

4.0 RESULTS

4.1 PREDICTION OF RECIDIVISM BY ATTITUDE (H1) AND ASSOCIATES (H2)

The first research question of whether recidivism is a factor of attitude – criminal autosuggestion and the attitude toward community-based services (CBS attitude) was examined by regressing recidivism on the attitude variables. Hypothesis 1.1 tested the effect of criminal autosuggestion (See Model 1 and Model 2 in Table 11) and Hypothesis 1.2 the CBS attitude (See Model 4 and Model 5 in Table 13). The second hypothesis that postulated a positive association of criminal associates to recidivism was tested with controlling for the two attitude variables – criminal autosuggestion (Hypothesis 2.1, See Model 1 and Model 3 in Table 11) and the CBS attitude (Hypothesis 2.2, See Model 4 and Model 6 in Table 13).

4.1.1 Recidivism as a factor of criminal autosuggestion (H1.1) and associates (H2.1)

Model 1 presents the main effects of criminal autosuggestion and criminal associates on recidivism. Criminal autosuggestion at Time 1 was not related to recidivism over Time 2 and Time 3 (H1.1). However, in testing H2.1, criminal associates was marginally significant ($p = .06$) in its relationship with recidivism ($\beta = .245$, $\text{Exp}(\beta) = 1.28$). With 6% of Type I error commitment, it was indicated that a larger network of criminal associates was related to an increased likelihood of recidivism at a later time. The chance of recidivism increased about 1.3

times when an ex-inmate had one more criminal connection. The Chi-square statistic of the overall Model 1 ranged from 5.53 ($p = .34$) to 6.91 ($p = .23$), and the Nagelkerke's R^2 from .034 to .042 based on the five imputed datasets.

Table 11. Logistic regression of recidivism (T0) on criminal autosuggestion (T1) and criminal associates (T1) – Hypothesis 1.1 and 2.1 ($N = 216$)¹

	Model 1		Model 2		Model 3	
	β (SE)	Exp(β)	β (SE)	Exp(β)	β (SE)	Exp(β)
<u>Time 1</u>						
<u>Predictors</u>						
Age	.005 (.015)	1.005	-.061 (.033)	.941 ⁺	-.009 (.025)	.991
Black	-.254 (.291)	.776	.746 (.666)	2.109	-.125 (.523)	.882
Violence	-.323 (.353)	.724	-.856 (.833)	.425	-.477 (.624)	.621
Auto ²	.094 (.146)	1.099	-1.050 (.576)	.350 ⁺	.095 (.147)	1.099
Cass ³	.245 (.130)	1.277 ⁺	.267 (.133)	1.306*	-.069 (.471)	.933
<u>Interaction effects</u>						
Auto*Age	-	-	.037 (.016)	1.038*	-	-
Auto*Black	-	-	-.579 (.337)	.560 ⁺	-	-
Auto*Violence	-	-	.284 (.396)	1.328	-	-
Cass*Age					.009 (.013)	1.009
Cass*Black					-.077 (.268)	.926
Cass*Violence					.118 (.325)	1.125
Constant	-.832 (.607)	.435	1.162 (1.187)	3.196	-.373 (.908)	.689

*** $p < .001$. ** $p < .01$. * $p < .05$. ⁺ $p < .10$

Note. The dependent variable, recidivism (T0), was measured over Time 2 and Time 3. Model 2 examines the interaction effect of criminal autosuggestion with grouping variables (age, race, and offense type) in testing Hypothesis 1.1 while Model 3 the interaction of criminal associates, in place of autosuggestion, in testing Hypothesis 2.1.

¹ N equals 216 since pooled statistics are reported based on five imputed datasets generated by multiple imputations.

² 'Auto' indicates "autosuggestion." The original variable measured on a 4-point scale (1 to 4) was used. The same analytic procedures were performed with the normality-transformed variable through log transformation, and the findings did not differ.

³ 'Cass' indicates "criminal associates."

Interaction effects were also examined. The criminal autosuggestion of which the main effect did not have a statistical significance in predicting recidivism was interacting with inmates' age ($p < .05$) in its effect on recidivism as shown in Model 2 of Table 11. The main effect of criminal associates on recidivism was still statistically significant at $p < .05$ level ($\beta = .267$, $\text{Exp}(\beta) = 1.31$). The Chi-square statistic of the overall Model 2 ranged from 12.37 ($p = .14$) to 14.76 ($p = .06$), and the Nagelkerke's R^2 from .075 to .089 based on the five imputed datasets. The interaction model showed improvement from the main effect model with the p -levels ranging from .04 ($x^2 = 8.42$) to .08 ($x^2 = 6.84$). Interaction effects that the criminal associates have with the grouping variables – age, race, and offense type were examined in Model 3, but no interaction was found. The Chi-square statistic of the overall Model 3 ranged from 4.65 ($p = .79$) to 7.49 ($p = .49$), and the Nagelkerke's R^2 from .036 to .046 based on the five imputed datasets.

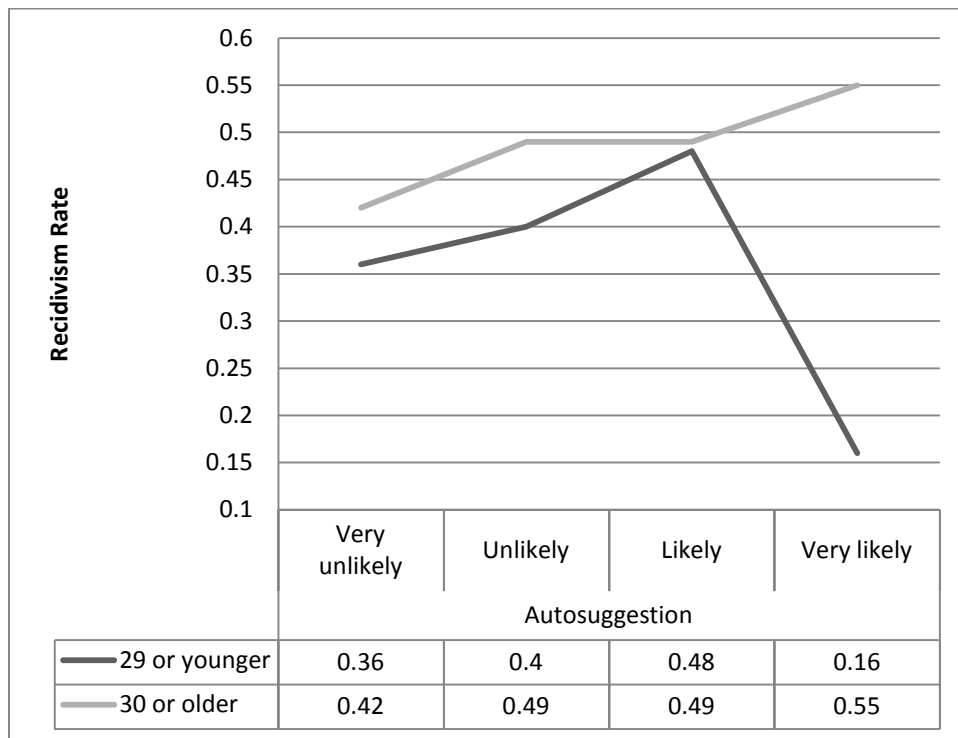


Figure 6. Interaction effect of autosuggestion and age on recidivism

Figure 6 presents the interaction pattern between criminal autosuggestion and age found in Model 2. The recidivism rate increased from 42%, 49%, to 55% as the level of criminal autosuggestion increased among the ex-inmates of 30 years or older, but the linear relationship broke down among the younger counterparts, 29 or younger. The recidivism rate dropped drastically and was the lowest among “the most criminal” in terms of their autosuggestion of future offending (respondents of “very likely”) although a positive linear relationship was visually observed among the younger respondents of the other categories of the autosuggestion.

The effect of criminal autosuggestion (H1.1) and criminal associates (H2.1) on recidivism was examined for each group by age, race, and offense type. As shown in Table 12, criminal autosuggestion at Time 1 was not a significant factor for recidivism in any subgroups. Even the age which had the interaction effect with the autosuggestion did not divide the sample into groups where the effect of the autosuggestion was different in terms of statistical significance. The only difference in statistical significance according to subgroups occurred in the effect of criminal associates per age groups. Criminal associates was positively related to the likelihood of recidivism at $p < .05$ level ($\beta = .472$, $\text{Exp}(\beta) = 1.60$) only among the older subgroup. The chance of recidivism increased about 1.6 times when an ex-inmate of 30 years old or over had one more criminal connection.

