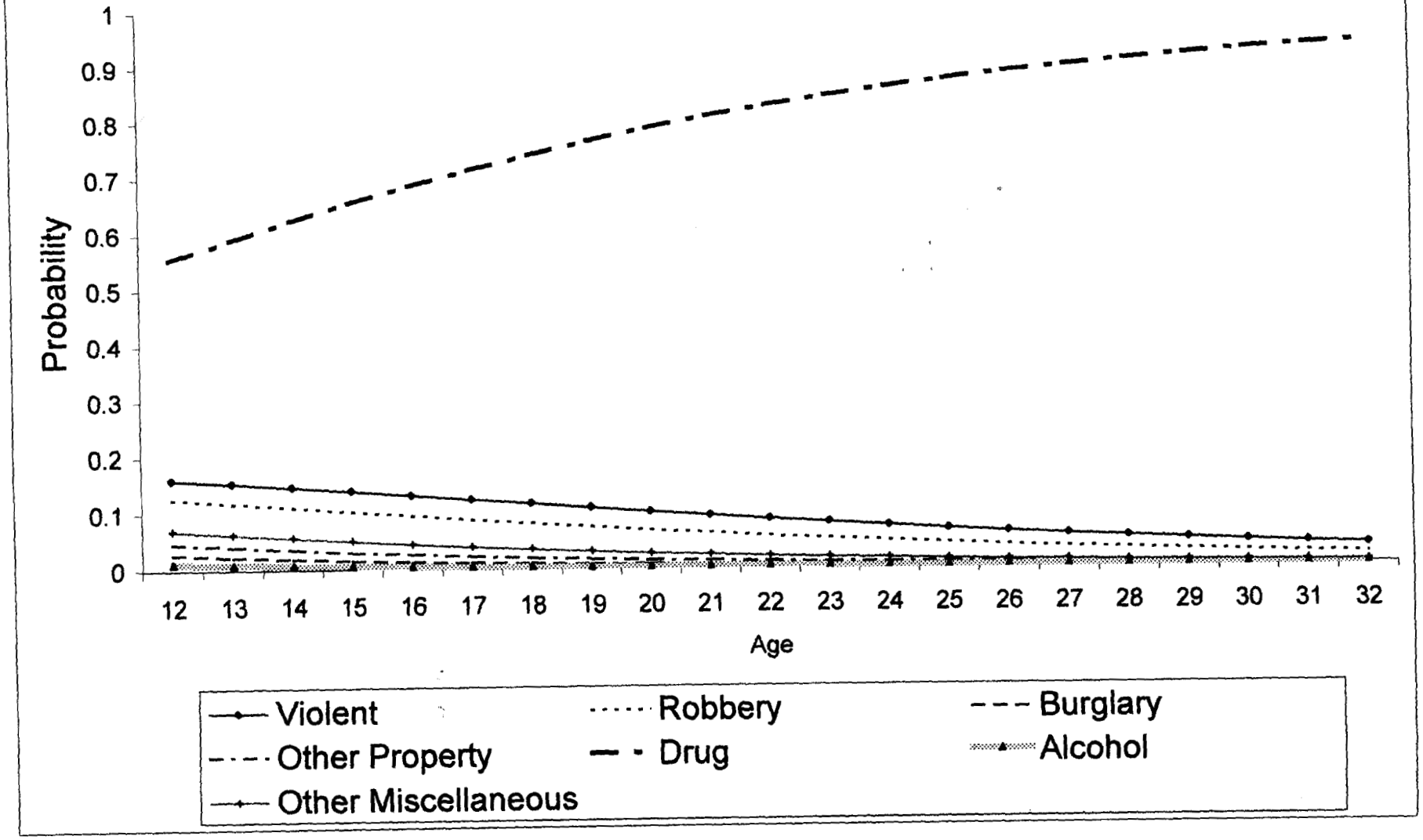
