ATTITUDE, ASSOCIATES, AND RECIDIVISM:
RELATIONSHIP PATTERNS AMONG ALLEGHENY COUNTY JAIL EX-INMATES

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This s tudy aims to longitudinally examine r elationship patterns a mong a ttitude, criminal associates, and recidivism am ong Black ($n = 1$ 09) a nd W hite m en ($n = 107$) r eleased from Allegheny County Jail in Pittsburgh, Pennsylvania. Attitude and criminal associates belong to the "big four" risk factors for recidivism (Andrews & Bonta, 1998). Review of studies reveals that different di mensions of a ttitude pr edict di fferent m easures of r ecidivism i n di fferent of fender populations. This study examines two new attitudinal dimensions – autosuggestion and attitude toward community-based services (CBS attitude in the following). Autosuggestion measures the reported l ikelihood of ex-inmates' future of fending. C BS a ttitude i s a meaningful measure among j ail popul ations given s hort j ail s tays a nd the c ritical r ole pl ayed by c ommunity-based services in jail ex-inmates' reintegration.

The original path model with three-wave data was split into four hypotheses because of inadequate bi variate cor relations am ong f ocal variables. Longitudinal relationships be tween attitude a nd r ecidivism, a nd c riminal a ssociates a nd r ecidivism, a nd l ongitudinal r eciprocal relationships be tween attitude and criminal as sociates w ere i nvestigated. Each hypothesis w as tested in the e ntire s ample (with interactions) a nd i n e ach s ubgroup b y r ace, a ge, a nd of fense type.

Findings indicated that criminal associates predicted recidivism and attitude, but attitude failed to predict r ecidivism a nd associates w ith an exception that C BS a ttitude pr edicted

recidivism in some groups. This latter finding illuminates the importance of the community-based services and CBS attitudes. Autosuggestion interacted with age and CBS attitude with race in predicting recidivism. Results suggest that "very likely" response of autosuggestion may contain two different meanings – criminal intention and acknowledgement of vulnerability, possibly leading to two different recidivism results. Improvement of the two attitude measurements is suggested necessary considering the double meaning contained in autosuggestion and cultural competency of CBS attitude measure. In addition, attitude was shown to change over time, and attitude change may make a better predictor for recidivism and criminal associates than attitude measured at a time. The original path model may be tested with attitude change as a predictor. Factors for attitude change, possibly including criminal associates, should also be investigated. Other points of discussion, and significance and limitations of the study are discussed.

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1.0   INTRODUCTION

1.1   PROBLEM STATEMENT

The objective of this study is to longitudinally examine the relationship patterns among criminal attitude, criminal associates, and recidivism among jail ex-inmates.

1.1.1   Recidivism and jail

Crime and recidivism has been a perennial social problem. Recidivism of an offender is costly because it means that the dollars spent on his/her trial, conviction, sentencing, and incarceration have not yielded a desired outcome. Recidivism caused by non-change in characteristics and circumstances that initially triggered the original offense is not only a burden but also a threat of additional offenses to society. The problem of recidivism and reintegration rose up to the surface in the U.S. in the last decade as a result of high incarceration rates of the last few decades. The number of individuals incarcerated in state and federal prisons and local jails in the U.S. was 2.3 million in 2007, indicating that one in every 133 U.S. residents were in custody (Sabol & Conture, 2008). Recent data show that prison admissions increased at a faster rate than releases, resulting in current growth of prison population (Sabol, Minton, & Harrison, 2007). Incarcerated individuals are to return to communities after release except a small proportion of inmates serving life sentences. More than 97% of prisoners are released within two years after

confinement (Sabol & Conture). A 15-state prison recidivism study showed, however, almost two thirds of released offenders are rearrested, almost half re-convicted, and a fourth re-incarcerated for a new crime within three years of release. Studies have reported that the highest rates of recidivism occur during the first year (Langan & Levin, 2002; Mears, Wang, Hay, & Bales, 2008).