Table 12. Logistic regression of recidivism (T0) on criminal autosuggestion (T1) and criminal associates (T1) – Model 1, by subgroups¹

	β (SE)	Exp(β)	β (SE)	Exp(β)
<u>By age</u>	<u>Age \leq 29 (n = 75)</u>		<u>Age > 29 (n = 141)</u>	
Age ²	-.130 (.000)	.878	-.043 (.026)	.958
Black	-.453 (.578)	.636	-.380 (.377)	.684
Violence	-.799 (.697)	.450	.068 (.486)	1.070
Autosuggestion ³				
Very unlikely	1.511 (1.202)	4.529	-.761 (.640)	.467
Unlikely	1.767 (1.287)	5.851	-.256 (.651)	.774
Likely	2.013 (1.624)	7.484	-.382 (.723)	.683
Cass ⁴	.162 (.225)	1.176	.472 (.184)	1.603*
Constant	1.180 (2.542)	3.256	1.612 (1.298)	5.015
X^2 range of the model ⁵	3.31 – 7.03		12.01 – 14.05 ⁺	
Nagelkerke's R ² range ⁵	.059 – .123		.109 – .127	
<u>By race</u>	<u>Black (n = 109)</u>		<u>White (n = 107)</u>	
Age ²	-.004 (.021)	.996	.026 (.022)	1.026
Violence	.071 (.588)	1.073	-.489 (.483)	.614
Autosuggestion ³				
Very unlikely	.447 (.911)	1.564	-.346 (.614)	.707
Unlikely	.882 (.927)	2.415	-.187 (.693)	.830
Likely	.475 (.966)	1.608	.703 (.910)	2.021
Cass ⁴	.253 (.202)	1.288	.291 (.179)	1.337
Constant	-1.193 (1.360)	.303	-1.199 (1.003)	.302
X^2 range of the model ⁵	2.70 – 4.32		6.09 – 8.29	
Nagelkerke's R ² range ⁵	.033 – .052		.074 – .100	
<u>By offense type</u>	<u>Violent (n = 48.8)</u>		<u>Nonviolent (n = 167.2)</u>	
Age ²	.051 (.040)	1.052	-.002 (.017)	.998
Black	.067 (.713)	1.069	-.387 (.343)	.679
Autosuggestion ³				
Very unlikely	-.579 (1.104)	.561	.089 (.566)	1.093
Unlikely	.402 (1.124)	1.495	.203 (.651)	1.226
Likely	.782 (1.703)	2.185	.339 (.723)	1.403
Cass ⁴	.489 (.339)	1.630	.223 (.149)	1.249
Constant	-2.954 (2.083)	.052	-.462 (.847)	.630
X^2 range of the model ⁵	4.77 – 10.59		3.69 – 5.70	
Nagelkerke's R ² range ⁵	.124 – .257		.029 – .045	

*** $p < .001$. ** $p < .01$. * $p < .05$. ⁺ $p < .10$

Note. The dependent variable, recidivism (T0), was measured over Time 2 and Time 3.

¹ Pooled statistics are reported based on five imputed datasets generated by multiple imputations.

² Continuous variable of age

³ Autosuggestion was used in the form of a 4-level categorical variable with the reference category being “Very likely.” Models with the continuous variable of autosuggestion, both in the

original and in the normality-transformed scale by log transformation, were analyzed as well to yield no different findings.

⁴‘Cass’ indicates “criminal associates.”

⁵ Statistics of chi-square and R^2 of each model are reported in ranges based on five imputed datasets.

4.1.2 Recidivism as a factor of the attitude toward community-based services (CBS attitude, H1.2) and associates (H2.2)

Model 4 presents the main effects of the CBS attitude and criminal associates on recidivism (See Table 13). CBS attitude at Time 1 was not related to recidivism over Time 2 and Time 3 (H2.1). However, in testing H2.2, criminal associates was marginally significant ($p = .052$) in its relationship with recidivism ($\beta = .254$, $\text{Exp}(\beta) = 1.29$). With 5% of Type I error commitment, it was indicated that a larger network of criminal associates is related to an increased likelihood of recidivism at a later time. Consistent with the main effect of criminal associates in Model 1 where criminal autosuggestion was entered in place of the CBS attitude, the chance of recidivism increased about 1.3 times when an ex-inmate had one more criminal connection. The Chi-square statistic of the overall Model 1 ranged from 5.48 ($p = .48$) to 6.61 ($p = .36$), and the Nagelkerke’s R^2 from .034 to .040 based on the five imputed datasets.

Interaction effects were also examined. The CBS attitude of which the main effect did not have a statistical significance was interacting with inmates’ race ($p < .01$) in its effect on recidivism as shown in Model 5 of Table 13. The main effect of criminal associates on recidivism was still statistically significant at $p < .05$ level ($\beta = .293$, $\text{Exp}(\beta) = 1.34$). The Chi-square statistic of the overall Model 5 ranged from 16.20 ($p = .18$) to 23.77 ($p = .02$), and the Nagelkerke’s R^2 from .097 to .140 based on the five imputed datasets. The improvement in the

interaction models from the main effect ones, however, was not consistent with the p-values ranging from .02 ($\chi^2 = 19.11$) to .19 ($\chi^2 = 12.52$) according to the five imputed datasets used.

Table 13. Logistic regression of recidivism (T0) on the CBS attitude (T1) and criminal associates (T1) – Hypothesis 1.2 and 2.2 ($N = 216$)¹

	Model 4		Model 5		Model 6	
	β (SE)	Exp(β)	β (SE)	Exp(β)	β (SE)	Exp(β)
<u>Time 1 Predictors</u>						
Age	.007 (.015)	1.007	.062 (.034)	1.064 ⁺	-.009 (.025)	.991
Black	-.219 (.296)	.803	-1.901 (.720)	.301**	-.082 (.525)	.922
Violence	-.143 (.386)	.866	-.068 (1.024)	.934	-.127 (.657)	.881
CBS (P) ²	-.103 (.367)	.902	1.523 (1.559)	4.586	-.109 (.369)	.897
CBS (M) ²	-.331 (.399)	1.001	1.116 (1.582)	3.053	-.341 (.405)	.711
Cass ³	.254 (.130)	1.289 ⁺	.293 (.140)	1.340*	-.068 (.473)	.935
<u>Interaction effects</u>						
CBS (P)*Age	-	-	-.073 (.045)	.930	-	-
CBS (M)*Age	-	-	-.078 (.046)	.925 ⁺	-	-
CBS (P) *Black	-	-	2.130 (.905)	8.415*	-	-
CBS (M)* Black	-	-	2.490 (.924)	12.064**	-	-
CBS (P)*Violence	-	-	-.414 (1.177)	.661	-	-
CBS (M)*Violence	-	-	-.074 (1.092)	.928	-	-
Cass*Age					.010 (.013)	1.010
Cass*Black					-.081 (.270)	.922
Cass*Violence					.011 (.326)	1.011
Constant	-.655 (.621)	.520	-1.827 (1.167)	.161	-.161 (.912)	.851

*** $p < .001$. ** $p < .01$. * $p < .05$. ⁺ $p < .10$

Note. The dependent variable, recidivism (T0), was measured over Time 2 and Time 3. Model 5 examines the interaction effect of the CBS attitude (attitude toward community-based services) with grouping variables (age, race, and offense type) in testing Hypothesis 1.2 while Model 6 the interaction of criminal associates and grouping variables in testing Hypothesis 2.2.

¹ N equals 216 since pooled statistics are reported based on five imputed datasets generated by multiple imputations.

² ‘CBS’ indicates “attitude toward community-based services.” The 3-level categorical variable of the CBS attitude, not the interval measure, yielded significant findings. The reference category is “Negative.” ‘P’ refers to the category of “Positive,” and ‘M’ “Medium.”

³ ‘Cass’ indicates “criminal associates.”

Interaction effects that the criminal associates have with the grouping variables – age, race, and offense were examined in Model 6, but there were no interactions. The Chi-square statistic of the overall Model 6 ranged from 6.10 ($p = .73$) to 7.32 ($p = .60$), and the Nagelkerke's R^2 from .037 to .045 based on the five imputed datasets.

Figure 7 presents the interaction pattern between the CBS attitude and race. The recidivism rate decreased from 47%, 42%, to 32% as the CBS attitude became more negative among Black ex-inmates. This finding that more negative attitude was related to lower recidivism rate was unexpected. Meanwhile, a V-shaped relationship emerged among White counterparts. The highest recidivism rate (62%) was found among individuals with negative attitude toward community-based services in the White group with the lowest recidivism among those in the medium-attitude group (30%). The interaction led to the observed differences in statistical significance of the effect of the CBS attitude between the two racial groups. As Table 14 shows, while Black individuals with both positive and medium attitude toward community-based services were not significantly different from those with negative attitude (reference category) in their likelihood of recidivism, White individuals with medium attitude was significantly less likely to recidivate compared to those with negative attitude at $p < .05$ level. In other words, the White ex-inmates with negative attitude were about 4.3 times more likely to recidivate than those with medium attitude.