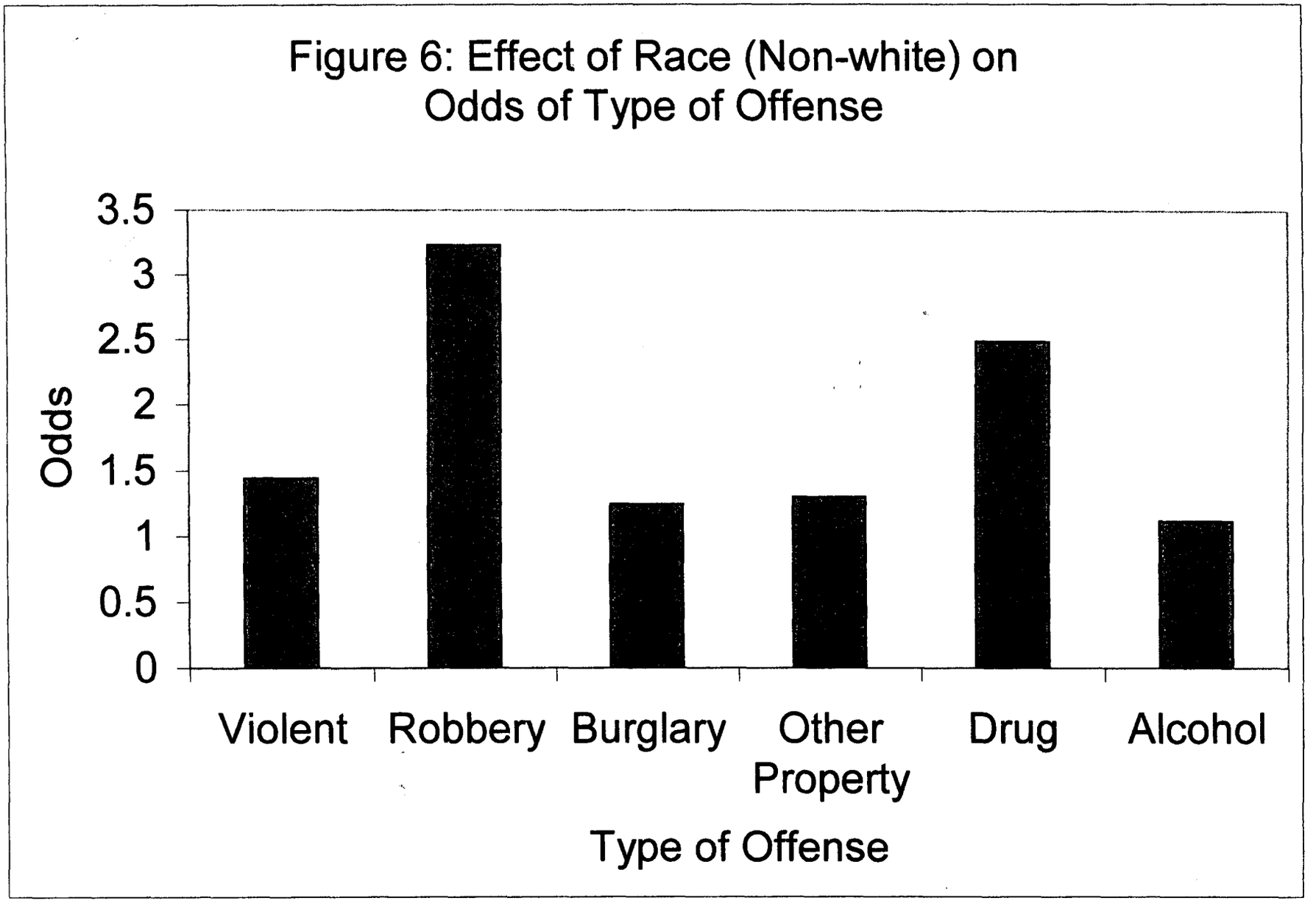