It is important to explain that jails and their inmates differ substantially from prisons, so prison literature findings cannot be generalized to jails (Center for Therapeutic Justice, 2000). Jails are short-term incarceration facilities that primarily hold offenders of minor crimes who typically stay for less than one year (Jung, Spjeldnes, Yamatani, in press). About 80% of jail inmates are released in less than a month while prison's average incarceration lasts about 2.5 years (Gerard, 2005; Sabol & Beck, 2007). Jail inmates are incarcerated for various reasons other than serving sentenced time. Among jail inmates are pretrial detainees, temporary detainees awaiting transfer to different institutions, court witnesses, and those in protective custody (LuBuglio, 2007). Another difference is that released prisoners are normally supervised by parole officers, but not so for released jail ex-inmates (Solomon, 2008). In addition, jails' geographical proximity to communities compensates for the limited possibility time-wise for treatment programs because community treatment programs are available through various community organizations (LoBuglio, 2007; Solomon, 2008).

With differences stated, jail populations need a separate attention in discussing reentry challenges, needs, and programs. Research on jail inmates is warranted given that many jail inmates cycle in and out escalating their criminal activity until they are committed to prison, and jails are in many cases the point of entry and exit in the nation's correctional system (LoBuglio, 2007). Effective jail and post-jail interventions can, therefore, deter people from ending in prison

(Roman & Chalfin, 2000). Needs for jail research are magnified with the high magnitude of jail populations and subsequent costs considered. Annually, an estimated 12 million people cycle in and out of nearly 3,500 U.S. jails (Beck, 2006). In 2008, 785,556 individuals were in jail at mid-year up from 400,000 in 1990 (Bureau of Justice Statistics, n.d; Minton & Sabol, 2009). Much higher number of populations pass through jails each year than prisons (Freudenberg, 2006), and jails process as many people in three weeks as prisons do in a year, and about 95% of ex-inmates released from custody are from local jails (Solomon, 2008). Given the volume of jail populations, "any diminution in their criminal activity could result in significant improvements in public safety" (Travis & Visher, 2005, p.4). In addition, the U.S. aggregated corrections costs rose from $12 billion in 1987 to $49 billion in 2007--$20 billion of which was spent on jails and local criminal justice (Hughes, 2006). Despite the substantial cost and numbers of people affected by the jail system and its unique role in criminal justice, the preponderance of literature about recidivism focuses on former prison inmates (Yamatani, 2008). The examination of risk factors for recidivism among jail, not prison, inmates contributes to the literature given the roles that jails bear in comparison to prisons as explained above and the comparative dearth of prior studies among jail populations despite the magnitude in their numbers and costs.

1.1.2   Criminal attitude

The construct of criminal attitude has been discussed as one of the most influential risk factors for criminal behavior (e.g. Andrews & Bonta, 1998). However, the terminology of criminal attitude has not been used consistently. Researchers have selected different terms with different combinations of adjective and noun, including antisocial, procriminal, or criminal attitude, cognition, or orientation to denote the broad concept "constituting the constellation of criminally

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oriented attitude, values, beliefs, and rationalizations" (Simourd & Olver, 2002). It is out of the question that criminal attitude is widely accepted as an indispensable element in efforts to reduce further criminal behavior of offenders. What is in question is rather how well the construct is established conceptually and operationally. Theories clearly point the importance of attitude in determining behaviors in relevant disciplines of social psychology (Ajzen & Fishbein, 1980; Bandura, 1977), criminology (Hirschi, 1969; Sutherland, 1947; Sutherland & Cressey, 1978), and forensic/criminal psychology (Andrews & Bonta, 1998). However, the operational construct of criminal attitude appears not to have yet arrived at an agreement. Pointing to the relative inattention to the attitude construct compared to theoretical discussions on it, Simourd and Olver (2002) stated that "what is missing is a reasonably articulated understanding of the criminal attitude construct(s), the most appropriate methods of assessing the construct(s), and suggestions as to how best provide practical interventions" (p. 428).