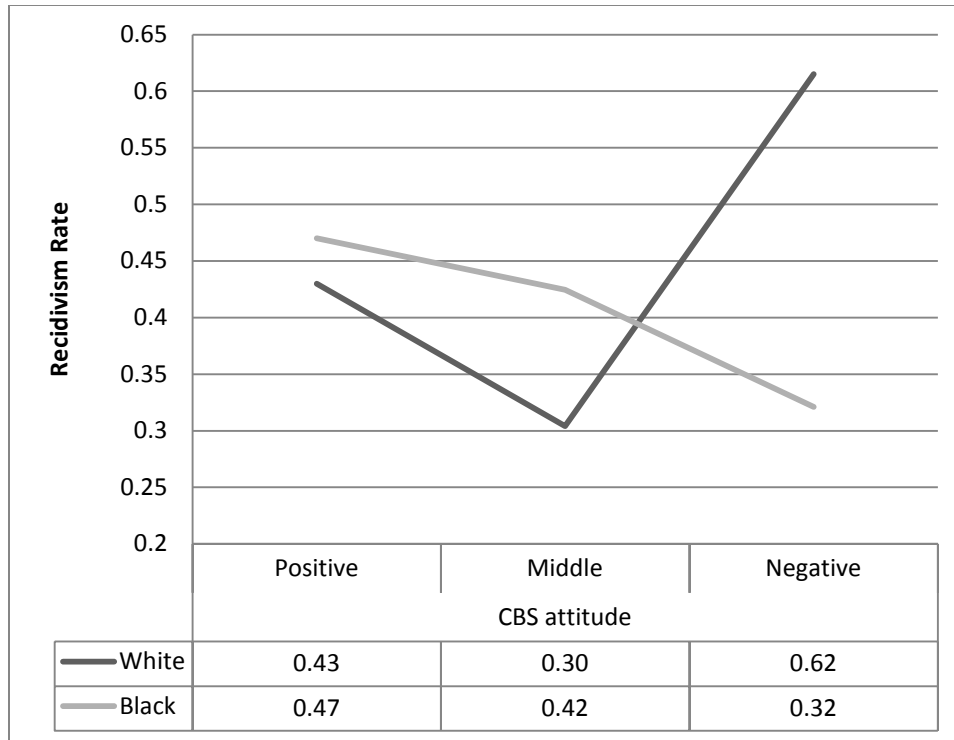


Figure 7. Interaction effect of CBS attitude and race on recidivism

The effect of the CBS attitude (H1.2) and criminal associates (H2.2) on recidivism was also examined for each group by the other indicators -- age and offense type as shown in Table 14. The criminal associates were a significant factor for recidivism among ex-inmates who are 30 years old or over at $p < .05$ level ($\beta = .496$, $\text{Exp}(\beta) = 1.64$), which is consistent with the finding in the previous model where the criminal autosuggestion was controlled instead of the CBS attitude. In addition, the effect of criminal associates was only marginally significant in the White group ($p = .08$) and among nonviolent offenders ($p = .09$). In the older group, the CBS attitude was also related to recidivism though with only marginal significance ($p = .08$). Older ex-inmates with negative attitude were about 2.5 times more likely to recidivate than those with medium attitude, which is the same pattern to that observed in the White group.

Table 14. Logistic regression of recidivism (T0) on the CBS attitude (T1) and criminal associates (T1) – Model 4, by subgroups¹

	β (SE)	Exp(β)	β (SE)	Exp(β)
By race	Black (n = 109)		White (n = 107)	
Age	-.007 (.020)	.993	.033 (.023)	1.033
Violence	.097 (.669)	1.102	-.638 (.520)	.528
CBS (P) ²	.608 (.623)	1.837	-.930 (.560)	.391 ⁺
CBS (M) ²	.421 (.541)	1.523	-1.449 (.644)	.235*
Cass ³	.227 (.200)	1.255	.327 (.187)	1.386 ⁺
Constant	-.876 (1.011)	.417	-.837 (.906)	.433
X^2 range of the model ⁴	1.77 – 8.27		9.65 ⁺ – 15.51**	
Nagelkerke's R ² range ⁴	.022 – .099		.115 – .180	
By age	Age ≤ 29 (n = 75)		Age > 29 (n = 141)	
Age	-.102 (.097)	.903	-.038 (.026)	.963
Black	-.175 (.573)	.839	-.291 (.378)	.748
Violence	-.787 (.691)	.455	.220 (.531)	1.246
CBS (P) ²	.447 (.727)	1.563	-.473 (.510)	.623
CBS (M) ²	.662 (.727)	1.938	-.931 (.526)	.394 ⁺
Cass ³	.098 (.212)	1.102	.496 (.191)	1.642*
Constant	1.617 (2.427)	5.037	1.324 (1.165)	3.758
X^2 range of the model ⁴	2.51 – 5.42		13.66* – 18.34**	
Nagelkerke's R ² range ⁴	.045 – .096		.123 – .163	
By offense type	Violent (n = 48.2)		Nonviolent (n = 167.8)	
Age	.052 (.043)	1.054	.000 (.017)	1.000
Black	.635 (.806)	1.866	-.369 (.363)	.691
CBS (P) ²	-.969 (.978)	.379	-.001 (.433)	.999
CBS (M) ²	-1.255 (1.048)	.285	-.255 (.449)	.775
Cass ³	.430 (.337)	1.537	.251(.149)	1.285 ⁺
Constant	-2.347 (1.902)	.096	-.380 (.670)	.684
X^2 range of the model ⁴	2.56 – 9.30 ⁺		4.11 – 8.10	
Nagelkerke's R ² range ⁴	.065 – .227		.032 – .064	

*** $p < .001$. ** $p < .01$. * $p < .05$. ⁺ $p < .10$

Note. The dependent variable, recidivism (T0), was measured over Time 2 and Time 3.

¹ Pooled statistics are reported based on five imputed datasets generated by multiple imputations.

² 'CBS' indicates "attitude toward community-based services." The 3-level categorical variable of the CBS attitude was used with the reference category being "Negative." 'P' refers to the category of "Positive," and 'M' "Medium."

³ 'Cass' indicates "criminal associates."

⁴ Statistics of chi-square and R² of each model are reported in ranges based on five imputed datasets.

In summary, more criminal associates was a predictor for higher likelihood of recidivism in the overall sample and the older subgroup in particular (H2). However, two attitude variables did not have their main effect on recidivism, but interaction effects were found (H1). The criminal autosuggestion interacted with ex-inmate's age while the CBS attitude with race. Older group showed a positive linear pattern of the relationship between autosuggestion and recidivism though statistically not significant. Meanwhile, in the other subgroups including the younger group, the recidivism rate reached the peak among either "unlikely" or "likely" respondents with lower recidivism observed among "very likely" respondents. In regard to the CBS attitude, the highest recidivism rate was found among those with negative attitude in the White group while negative attitude was related to the lowest recidivism in the Black group where a negative linear relationship between the CBS attitude and recidivism rate was observed.

4.2 RECIPROCAL RELATIONSHIPS OF ATTITUDE AND ASSOCIATES (H3-H4)

The reciprocal relationship between criminal attitude and criminal associates was tested by Hypothesis 3 and 4. Hypothesis 3 postulates that criminal attitude at Time 1 will be positively related to criminal associates at Time 2. Hypothesis 3.1 tests the effect of criminal autosuggestion, and Hypothesis 3.2 that of the CBS attitude. Hypothesis 4 posits on the relationship in an opposite direction, namely, that criminal associates at Time 1 will be positively related to criminal attitude at Time 2. The dependent variable of the Hypothesis 4.1 is criminal autosuggestion, and that of Hypothesis 4.2 is the CBS attitude.

4.2.1 Criminal associates at Time 2 as a factor of criminal autosuggestion at Time 1

(H3.1)

As shown in Model 7 in Table 15, criminal associates at Time 2 were not predicted by criminal autosuggestion at Time 1 ($b = .242, p = .41$) while criminal associates at Time 1 were a strong predictor for the same variable measured at Time 2 ($b = .333, p < .001$). It was indicated that one more connection with criminal associates at Time 1 was linked to .33 point increase in criminal associates at Time 2. In other words, three more connections at Time 1 mean one more connection at Time 2. Meanwhile, older age was related to smaller criminal network ($b = -.013, p < .05$).

Table 15. Regression of criminal associates (T2) on criminal autosuggestion (T1) with criminal associates (T1) controlled – Hypothesis 3.1 ($N = 216$)¹

	Model 7		Model 8	
	<i>b</i> (<i>SE</i>)	<i>t</i>	<i>b</i> (<i>SE</i>)	<i>t</i>
<u>Time 1 Predictors</u>				
Age	-.013 (.006)	-2.035*	-.011 (.009)	-1.255
Black	.071 (.128)	.559	-.020 (.180)	-.113
Violence	-.073 (.159)	-.456	-.074 (.237)	-.314
Auto ²	.242 (.292)	.830	-.075 (1.679)	-.045
Cass ³	.333 (.057)	5.876***	.331 (.057)	5.801***
<u>Interaction effects</u>				
Auto*Age	-	-	-.011 (.030)	-.364
Auto*Black	-	-	.467 (.628)	.744
Auto*Violence	-	-	.028 (.805)	.034
Constant	1.510 (.257)	5.886***	1.493 (.343)	4.347***
Adjusted R ² range ⁴	.144 – .148		.135 – .140	
<i>F</i> range ⁴	$F(5, 210) = 8.22*** - 8.47***$		$F(8, 207) = 5.12*** - 5.38***$	

*** $p < .001$. ** $p < .01$. * $p < .05$. ⁺ $p < .10$

¹ N equals 216 since pooled statistics are reported based on five imputed datasets generated by multiple imputations.

² ‘Auto’ indicates “Autosuggestion,” and its normality-transformed scale by log transformation was used.

³ ‘Cass’ indicates “criminal associates.”

Interaction effects were examined between criminal autosuggestion and grouping variables with the main effect of criminal autosuggestion being insignificant, but no interaction effects emerged with statistical significance (See Model 8 in Table 15). The association between the variables of criminal associates over time remained significant in the interaction model ($b = .331, p < .001$).

The effect of the criminal autosuggestion (T1) on criminal associates (T2) was also examined for each group by age, race, and offense type as shown in Table 15. The criminal autosuggestion at Time 1 was not a predictor for criminal associates at Time 2 in any subgroups when the continuous variable of autosuggestion was entered. This finding was held true when the three dummy-coded variables of autosuggestion were entered only with one exception that occurred among Black ex-inmates. Black individuals who said they were “likely” to reoffend within six months at Time 1 had .785 ($= b$ with the SE of .368, $p < .05$) more criminal connection at Time 2 than Black respondents who evaluated the possibility as “very likely.” It seems counter-intuitive at first, but a similar pattern was observed in a previous model (Model 1) among the younger and the Black ex-inmates though statistical significance was absent. As Figure 6 shows, the recidivism rate among younger individuals who said they were likely to reoffend was higher (48%) than those who said “very likely” (16%). Meanwhile, among Black individuals (See Figure 7), attitudes toward community-based services were negatively related to recidivism rate, thus the negative attitude holders (32%) had the lowest recidivism rate in comparison to positive (47%) and medium attitude holders (42%).