Figure 5: Probability of Offense by Age





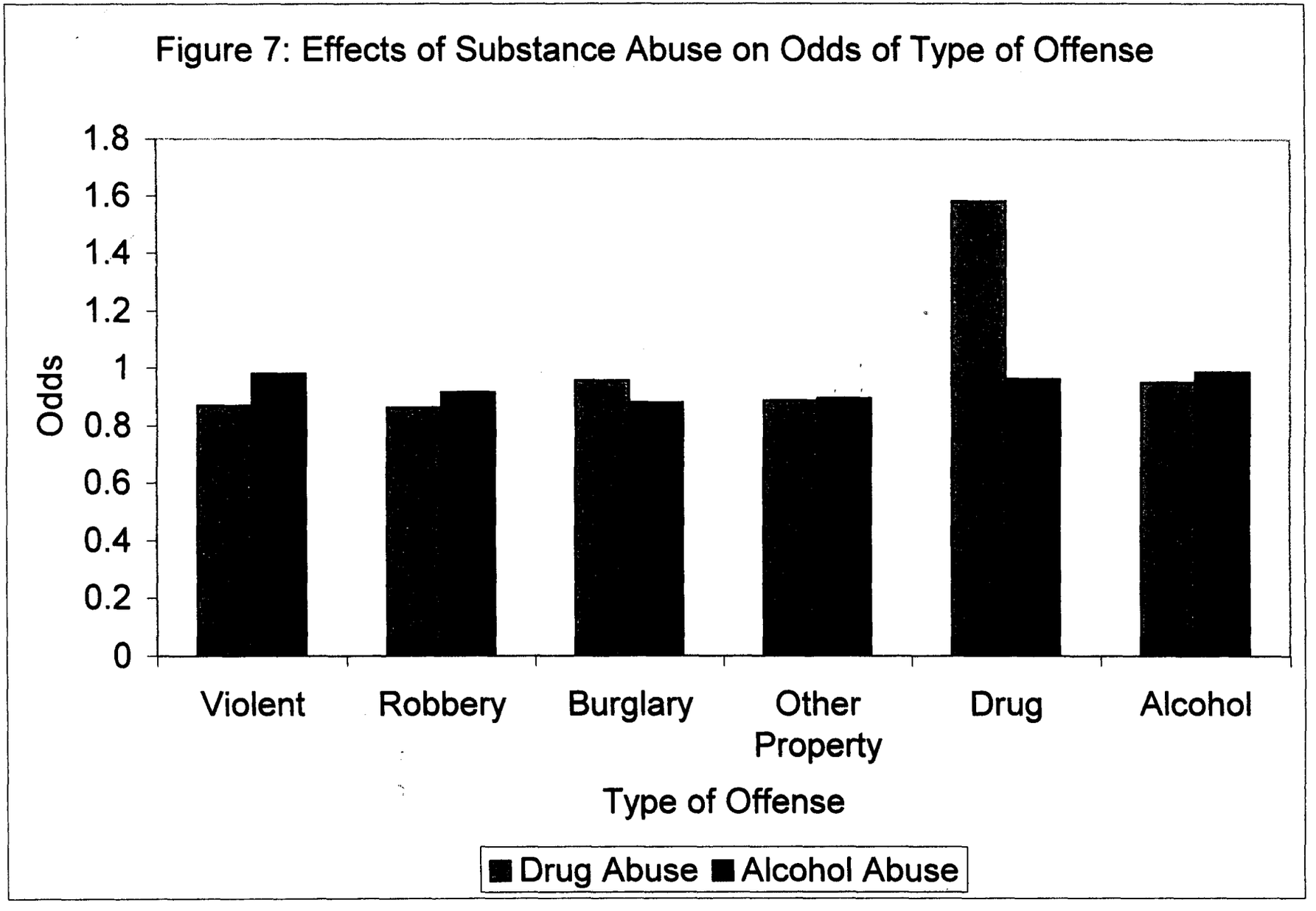


Figure 8: Effects of Prior Deviant Behavior on Odds of Type of Offense