Criminal attitude is multi-dimensional. Existing scales on criminal attitude measure different aspects of attitude including attitude toward justice personnel and system, criminal identification, tolerance toward law violation and violence, antisocial intent, and neutralization (Mills & Kroner, 1999; Shields & Simourd, 1991; Shields & Whitehall, 1991). Furthermore, different dimensions predict recidivism among different offender groups (e.g. Simourd & van de Ven, 1999). Further investigation is required in whether attitude construct is being measured exhaustively as well as accurately. Accurate measurement of a construct should satisfy its exhaustive coverage of the construct's concept. The multidimensionality of the criminal attitude also suggests that an important dimension of the construct should not be missed.

This study will be able to contribute to the literature in this regard by examining two yet-unaddressed dimensions of criminal attitude. One may be called *autosuggestion*. It is

conceptualized as ex-inmates' anticipation (reported likelihood) of their future crime. The other dimension is *attitude toward community-based services*. Scales of criminal attitude cover attitude toward law, court, and police, but not services available to them. As ex-offenders, services that are available to them for their reintegration assistance are another area that they may bear certain attitude about. Their attitude toward services should be related to their (non)criminal paths after release because negative attitude toward services is likely linked to hesitation and/or refusal to receive and take advantage of the services. The effect of attitude toward community-based services should be more salient among jail population than prison counterpart because community-based services are to have larger impact on jail than prison ex-inmates. Overall short period of jail incarceration should make the services available in community more essential to jail ex-inmates for their reintegration as compared to prison counterparts. In jail, needs are assessed and corresponding resources and connections are identified accordingly in a short time frame, but actual services should mostly be provided in community through reference and collaboration (Solomon, 2008). Therefore, negative attitude toward community-based services would bring stronger consequences among jail inmates. These two measures of criminal attitude may enlighten new dimensions of criminal attitude, and contribute to a better assessment of risk factors that offenders bear, ultimately promoting successful reintegration of more ex-offenders.

1.1.3 Criminal associates

Criminal associates are a significant risk factor for criminal behaviors, and are closely related to criminal attitudes (Andrews & Bonta, 1998; Sutherland, 1947; Sutherland & Cressey, 1978). The relationship between criminal attitude and criminal behavior is reciprocal (Bandura, 1977). On one hand, criminal associates become the mechanism why individuals with criminally oriented

attitudes turn to criminal behaviors. Those with criminal attitudes tend to form or join the company of criminal associates. They find their thoughts and feelings shared, keep in contact, spend time together, provide criminal opportunities, motivate and assure each other toward criminal offending, and reinforce and support further crime. On the other hand, criminal attitude is transmitted and learned from criminal associates, and further strengthened and reinforced by criminal associates.

In brief, one's criminal attitude leads to criminal behavior through criminal associates, and the criminal attitude is learned from criminal associates. A cyclical relationship is formed: criminal attitude, learned in part from criminal associates, leads to extended criminal associates, which in turn become the facilitator for criminal behavior. The relationship between criminal attitude and criminal associates in predicting recidivism will be examined with the two new attitude variables employed for criminal attitude.

1.2   SPECIFIC AIMS (RESEARCH QUESTIONS AND HYPOTHESES)

This study aims to examine the effects of criminal attitudes on ex-inmates' recidivism. Criminal attitudes are expected to operate in close conjunction with ex-inmates' having criminal associates, and they are expected to affect recidivism in a positive direction. By testing hypotheses specified below, this study will also test the criterion validity of the new dimensions of the criminal attitudes: *autosuggestion* and *attitude toward community-based services*.

Hypothesis 1: Criminal attitude (*autosuggestion* and *attitude toward community-based services*) at Time 1 will increase the likelihood of recidivism over Time 2 and 3 with criminal associates at Time 1 controlled.

Hypothesis 2: Criminal attitude at Time 1 will be positively related to criminal associates at Time 2 with criminal associates at Time 1 controlled.

Hypothesis 3: Criminal associates at Time 1 will be positively related to criminal attitude at Time 2 with criminal attitude at Time 1 controlled.