The link between the variables of criminal associates over Time 1 and Time 2 was statistically significant in all subgroups with the regression coefficient ranging from .24 ($p < .01$) to .40 ($p < .001$). The statistical significance was only marginal ($p = .06$) in the violent group,

which appeared to be because of the small sample size and the low power to detect the association in the group. The sample consists of less than 50 in all five imputed datasets with 42 in the raw data.

Table 16. Regression of criminal associates (T2) on criminal autosuggestion (T1) with criminal associates (T1) controlled – Model 7, by subgroups¹

	<i>b</i> (<i>SE</i>)	<i>t</i>	<i>b</i> (<i>SE</i>)	<i>t</i>
By race	Black (<i>n</i> = 109)		White (<i>n</i> = 107)	
Age	-.024 (.009)	-2.731**	-.004 (.010)	-.403
Violence	-.334 (.225)	-1.481	.148 (.221)	.670
Autosuggestion ²	.631 (.437)	1.445 ²	-.003 (.398)	-.006
Cass ³	.235 (.085)	2.763**	.402 (.076)	5.314***
Constant	2.119 (.384)	5.519***	1.091 (.362)	3.015**
Adjusted R ² range ⁴	.123 – .144		.188 – .200	
<i>F</i> range ⁴	<i>F</i> (4, 104) = 4.78** – 5.55***		<i>F</i> (4, 102) = 7.12** – 7.62***	
By age	Age ≤ 29 (<i>n</i> = 75)		Age > 29 (<i>n</i> = 141)	
Age	-.077 (.035)	-2.183*	-.035 (.011)	-3.200**
Black	.039 (.208)	.188	.041 (.164)	.249
Violence	-.008 (.223)	-.037	-.118 (.208)	-.566
Autosuggestion ²	.084 (.462)	.182	.375 (.366)	1.024
Cass ³	.268 (.080)	3.354**	.415 (.078)	5.330***
Constant	3.065 (.903)	3.396**	2.395 (.472)	5.073***
Adjusted R ² range ⁴	.137 – .139		.194 – .202	
<i>F</i> range ⁴	<i>F</i> (5, 69) = 3.35** – 3.39**		<i>F</i> (5, 135) = 7.76*** – 8.07***	
By offense type	Violent (<i>n</i> = 46.2)		Nonviolent (<i>n</i> = 167.8)	
Age	-.014 (.018)	-.776	-.014 (.007)	-1.998*
Black	-.253 (.297)	-.851	.170 (.145)	1.170
Autosuggestion ²	.195 (.744)	.263	.228 (.333)	.685
Cass ³	.277 (.145)	1.904 ⁺	.349 (.064)	5.419***
Constant	1.708 (.727)	2.349*	1.475 (.277)	5.318***
Adjusted R ² range ⁴	.058 – .109		.151 – .166	
<i>F</i> range ⁴	<i>F</i> (4, 37-45) = 1.67 – 2.49 ⁺		<i>F</i> (4, 162-169) = 8.37*** – 9.59***	

*** $p < .001$. ** $p < .01$. * $p < .05$. ⁺ $p < .10$

¹ Pooled statistics are reported based on five imputed datasets generated by multiple imputations.

² Normality-transformed scale by log transformation was used. Three dummy-coded variables were also analyzed, but no difference emerged except among Black ex-inmates. Black individuals who said they were “likely” to reoffend at Time 1 had .785 (= *b* with the *SE* of .368, $p < .05$) more criminal connection at Time 2 than those whose evaluation was “very likely.”

³ ‘Cass’ indicates “criminal associates.”

⁴ Statistics of R² and *F* of each model are reported in ranges based on five imputed datasets.

Age was also a significant predictor, and had a negative relationship with criminal associates among the Black and the nonviolent ex-inmates and in all age groups. The finding from the entire sample that the older the ex-inmates are, the smaller the network of criminal associates is at Time 2 (Model 7) was true of the Black individuals and the nonviolent ex-inmates.

4.2.2 Criminal associates at Time 2 as a factor of the CBS attitude at Time 1 (H3.2)

Findings on the effect of the CBS attitude on criminal associates were similar to the findings on Hypothesis 3.1 that tested the effect of criminal autosuggestion on criminal associates. Criminal associates at Time 2 were not predicted by the CBS attitude at Time 1 ($b = .026, p = .84$) while criminal associates at Time 1 were a strong predictor for the same variable measured at Time 2 ($b = .337, p < .001$). It was indicated that one more connection with criminal associates at Time 1 was linked to .34 point increase in criminal associates at Time 2. In other words, three more connections at Time 1 mean one more connection at Time 2. Meanwhile, older age was related to smaller criminal network with marginal significance ($b = -.013, p = .05$). Interaction effects were examined between the CBS attitude and grouping variables with its main effect being insignificant, but no interactions emerged with statistical significance (See Model 10 in Table 17). The association between the variables of criminal associates over time remained significant in the interaction model ($b = .345, p < .001$).

Table 17. Regression of criminal associates (T2) on the CBS attitude (T1) with criminal associates (T1) controlled – Hypothesis 3.2 ($N = 216$)¹

	Model 9		Model 10	
	β (SE)	t	β (SE)	t
<u>Time 1 Predictors</u>				
Age	-.012 (.006)	-1.937 ⁺	-.018 (.027)	-.669
Black	.071 (.129)	.553	.890 (.581)	1.531
Violence	-.062 (.158)	-.396	-.470 (.560)	-.840
CBS ²	.026 (.131)	.198	.309 (.617)	.501
Cass ³	.337 (.057)	5.931***	.345 (.057)	6.041***
<u>Interaction effects</u>				
CBS*Age	-	-	.003 (.013)	.249
CBS*Black	-	-	-.423 (.298)	-1.423
CBS*Violence	-	-	.199 (.281)	.706
Constant	1.477 (.352)	4.193***	1.337 (.926)	1.444
Adjusted R ² range ⁴	.142 – .145		.137– .152	
F range ⁴	$F(5, 210) = 8.13*** - 8.27***$		$F(8, 207) = 5.25*** - 5.81***$	

*** $p < .001$. ** $p < .01$. * $p < .05$. ⁺ $p < .10$

¹ N equals 216 since pooled statistics are reported based on five imputed datasets generated by multiple imputations.

² ‘CBS’ indicates “CBS attitude,” the attitude toward community-based services. The 3-level categorical variable of the CBS attitude was also analyzed by being dummy-coded, but the findings did not differ.

³ ‘Cass’ indicates “criminal associates.”

The effect of the CBS attitude (T1) on criminal associates (T2) was also examined for each group by age, race, and offense type as shown in Table 18, and findings were similar to those in the previous model where the effect of criminal autosuggestion was examined in place of the CBS attitude. The CBS attitude at Time 1 was not a predictor for the criminal associates at Time 2 in any subgroups.

The link between variables of criminal associates over Time 1 and Time 2 was statistically significant in all subgroups with the regression coefficient ranging from .25 ($p < .01$) to .42 ($p < .001$). The statistical significance was only marginal ($p = .06$) in the violent group, which appeared to be because of the small sample size and the low power to detect the

association in the group. The sample consists of less than 50 in all five imputed datasets with 42 in the raw data.

Table 18. Regression of criminal associates (T2) on the CBS attitude (T1) with criminal associates (T1) controlled – Model 9, by subgroups¹

	<i>b</i> (<i>SE</i>)	<i>t</i>	<i>b</i> (<i>SE</i>)	<i>t</i>
By race	Black (<i>n</i> = 109)		White (<i>n</i> = 107)	
Age	-.019 (.009)	-2.237*	-.004 (.010)	-.430
Violence	-.443 (.226)	-1.962 ⁺	.120 (.210)	.572
CBS ²	-.218 (.179)	-1.216	.174 (.180)	.968
Cass ³	.250 (.084)	2.984**	.412 (.076)	5.399***
Constant	2.496 (.486)	5.139***	.771 (.492)	1.567
Adjusted R ² range ⁴	.120 – .155		.197 – .204	
<i>F</i> range ⁴	<i>F</i> (4, 104) = 4.69** – 5.94***		<i>F</i> (4, 102) = 7.51*** – 7.80***	
By age	Age ≤ 29 (<i>n</i> = 75)		Age > 29 (<i>n</i> = 141)	
Age	-.078 (.035)	-2.206*	-.034 (.011)	-3.075**
Black	.041 (.205)	.202	.047 (.166)	.285
Violence	-.019 (.219)	-.088	-.151 (.208)	-.726
CBS ²	-.103 (.201)	-.514	.042 (.159)	.164
Cass ³	.269 (.078)	3.431**	.415 (.078)	5.297***
Constant	3.287 (.950)	3.461**	2.339 (.535)	4.372***
Adjusted R ² range ⁴	.137 – .153		.192 – .199	
<i>F</i> range ⁴	<i>F</i> (5, 69) = 3.36** – 3.41**		<i>F</i> (5, 135) = 7.63*** – 7.96***	
By offense type	Violent (<i>n</i> = 45.8)		Nonviolent (<i>n</i> = 168.2)	
Age	-.016 (.016)	-.976	-.013 (.007)	-1.777 ⁺
Black	-.324 (.290)	-1.117	.200 (.148)	1.352
CBS ²	-.018 (.261)	-.071	-.065 (.139)	-.468
Cass ³	.257 (.135)	1.901 ⁺	.354 (.064)	5.529***
Constant	1.892 (.796)	2.377*	1.578 (.367)	4.296***
Adjusted R ² range ⁴	.074 – .142		.151 – .162	
<i>F</i> range ⁴	<i>F</i> (4, 39-46) = 1.88 – 3.07*		<i>F</i> (4, 160-167) = 8.29*** – 9.10***	

*** $p < .001$. ** $p < .01$. * $p < .05$. ⁺ $p < .10$

¹ Pooled statistics are reported based on five imputed datasets generated by multiple imputations.