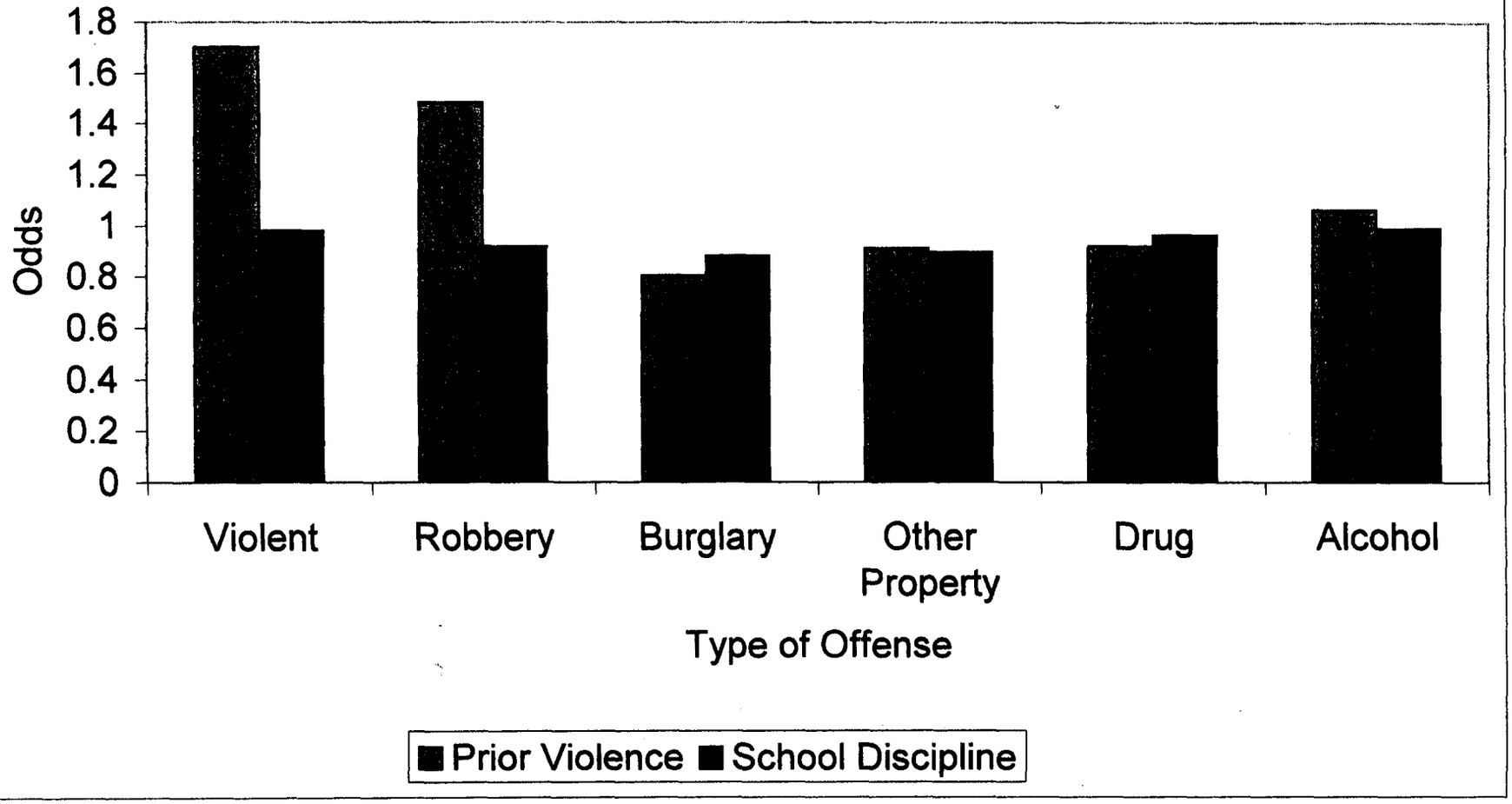
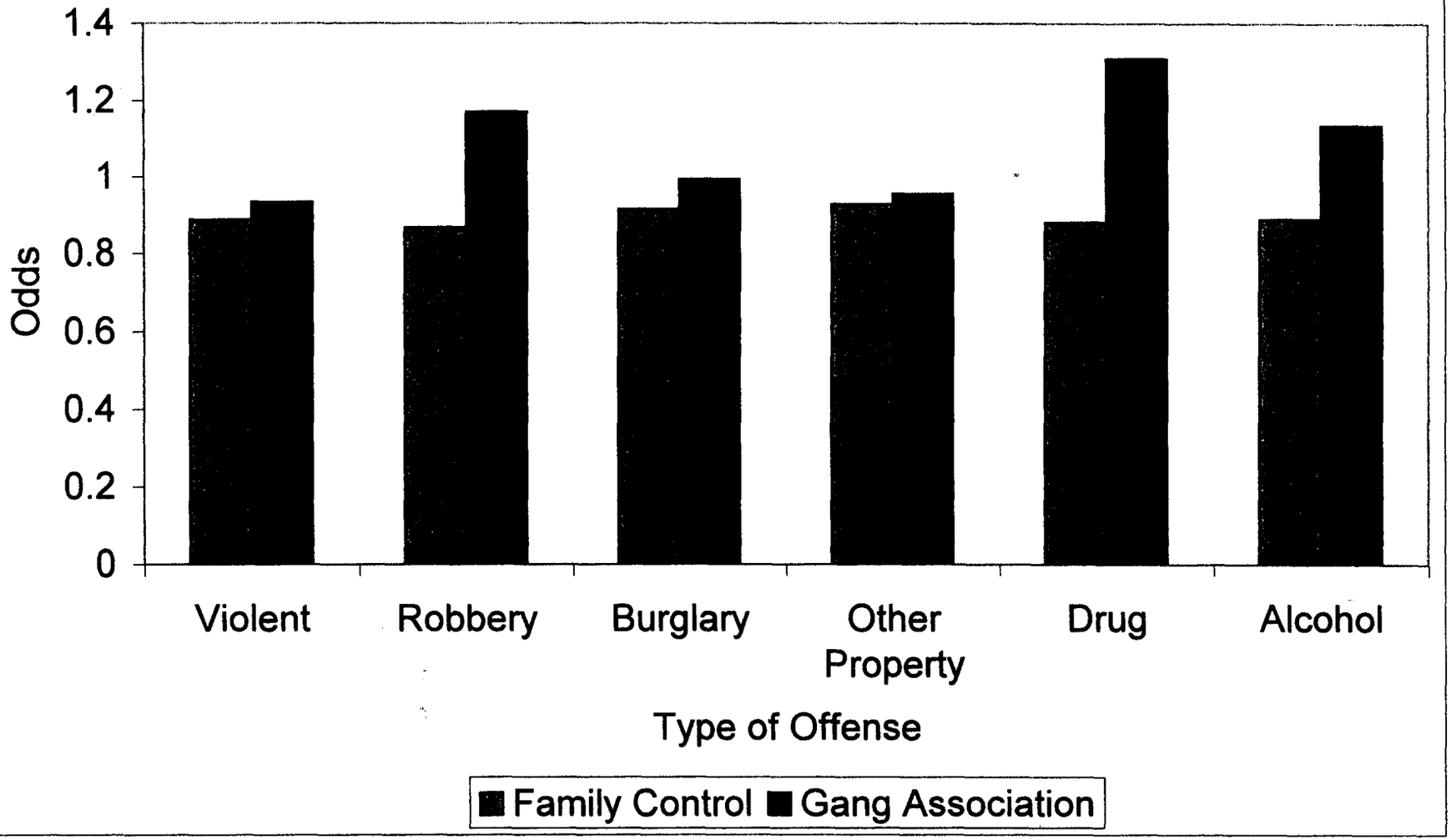


Figure 9: Effects of Family Control and Gang Association on Odds of Type of Offense



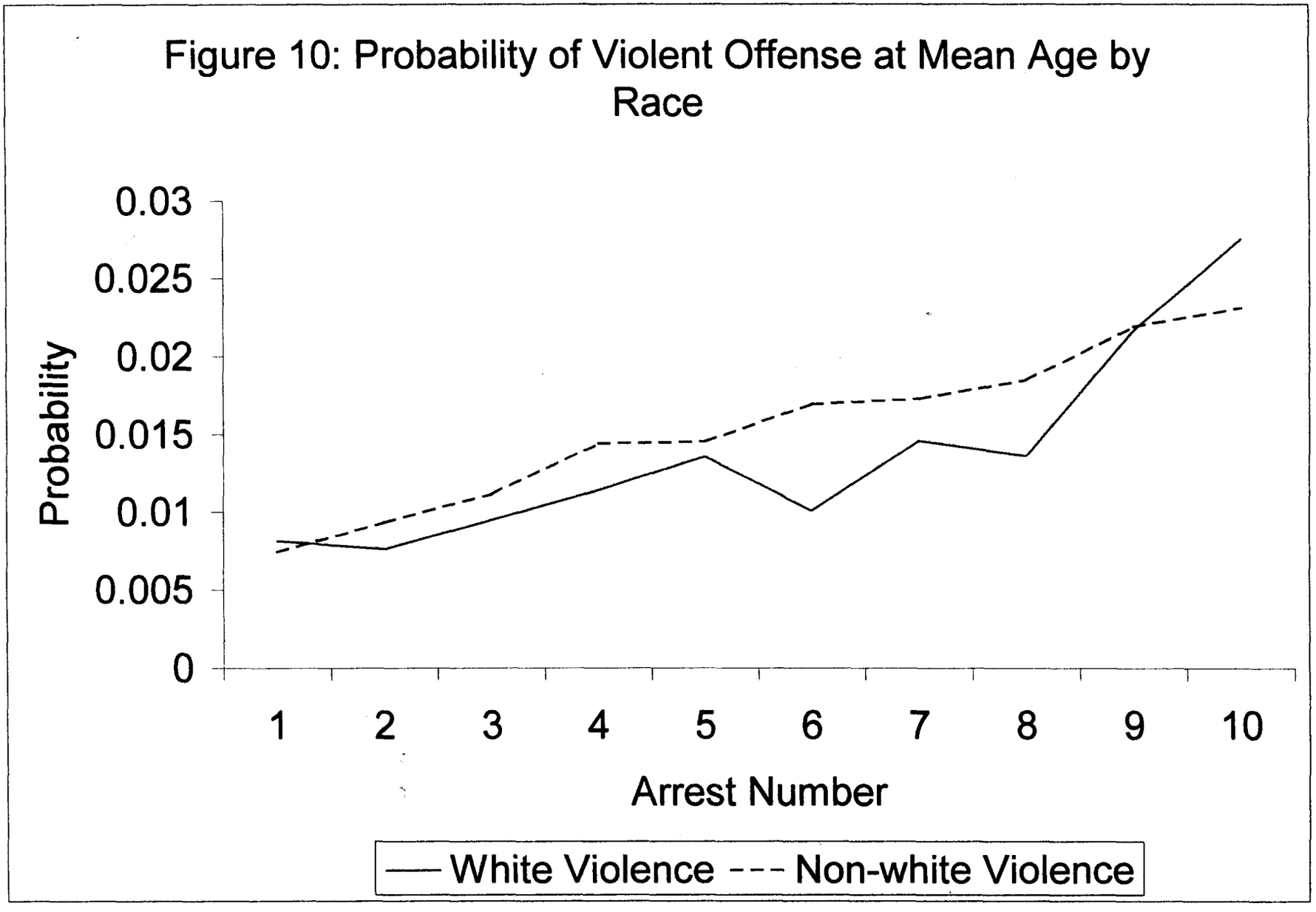


Figure 11: Probability of Robbery Offense at Mean Age by Race

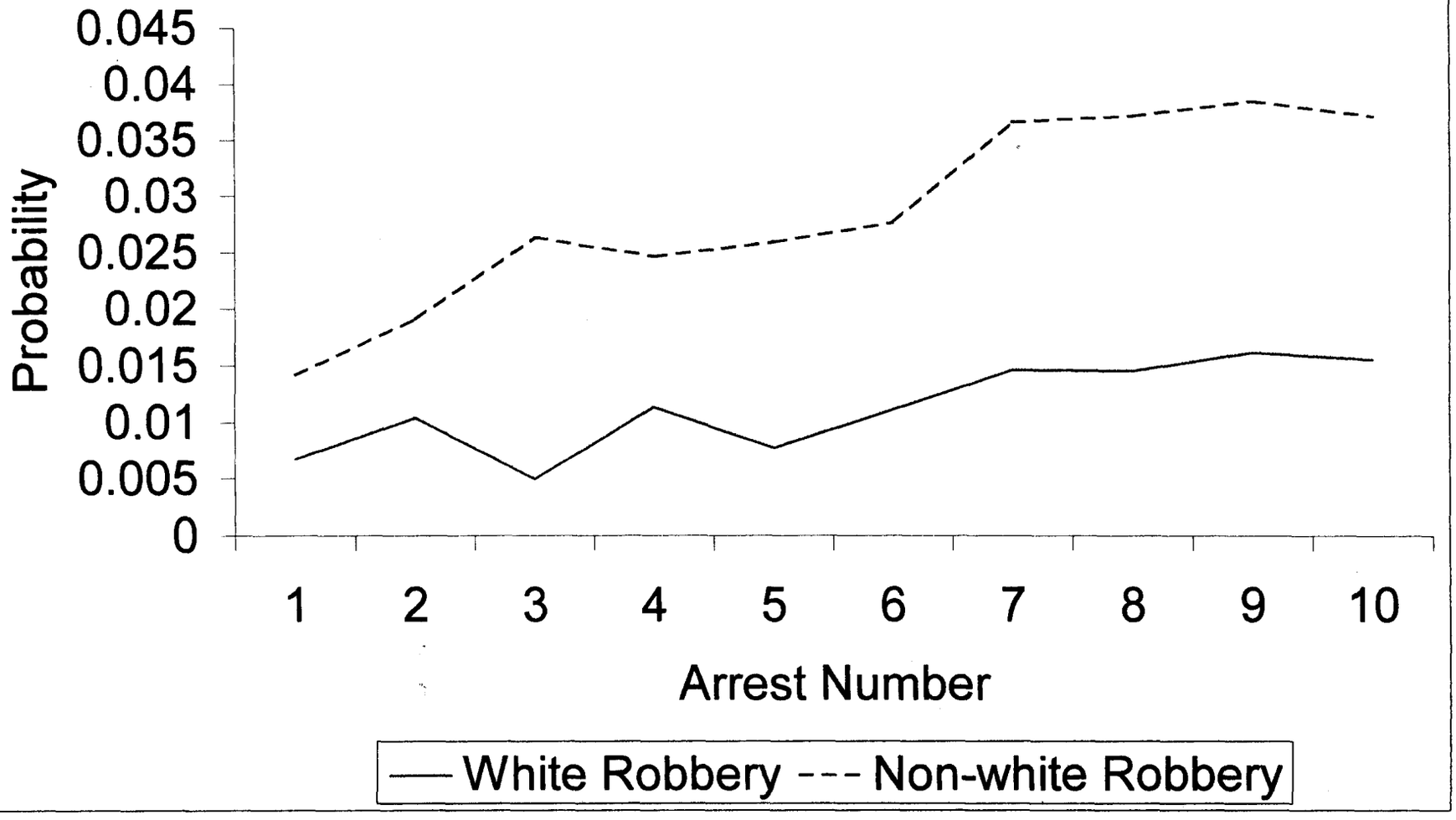