² CBS attitude as an interval variable measured on a 4-point scale: Dummy-coded categorical form of the variable generated no different findings.

³ ‘Cass’ indicates ‘criminal associates.’

⁴ Statistics of R² and *F* of each model are reported in ranges based on five imputed datasets.

Age was also a significant predictor, and had a negative relationship with criminal associates among the Black ex-inmates and in all age groups, and the association was only marginally significant in the nonviolent sample ($p = .08$). The finding from the entire sample that the older the ex-inmates are, the smaller their network of criminal associates is at Time 2 ($p = .05$) was true of the Black and the nonviolent ex-inmates.

In summary, the two attitude variables were similar in their relationship to criminal associates. Overall, both the criminal autosuggestion and the CBS attitude were not a significant predictor for criminal associates with no interactions with the grouping variables. An interesting pattern was observed among Black ex-inmates that the respondents of “very likely to reoffend” at Time 1 had less connection with criminal associates at Time 2 in comparison to those who reported their likelihood as “likely.” In addition, older age was related to less criminal associates overall, and particularly in the Black and the nonviolent group.

4.2.3 Criminal autosuggestion at Time 2 as a factor of criminal associates at Time 1 (H4.1)

The hypothesis that criminal autosuggestion at Time 2 would be positively related with criminal associates at Time 1 was rejected. As shown in Table 19, criminal associates at Time 1 did not have a significant effect on autosuggestion at Time 2 ($b = .012, p = .39$). Even the autosuggestion measured at Time 1 was not related to the same variable at Time 2 ($b = -.051, p = .42$). However, the interaction effect between criminal associates and offense type was found in predicting criminal autosuggestion as shown in Model 12 ($b = .072, p < .05$). Even in the interaction model, however, criminal autosuggestion variables over time were not related each other ($b = -.050, p = .43$). The interaction models showed improvement from the main effect ones with the p -levels

ranging from .02 [$F(3, 207) = 3.34$] to .12 [$F(3, 207) = 2.00$]. Four out of the five imputed datasets yielded a significant change in F values of the interaction model from the main effect model.

Table 19. Regression of criminal autosuggestion (T2) on criminal associates (T1) with criminal autosuggestion (T1) controlled – Hypothesis 4.1 ($N = 216$)¹

	Model 11		Model 12	
	<i>b</i> (SE)	<i>t</i>	<i>b</i> (SE)	<i>t</i>
<u>Time 1 Predictors</u>				
Age	-.002 (.001)	-1.585	-.000 (.002)	-.040
Black	-.004 (.028)	-.145	-.002 (.050)	-.038
Violence	-.033 (.036)	-.925	-.149 (.060)	-2.464*
Auto ²	-.051 (.064)	-.804	-.050 (.063)	-.791
Cass ³	.012 (.014)	.869	-.029 (.075)	-.381
<u>Interaction effects</u>				
Cass*Age	-	-	-.001 (.001)	-.992
Cass*Black	-	-	-.004 (.026)	-.142
Cass*Violence	-	-	.072 (.033)	2.206*
Constant	.294 (.060)	4.940***	.242 (.088)	2.755**
Adjusted R ² range ⁴	.005 – .012		.137– .152	
<i>F</i> range ⁴	$F(5, 210) = .86 – 1.52$		$F(8, 207) = 1.62 – 2.14^*$	

*** $p < .001$. ** $p < .01$. * $p < .05$. + $p < .10$

¹ N equals 216 since pooled statistics are reported based on five imputed datasets generated by multiple imputations.

² ‘Auto’ indicates “Autosuggestion,” and its normality-transformed scale by log transformation was used for both the dependent variable at Time 2 and the predictor at Time 1.

³ ‘Cass’ indicates “criminal associates.”

The interaction pattern was presented in Figure 8. While among nonviolent ex-inmates, the level of criminal associates at Time 1 was hardly related to criminal autosuggestion at Time 2, a linear relationship was observed among violent ex-inmates. In particular, the criminal autosuggestion level of the individuals with violent offenses increased radically (Mean = 4 indicating “very likely”) when they have four or more connections with criminal associates compared to less than four (Mean ranges from 1.4 to 1.9 when 1 and 2 indicates “very unlikely”

and “unlikely,” respectively). This interaction pattern led to differences in the effect of criminal associates on autosuggestion between the violent and the nonviolent group. As Table 20 shows, criminal associates were positively related to criminal autosuggestion only among violent ex-inmates ($b = .08, p < .01$). In the violent group, one more connection with criminal associates at Time 1 leads to 1.08 point increase of autosuggestion at Time 2. In addition, the variables of criminal autosuggestion over Time 1 and Time 2 were not related each other in both groups.

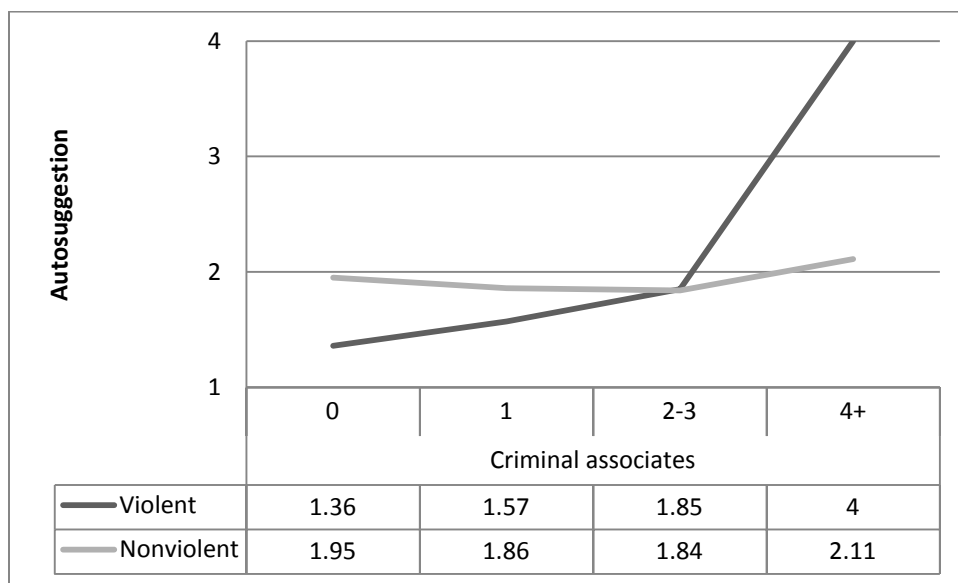


Figure 8. Criminal associates and offense type on autosuggestion

The effect of criminal associates at Time 1 on the criminal autosuggestion at Time 2 was further analyzed in each subgroup by age and race. As shown in Table 20, it was only among younger ex-inmates (29 or under), except the violent, that criminal associates predicted the criminal autosuggestion at least with marginal significance ($b = .04, p = .06$). In the younger group, one more connection with criminal associates at Time 1 leads to 1.04 point increase of

5.0 DISCUSSION AND CONCLUSION

5.1 DISCUSSION

This study originally proposed the path model where criminal attitudes and criminal associates are positively associated each other reciprocally, that is, criminal attitude at Time 1 predicts criminal associates at Time 2 and criminal associates at Time 1 predicts criminal attitude at Time 2, and criminal attitude and criminal associates at Time 2 predicted by each other measured at Time 1, are associated with increased likelihood of recidivism over Time 2 and Time 3. This original model was modified and partitioned into four different hypotheses and analytic procedures because findings on bivariate correlations among criminal attitude at Time 1 and Time 2, criminal associates at Time 1 and time 2, and recidivism did not support the path model. Variables were checked for normal distribution, influential cases, and the linearity of primary relationships, and confirmed for the appropriateness and the reliability of the Pearson's r statistics. Spearman's rho statistics provided similar correlation patterns. First of all, neither of the two attitude variables at Time 1 was correlated not only with criminal associates at Time 2 but also recidivism in the entire sample and in any subgroups. Though the criminal associates at Time 1 was correlated with attitude variables at Time 2 in a few subsamples, only the CBS attitude at Time 2 was correlated with recidivism in the older group only. The correlation of criminal associates and recidivism was mostly cross-sectional, and the same longitudinal relationship was significant only in the older group. Taken together, basic bivariate correlations

were not supportive for the formation of three-variable mediating relationships in the overall sample and in subsamples. Accordingly, it was decided that this study investigate the originally anticipated two-variable relationships with more focus on moderation by grouping variables – age, race, and offense type, and group differences. The two-variable relationships comprised the four new hypotheses, which did not deviate much from the original hypotheses based on the path model (See pages 66 - 67 for the new hypotheses).

Hypothesis 1 that posited that criminal attitude at Time 1 would have a positive effect on the likelihood of recidivism was rejected. The main effect of the attitude variables -- criminal autosuggestion and CBS attitude was not supported by the data. In regard to the criminal autosuggestion (H1.1), the effect was moderated by age groups of 29 or younger versus 30 or older. The rejection of Hypothesis 1 may be attributed to measurement (reliability) error related to social desirability. A single item that can sound as if it asks ex-inmates about their intention to continue criminal behavior may stop them from giving an honest answer. The descriptive statistics that more than 75% (Time 1) or 80% (time 2) of the respondents said either “very unlikely” or “unlikely” might suggest that they were reluctant to report any likelihood. Chances are that ex-inmates may tend to answer in a more positive way than they estimate their likelihood in actuality, and that the autosuggestion, “the more” or “the less” criminal it may be, failed to be measured correctly. Connectedly, the low number in the category of “very likely” and “likely,” presumably stemming from the social desirability error, may be another factor for the autosuggestion to be statistically insignificant in any groups due to low power.

Having acknowledged on this point, there is also another possible scenario. Interaction pattern suggested that younger ex-inmates who had evaluated their possibility of reoffending as “very likely” actually recidivated at a lower rate than those whose evaluations were “likely.”

Although statistical significance was not achieved, the highest likelihood of recidivism was found, based on regression coefficients presented in Table 12, not among “very likely” respondents – the most criminal autosuggestion group, but among “likely” (in the younger, the White, and the violent subgroup) or even “unlikely” (in the Black and the nonviolent subgroup) respondents. In fact, it was only among the older that the “very likely” respondents had the highest recidivism risk and the relationship between autosuggestion and recidivism was quite linear. Reflecting on why “very likely” responses were followed by lower recidivism rate in most groups, it may be that “very likely” indicates that the respondents acknowledge and are well aware of their susceptibility to the likelihood of further offense. In other words, the responses of “very likely” may be indicative of their highest level of caution and vigilance not to get into trap of reoffending, thus the recidivism risk emerged lower among them in comparison to “likely” or “unlikely” respondents. “Very likely” responses may contain the meaning that they do not have any control over their future circumstances and even their behavior, but this perceived uncontrollability, if expressed in a positive way along with the will for success, may work for the success, not recidivating. Another finding to support this speculation was in the relationship between criminal autosuggestion and criminal associates (H3.1). The Black ex-inmates who had said at Time 1 that they were “very likely” to reoffend had less criminal associates at Time 2 at $p < .05$ level than those who had answered “likely.” It is contrary to the expectation, which is that more criminal autosuggestion – “Very likely” responses would lead one to keep more criminal associates in comparison to less criminal autosuggestion – “Likely” responses. The reasoning may also lie in the supposition stated above that the respondents of “very likely” are, by acutely acknowledging their vulnerability, better prepared to make a successful reintegration into society

and not to drive oneself into the elevated risk of reoffending by keeping contacts with crime-related networks.

Returning to the discussion on criminal autosuggestion and recidivism, the reason why the older group was the exception, that is, why the older group showed a linear relationship between criminal autosuggestion and recidivism can be conjectured that the “very likely” in autosuggestion at Time 1 among the older group literally indicated that they intended to commit another crime instead of that they would take every measure to be alert since they were vulnerable. One basis of this speculation is that criminal autosuggestion variables at Time 1 and Time 2 showed a negative correlation ($r = -.16, p = .08$) among the older ex-inmates. Cross-tabulation of the two autosuggestion variables revealed that almost 90% of the respondents of “very likely” and even “likely” at Time 1 changed their evaluation to “very unlikely” (the majority) or “unlikely” at Time 2. While it was true in all subgroups and in the entire sample that the attitudes changed from Time 1 and Time 2 so that they were not correlated each other, this amount of change in an opposite direction that is sufficient to cause the negative correlation occurred only in the older subgroup. It was conjectured, therefore, that the “very likely” response at Time 1 among the older does not imply their self-acknowledgement and alertness to take caution so much as their honest confession of the intention to continue their criminal trajectory. This conjecture, then, is led to the following question of why the “very likely” evaluation at Time 1 has a different meaning in the older group only, but the data do not provide the answer to this question. To be substantiated first is whether the “very likely” response actually has double meanings and then whether the older consistently tend to answer “very likely” in a certain way different from the way of ex-inmates in the other groups. To do so, the self-evaluation of the

likelihood of future offending should be measured to precisely distinguish the true “criminal autosuggestion” from self-acknowledgement of the vulnerability/susceptibility.

The hypothesized positive effect of the CBS attitude at Time 1 on recidivism (H1.2) was not accepted, either, but the effect was moderated by the ex-inmates’ race. The interaction pattern suggested that the CBS attitude at Time 1 and recidivism was linearly associated in the Black group, but the direction was negative such that the more negative the attitude was, the lower the recidivism rate was among the Black ex-inmates. Meanwhile, the White counterparts presented a V-shaped relationship with the lowest recidivism in the medium-attitude group. The relationship in the White group may be regarded as positive linear (the more negative the attitude was, the higher the recidivism was) since the medium-attitude group consists of only those with the CBS attitude score of ‘2,’ which can strictly be considered to belong to the positive attitude group.⁶ Having stated the above, the relationship pattern between the CBS attitude and recidivism differed in an opposite direction between racial groups. The relationship among the White ex-inmates that the more negative attitude predicted higher recidivism was what was expected because negative attitudes toward the community services, which should play a crucial role in keeping ex-inmates in the community and out of criminal behavior, would hinder any positive impact of services from taking effect and would increase recidivism risk as compared to when positive attitudes were borne, as supported by the risk-need-responsivity model (Andrews et al., 1990). This expected relationship was even statistically significant among the White ex-inmates as shown in subgroup analyses. The reason that the Black ex-inmates did not show the expected relationship of the CBS attitude and recidivism may lie in parallel with the finding that

⁶ The categories were defined into the three groups based not only on content meanings but also on the frequency distribution. Inclusion of the medium-attitude in the positive-attitude group causes the positive group to consist of 70% of the total sample. Thus, considering the frequency distribution across categories as well as content meanings, the categorization was made into three groups.

higher percentage of the Black ex-inmates (67%) had medium or negative attitude than the White counterparts (50%) at $p < .05$ (See Table 6). As shown in Table 10, in addition, the Black ex-inmates had more negative attitude than the Whites among the nonviolent with the Pearson's r of .22 ($p < .05$). This finding is consistent with literature that evidences that clients from the minority groups including Blacks are likely to have unfavorable attitudes toward various kinds of services (e.g. Jones & Matsumoto, 1982).

Taken together, the fact that the Black ex-inmates generally tend to have more negative attitudes toward the community-based services than the White counterparts may operate so that the Black individuals be immune from the possible disadvantages that having negative attitude toward services can bring. That is, since negative attitudes are commonly held, their negative impact on recidivism becomes weaker enough to even out the impact among the Black ex-inmates than in other groups – the Whites here, where negative attitudes are not as common. One step further, the expressed negative attitudes may also imply their critical evaluation of the services. In other words, their negative, critical, evaluation rather reflects their firm will not to recidivate, such that the relationship between the CBS attitude and recidivism in the Black subsample turned out to take the opposite pattern to the expected one albeit no statistical significance. This point leads again to the issue of measurement related to the cultural competency of the scale. Scores can have different meanings according to cultural characteristics of the respondents. Scores indicating negative CBS attitude may indicate the negative attitudes in a generally-discussed sense in a certain group, but not in a different group. Along with the criminal autosuggestion, the CBS attitude scale needs to be re-examined whether it measures what is supposed to in a valid way. If not, a measure needs to be developed and validated that

can precisely distinguish different meanings implied in negative attitudes in different racial, cultural, groups.

Hypothesis 4 that posited positive relationships between criminal associates at Time 1 and attitudes – criminal autosuggestion and CBS attitude at Time 2 was accepted in part. In regard to criminal autosuggestion, the main effect of criminal associates was not supported but it was moderated by offense type. Consistent with what was shown in the interaction graph, larger criminal networks predicted stronger autosuggestion in the violent group, and in addition among the younger ex-inmates in subgroup analyses. This finding may conflict with discussion above in that the relationships involving variables of criminal autosuggestion are not to yield expected outcomes because of possible measurement problems. The most negative autosuggestion (very likely response) was conjectured to possibly imply better equipment for successful reintegration based on the unexpected relationships between autosuggestion (T1) and recidivism (H1.1) and between autosuggestion (T1) and criminal associates (T2, H3.1). However, findings on Hypothesis 4 indicate that criminal associates at Time 1 increase the level of criminal autosuggestion at Time 2 even up to the most criminal autosuggestion response (Very likely), and it may be related to attitude changes over time observed in the data.