Figure 12: Probability of Burglary Offense at Mean Age by Race

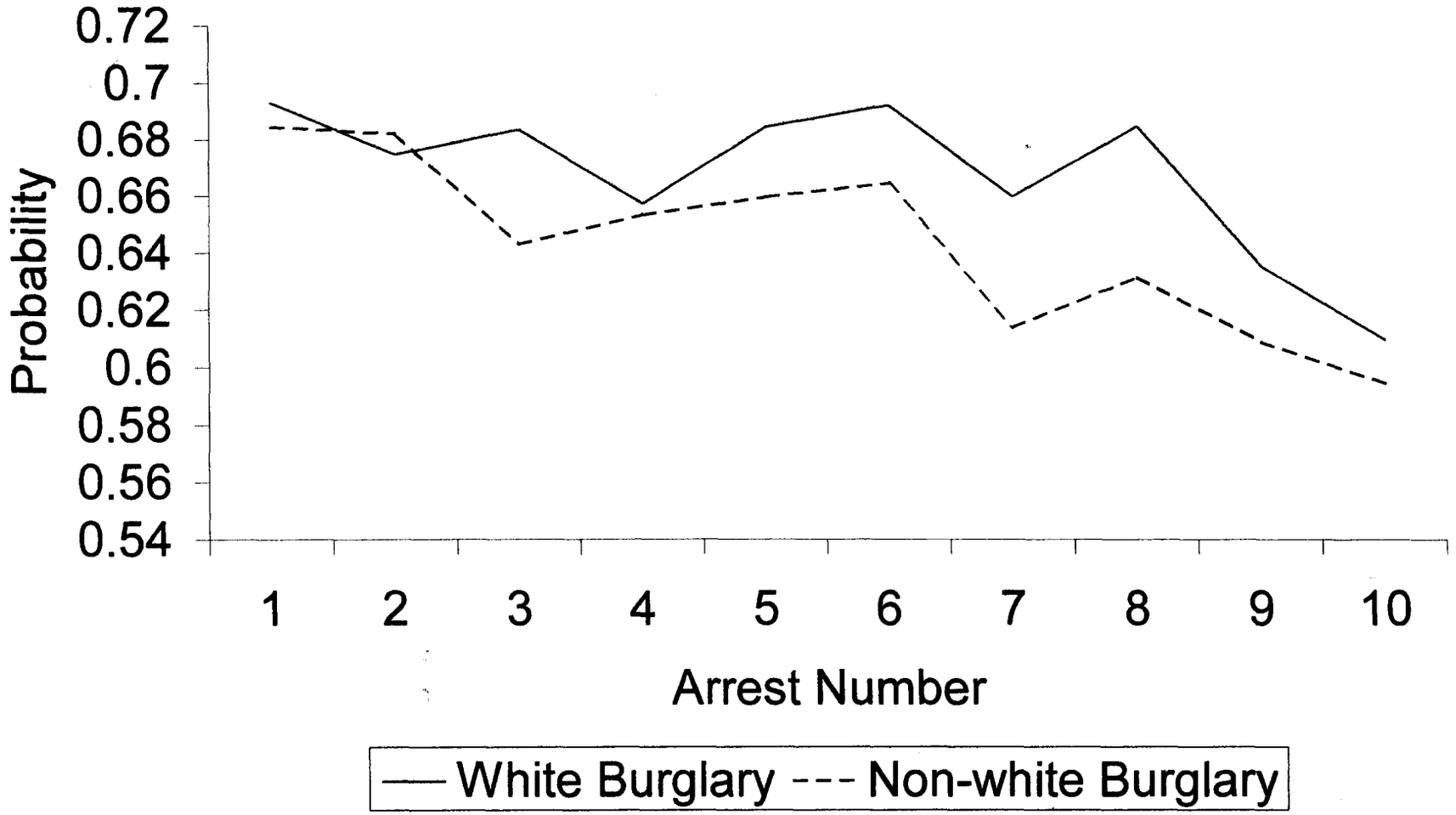


Figure 13: Probability of Other Property Offense at Mean Age by Race