The data suggested that attitudes had changed over time. Consistently across the analyses, the variables of criminal autosuggestion were not related each other between Time 1 and Time 2, the same applied to the variables of the CBS attitude. Corresponding Pearson's r correlations were lower than 0.1 and statistically insignificant in the entire sample and in most subsamples. There were two significant correlations between over time attitude variables, and they rather indicate a drastic attitude change than its stability. Namely, autosuggestion variables were correlated negatively over time among the older ($r = -.16, p = .08$), and the CBS attitude in the

violent group ($r = -.51, p < .05$). Cross-tabulation of the variables revealed that 75% of the violent offenders with positive attitudes at Time 1 had the Time 2 scores that fall into the range of negative attitude. Among the older, respectively 60% and 50% of the “very likely” and “likely” respondents at Time 1 moved into the category “very unlikely” at Time 2. Although the means of the attitude variables did not change much over time, indicating the overall attitudinal distribution is alike across Time 1 and Time 2, attitude in one person did not remain stable but changed. Cross-tabulations revealed that in other subgroups as well the attitudes had changed over time though not as drastically as in those groups where negative correlations came out. No relationship between the same variables over time, signaling the attitude change, was again corroborated in regression models for Hypothesis 4 (shown in Table 19 – 22), where attitude variables at Time 1 did not predict themselves measured at Time 2 in the entire sample and in any subgroups.

Given this change of attitudes, it is not necessarily contradictory that autosuggestion at Time 2 is positively related to criminal associates at Time 1. Autosuggestion at Time 2 might be reflecting the autosuggestive criminality more truly rather than its higher score, particularly “very likely” response, has two different meanings – criminal intention and better self-appraisal of vulnerability/susceptibility. However, the question still remains on why the meaning contained in the “very likely” response may change over time either. This is beyond the scope of this study, but a more precise measurement that is able to capture and distinguish two different meanings of autosuggestion can also clearly reveal the pattern of attitude change and differentiate various response patterns over time.

Returning to the Hypothesis 4, the second attitude measure at Time 2, the CBS attitude, was predicted by criminal associates at Time 1 in the entire sample and in the White, older, and

violent subsamples. That is, more criminal networks at Time 1 was related to more negative attitude toward community-based services. In line with the finding that criminal autosuggestion at Time 1 did not predict criminal associates at Time 2 but the autosuggestion at Time 2 was predicted by criminal associates at Time 1 in subgroups (violent and younger), the CBS attitude at Time 2 was also predicted by criminal associates at Time 1 in subgroups (violent, White, and older) while the CBS attitude at Time 1 did not predict criminal associates at Time 2. In other words, attitude variables in this study were not a factor for the increase of criminal associates, but a larger criminal network had an effect on the ex-inmates' attitude. It may be interpreted that attitude variables in this study are not measuring criminality. Negative attitude toward community services can be held without criminal minds, and likelihood of future offending can be estimated high when one admits his vulnerability. Negative CBS attitude and strong autosuggestion of future offending in these cases would not operate to extend the criminal network because criminal intention is absent. Given that the attitude measures of this study are conjectured to connote non-criminal evaluations based on findings discussed above, it may be stated that the failure for attitude variables to predict criminal associates is somewhat expected. It makes sense in this context that attitude variables at Time 1 – autosuggestion and CBS attitudes did not predict recidivism as well as criminal associates. The theory of reasoned action (Ajzen & Fishbein, 1980) emphasizes the importance of behavioral intentions in human behavior, and it applies to criminal behavior, too. However, larger networks of criminal associates predicted negative CBS attitude and autosuggestion of future offending. Considering that both attitudes had changed from Time 1 to Time 2, it is probable that criminal networks worked as a factor for the change of attitudes. One thing to note is that the CBS attitude at Time 2 among the Black ex-inmates was not predicted by their size of criminal associate network at Time 1, which may be

another evidence given in this study that points out the importance of cultural competency of the CBS attitude measure. As discussed earlier, Black ex-inmates tend to have more negative attitude toward community services, so the impact that criminal associates might have had on the CBS attitude did not emerge among Black ex-inmates.

One point to note, however, is that the CBS attitude at Time 1 was successful to predict recidivism, though not criminal associates, in the White and the older group. Contrary to the autosuggestion variable, CBS attitude left some possibility that it has effects on the final outcome, recidivism. Community-based services should serve a critical role in ex-inmates' reintegration into society. Difficulties and hurdles that they are to face in the community after their time in jail include and are not limited to substance abuse, employment, family and friends, and transportation. Difficulties are to increase the risk to reoffend, so assistances in various areas as needed are very important in keeping them in communities. Ex-inmates' negative attitude toward the community services, however, can make it difficult for benefits of services helpful for reintegration to be received and magnified. As explicated in the risk-need-responsivity model, particularly in the responsivity domain, on the principles of effective treatment programs for recidivism prevention, treatment programs become effective only when the target populations are ready to respond to the incoming positive influences (Andrews et al., 1990). Provided for quality services, therefore, having positive attitude toward those services would facilitate the receipt and usage of their benefits, ultimately to reduce recidivism risk. The finding that negative CBS attitude at Time 1 was related to elevated recidivism risk shed light on the importance of the community-based services as well as the attitudes of ex-inmates toward the services. Although it was suggested that the CBS attitude measure might have some room for improvement in regard to its cultural competency, and its significant prediction of recidivism did not occur in every

subgroup, the finding that the positive CBS attitude was related to reduced risk of recidivism in the White and the older subgroups has an implication that the attitude toward the community-based services among ex-inmates should be addressed so that beneficial impacts of services can be penetrated through lives of ex-inmates in need of those services.

5.2 IMPLICATIONS FOR REINTEGRATION EFFORTS AND FUTURE STUDIES

The findings of this study can be summarized overall as follows. The hypothesized effects of attitude measures – criminal autosuggestion and the CBS attitude, both on recidivism and criminal associates were not supported whereas the hypothesized effects of criminal associates on recidivism and attitude were confirmed by the data. The attitude measures are thought to have failed to predict recidivism as well as criminal associates for the weakness of the measurements as discussed, particularly in case of the criminal autosuggestion variable. The “very likely” and “likely” categories had very low *n* size, indicating the possibility that this measure was exposed to social desirability error, augmented by it being a single-item measure. In addition, there were indications that “very likely” answer could have two different meanings depending on respondents, connoting either ex-inmates’ criminal intention, as supposed when the hypotheses were built, or self-confession/acknowledgement of their vulnerability or susceptibility to criminal temptations. In regard to the CBS attitude, negative attitudes might indicate a critical evaluation of the services reflecting respondents’ efforts to succeed in reintegration particularly in the Black group where attitude toward services is generally more negative than in the White group (Jones & Matsumoto, 1982). Supposing that these weaknesses of attitude measures caused the hypothesized attitudinal effects on recidivism as well as criminal associates not to rise to the

surface, development and/or improvement of attitude measures is necessary. A more accurate measure to distinguish two different meanings contained in responses for the autosuggestion and a more culturally sensitive measure that is able to predict outcomes in both the Black and the White group are in need of development and validation.

The attitudinal change observed between Time 1 and Time 2 casts another implication for future studies. With some variations among subgroups, both the criminal autosuggestion and the CBS attitude were not stagnant but changed over time. This study showed attitude variables at Time 1 did not make a good predictor for outcome variables, and bivariate correlations revealed that even the attitude variables at Time 2 were not correlated significantly with outcome variables. Given this, changes in attitude may make a better predictor for recidivism as well as criminal associates than attitudes measured at one point in time, either at Time 1 or Time 2. With improvements in attitude measures made as stated earlier, attitude changes over time, compared to attitude scores measured at a time, should be examined to predict recidivism as well as criminal associates in order to look into any possibilities that attitude variables may have in prediction of these outcome variables. By doing so, the original path model can also be tested whether either the improved measure of attitudes or the measurement of attitude changes operate as an independent variable having an effect on recidivism through a mediating role of criminal associates, and also as a mediator carrying the effect of criminal associates on recidivism.

Regardless of the comparison of the strength as a predictor between attitude changes and attitude measure at one time, factors that bring changes in attitudes need to be investigated given the theoretical importance of the attitudes in prediction of recidivism. This study showed that criminal associates at Time 1 predicted both the autosuggestion and the CBS attitude at Time 2 in the expected positive direction. It is indicated that given the differences in attitudes between

Time 1 and Time 2, the network of criminal associates that ex-inmates have at immediate post-release, which is Time 1, might operate as a factor for attitude changes in near future, within 6 months in case of this study. Other possible factors for attitude changes may include family relations, other informal social support, formal social support, employment problems, financial issues, and even reoffending after immediate post-release period. If these elements operate as factors for attitude changes, solving these issues will lead ex-inmates' attitudes consequently to be transformed in a positive way. Therefore, these factors that may cause ex-inmates' attitude changes between time periods after release should be first addressed to facilitate successful reintegration efforts. Although the priority certainly lies in addressing the issues that come before a certain attitude or attitude change, ex-inmates' attitudes make a good medium for social workers to find venues for issues to be tackled in ex-inmates' lives since their attitudes are likely to bear a mediating role between life problems and criminal behavior. In other words, attitude changes can provide a basis to look more into one's life situations when difficulties/issues in ex-inmates' reintegration process haven't been noticed by or reported to social workers. In case attitude changes occurred, but not as a signal for other life issues, the changes will be able to serve as an alert against possible risks for any illegal/criminal behaviors by themselves.

The finding that the CBS attitude at Time 1 predicted recidivism in subgroups is very promising despite the overall breakdown of the attitude-related results in this study. Negative CBS attitudes at Time 1 was related to elevated recidivism risks among the White and the older, which shed light on the importance of the community-based services as well as the attitudes of ex-inmates toward the services. Although it was suggested that the CBS attitude measure has some room for improvement in regard to its cultural competency, and its significant prediction of recidivism did not occur in every subgroup, the finding that the positive CBS attitude was related

to reduced risk of recidivism in the White and the older subgroups has an implication that the attitude toward the community-based services among ex-inmates should be addressed as an area of intervention so that beneficial impacts of services can be penetrated through lives of ex-inmates in need of those services. The improvement of the CBS attitude measure and the investigation of factors that influence the CBS attitude as well as its changes should be kept in research and practice agenda to facilitate the successful reintegration of ex-inmates. At the same time, evidence-based and client-focused quality services should keep being developed, implemented, and evaluated. Positive experiences with formal social services among ex-inmates should keep being fostered through constant self-monitoring of service agencies and agents including social workers. Formal social services can be delivered more effectively and in a way to promote positive relationships with clients by cooperating with their informal social support systems including religious organizations such as church and synagogue and family members.

The criminal associates predicted recidivism as well as attitude variables in this study, confirming corresponding hypotheses (H2 and H4). Increased volume of criminal associates was positively related to criminal autosuggestion among the violent and the younger, to the negative CBS attitude among the White, the older, and the violent, and to increased recidivism likelihood in all groups. These findings provide the evidence that the criminal networks should be paid substantial attention in care of ex-inmates toward their successful reintegration, both in research and practice. In research, situations that can lead ex-inmates to, or reasons why ex-inmates look for acquaintances or friends in a criminal network should be documented and added to knowledge, and it should be applied to practice to prevent ex-inmates from keeping company with their criminal networks. In practice, constant mentoring relationships and various social services that fill the reintegration needs of the ex-inmates can work toward minimizing the

chances that ex-inmates accompany each other to settle any issues arising in their reintegration processes, and ultimately toward reducing recidivism.

In addition, further studies will deepen the knowledge by delving more into the group differences in relationships between criminal attitude, criminal associates, and recidivism. This study revealed that some effects were statistically significant in some subgroups but not in other subgroups, which varied depending on examined relationships. It was beyond this study's scope, however, to illuminate reasons for the group differences and also to test whether the effects examined in separate groups are significantly different across groups. Given that the subgroup analyses were exploratory in this study, replications are warranted. Further, future studies can examine whether the different effects found across subgroups are actually different each other with statistical significance. Even though one group has a statistically significant regression coefficient and the other does not, the two coefficients might not be different with statistical significance from each other. Significant differences in effects across subgroups will guide reintegration efforts to be more focused in a certain group by allowing more resources to be received by one group than the other according to the documented differences of a certain effect.

To reduce recidivism and successfully reintegrate jail ex-inmates into society, researchers need to uncover and further address the individual-based and environmental predictors of recidivism. The unique role and structure of jails in the criminal justice system allows for greater intervention and prevention of future criminal activity (Center for Therapeutic Justice, 2000; Roman & Chalfin, 2006). This study added important information that attitudes that jail ex-inmates have toward reintegration services play a role in reducing recidivism. However, discussion of attitudes toward services should follow discussion of qualities and delivery system of services. The public and federal lawmakers have begun to recognize these needs. Jail studies

show that evidence-based rehabilitation and interventions do reduce recidivism, but much work still needs to be done (Roman & Chalfin, 2006; Yamatani, 2008). In 2008, the Second Chance Act was enacted making rehabilitation a criminal justice system priority (Eckholm, 2008; Orator Network, 2008). For 2010, \$114 million of funding was appropriated to the Department of Justice for offender reentry efforts including \$10 million for related research (Reentry Policy Council, n.d.). Plus, an additional \$108 million went to the Department of Labor for offender reentry and jobs programs. With this shift in policy, now is the time for social work professionals to take the lead to advocate for funding, investigate, and address the correlates associated with recidivism, including attitude domains of ex-inmates.

5.3 LIMITATIONS

This study has limitations. First, the sample is limited to ex-inmates of a U.S. local jail. Given the lack of studies among jail inmates, replications of this study or similar future studies are required so that findings are to be generalized.

Second, the data were not complete with the missing rate mostly ranging from 10.2% in autosuggestion at Time 1 to 23.6% in the CBS attitude at Time 1, with one exception, the highest of 32.4% in the CBS attitude at Time 2. Multiple imputations were used to minimize the estimation bias with the assumption that the missingness were *missing at random* (MAR), which could not be tested out. Future complete data will be a great addition to the area of study for the sake of unbiased estimation stemming from incomplete data.

Third, recidivism was measured in a less specified manner, not distinguishing whether recidivism occurred from supervision violation or new crime and whether it was rearrest, reconviction, or reincarceration. Since different attitude measures have been reported to predict different types of recidivism (e.g. Mills & Kroner, 1997; Simourd and van de Ven, 1999), future studies with varying measures of recidivism will shed light on these differentials.

Fourth, recidivism rate may be underestimated in this study for two reasons. One, since individuals interviewed only at Time 1 and Time 2 could not be followed up for recidivism to the end of their first year in community (Time 3), their recidivism rate is likely to be under-observed if they had not recidivated by their Time 2 interview. Two, the recidivism measure was limited to detected crime. Offenses often pass undetected by law enforcement although they are recidivistic events, which have not been included in recidivism measure of this study.

Fifth, the measurement of the attitude toward community-based services and criminal associates lacks its reliability and validity information from their previous applications. However,

the instruments were adopted from the survey conducted by a nationally recognized research institute, the Urban Institute, and they specified that the survey was developed from literature and revised based on experts' input (Visher et al., 2004). The Cronbach's alpha reliability of the attitude toward community services was over .90 at both Time 1 and Time 2 in this study, and also was partly successful in predicting recidivism. Given the importance of this dimension of attitude in contexts of ex-inmates reintegration into communities, particularly for jail populations, this measure is worth being used, improved, and validated by future studies. The suggestions for its improvement based on this study in regard to its cultural competency needs also be reflected. Meanwhile, the measure of criminal associates can be said to have shown its construct validity in this study in a way that it predicted recidivism as well as attitude variables with statistical significance. In addition, a more direct measure of criminal associates, possibly excluding the last two questions used for the measure, may make a stronger measurement of the variable.

5.4 SIGNIFICANCE OF THE STUDY

This study examined the two variables of criminal attitude in their relationships with criminal associates and recidivism. The CBS attitude as well as criminal autosuggestion had never been studied as a possible attitudinal dimension related to future criminal behavior. The CBS attitude variable is particularly significant since community-based services play crucial roles in the reintegration process of ex-inmates released from either prisons or jails. Although the autosuggestion variable was assessed to have low reliability tainted with the social desirability issue and to have room for improvement in terms of distinguishing meanings contained in a

response, such improvement of this measure will have potential to inform practitioners and researchers of ways to better serve ex-inmates according to their specified needs.

Moreover, the CBS attitude variable and its prediction of recidivism in subgroups as found in this study testifies that this new attitude dimension applies well to jail ex-inmates and maybe more generally to the offender population, and that this measure should receive further attention provided the practical importance of community-based services in assisting ex-inmates' reintegration into communities. However, the measure may be especially of significance among jail populations because treatment programs and community supervision of jail ex-inmates are closely connected to community-based service organizations because of short stays in jail.

One step further, this study revealed that attitudes, whether the autosuggestion or the CBS attitude, changed from immediate (30 days in this study) to 6 months post-release, and noted the changes in attitudes as a possible better predictor for the outcomes including recidivism than attitudes at a certain point in time. The possible importance of the variable of attitude changes, as a predictor for recidivism, illuminates some of the directions that future attitude studies can follow.

Secondly, this study added information to literature on how criminal attitudes and recidivism were differentially related in diverse populations. In addition to age and offense type, racial information had rarely been addressed in relation to the attitude-recidivism association. The meta-analysis of 32 studies revealed that 72% of the included studies had not reported ethnic/racial information of the participants in their analyses of attitude-recidivism relationship (Law, 1998). The contribution of this study was made by including the interaction term of attitude and grouping variables of age, race, and offense type, and by examining each hypothesis in each subgroup. It provided the basis on which further studies can be built so that they

elucidate statistical significance of group differences and by doing so make a contribution of suggesting ways for effective and efficient distribution of resource.

Connectedly, the fact that the study sample came from U.S. jails with information of race and age available is important. Previous studies had been conducted among relatively homogeneous populations, mostly White male inmates in federal institution in Canada. By using ex-inmate samples from the U.S. jails with an even distribution of race (Black versus White), this study broadened the population among whom the criminal attitude-recidivism relationships were examined. In addition, literature on recidivism has mostly focused on prison, not jail, populations. Since jails are qualitatively very different from prisons in various aspects (LoBuglio, 2007), the examination of jails makes the contribution to knowledge in itself.

Thirdly, longitudinal, not cross-sectional, relationships were examined in this study. Findings from cross-sectional data inherently have the weakness, in comparison to those from longitudinal data, that the time order of predictor and outcome variables is not controlled. Statistically significant relationships between a theoretical predictor and an outcome based on cross-sectional data only mean their association, not causality. Using longitudinal data does not preclude other issues related to the validity of causal relationships, but it advances one step to the causality because the time order is controlled. Considering this, the significant relationship between the CBS attitude at Time 1 and recidivism, between criminal associates at Time 1 and recidivism, and between criminal associates at Time 1 and attitude variables at Time 2 have considerable implications for the reintegration efforts for ex-inmates. It indicates with scientific rigor the importance of providing the quality community-based services, gearing the ex-inmates' attitudes in a positive way, and reducing/minimizing the network of ex-inmates' criminal associates, in order to prevent future offending/recidivism of ex-inmates.

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