Figure 14: Probability of Drug Offense at Mean Age by Race

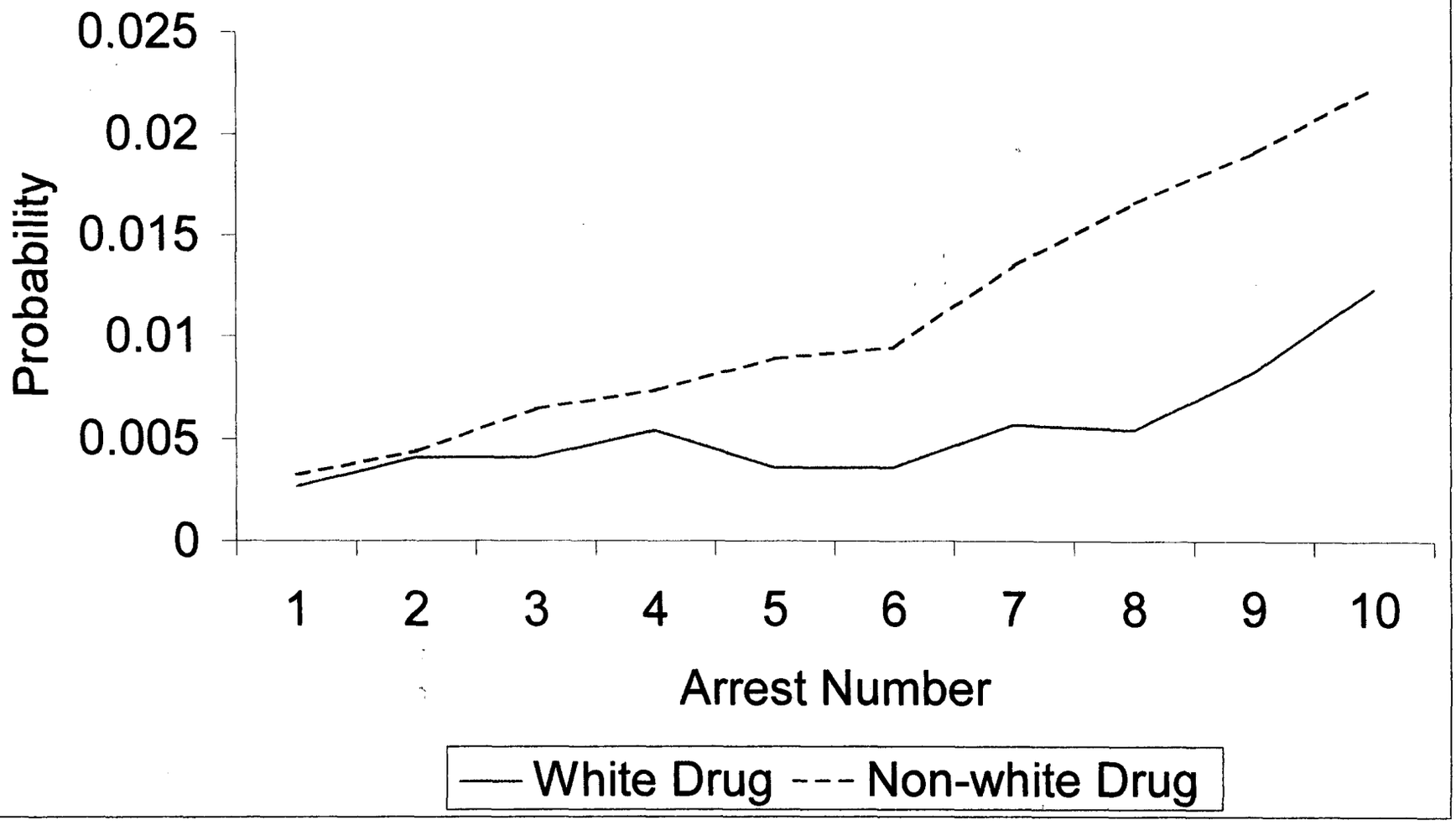


Figure 15: Probability of Alcohol Offense at Mean Age by Race

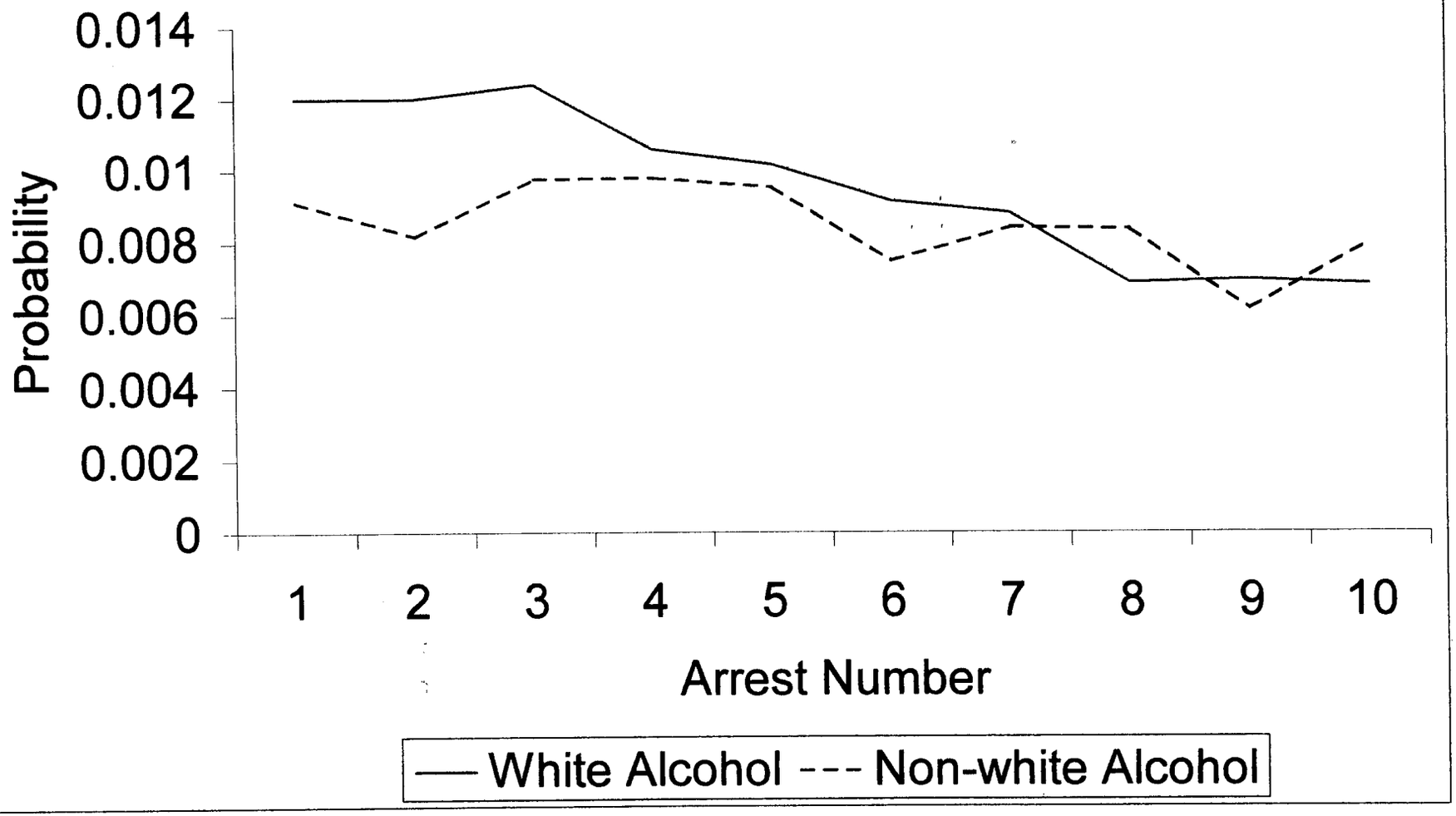


Figure 16: Probability of Other Miscellaneous Offense at Mean Age by Race