Hypothesis 4: Criminal attitude and criminal associates at Time 2 will be positively related to recidivism at Time 3.

Hypothesis 5: Criminal associates at Time 2 will partially mediate the effect of criminal attitude at Time 1 on recidivism at Time 3.

Hypothesis 6: Criminal attitude at Time 2 will partially mediate the effect of criminal associates at Time 1 on recidivism at Time 3.

In addition, this study will also explore the relationship patterns delineated above among different groups of ex-inmates. Black versus White offenders, violent versus nonviolent offenders, and younger versus older offenders are to be contrasted in an exploratory manner to investigate whether the relationship patterns emerge differently among different groups.

1.3   SIGNIFICANCE OF THE STUDY

The first gap in the knowledge lies in the absence of these dimensions of criminal attitudes from existing scales. Expanding on the undiscovered attitudinal dimensions can contribute to the increased explanation of recidivism, and is important given the various relationship patterns between different attitudinal dimensions and recidivism among different offender populations (violent vs. nonviolent offenders and/or younger vs. older offenders). The second attitude measure, attitude toward community-based services, is especially of significance among jail

populations because treatment programs and community supervision of jail ex-inmates are closely connected to community-based service organizations provided the short stays in jail.

Secondly, scant information is available on how criminal attitudes and recidivism are differentially related in diverse populations. In addition to age and offense types, racial information has rarely been addressed in relation to the attitude-recidivism association. The meta-analysis of 32 studies revealed that 72% of the included studies did not report ethnic/racial information of the participants in their analyses of attitude-recidivism relationship (Law, 1998). Given the racial disparity of recidivism, the examination of race, as well as other offender characteristics (age and offense types), as a moderator in this relationship will contribute significantly to the literature.

Thirdly, the study sample from U.S. jails with information of race and age available make contribution to literature and practice. Previous studies have 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 broadens the population among whom the criminal attitude-recidivism relationships are 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 with respect to criminal attitudes-recidivism relationship will allow sets of analysis that promises a contribution to criminal justice literature.

Fourthly, this study contributes to scientific knowledge in attitude-recidivism relationship by improving on study methodologies. Prior studies accumulated knowledge from two-wave data with attitude assessed at intake rather than at release, and the analysis was mostly correlational. This study uses the three-wave longitudinal dataset through comparatively advanced analytic

procedure including multivariate (logistic) regression. The variables of attitude as a predictor were assessed at immediate post-release in this study, more meaningful in recidivism prediction than assessed at intake.

Lastly, treatment programs of criminal attitudes are virtually absent in corrections, and one reason is the lack of appropriate programs (Simourd & Olver, 2002). The sample of this study consists of ex-inmates who have participated in various programs that were available through the Allegheny County Jail Collaborative, an initiative developed and implemented to assist inmates' successful reentry into society. However, no corresponding services/programs directly handled the aspect of criminal attitudes. By examining the effect of attitudes on recidivism, this study aims to show the importance of attitudes in criminal behavior and to promote the development and implementation of treatment programs of criminal attitudes.

2.0   LITERATURE REVIEW

Literature review will cover the (1) criminal attitude and criminal associates as risk factors for recidivism, (2) theoretical underpinnings that uphold the two factors in recidivism prediction, (3) concepts and characteristics of criminal attitude, (4) various dimensions and scales under the large construct of criminal attitude, (5) previous empirical studies on the relationship between criminal attitude and recidivism, (6) limitations that previous literature bears as reviewed in prior sections and contributions where this study counteracts the limitations, and finally the (7) justification of the two attitude dimensions used in this study reflected upon previous theoretical and empirical literature.

2.1   RECIDIVISM RISK FACTORS

Prediction of recidivism by assessing the risks as accurate as possible has been a focal research question. Offenders have many areas that need intervention in and the rate of population in needs is much higher than in general population (Solomon, 2008). Jail detainees are similar to the overall correctional populations including federal and state inmates in the sense that there are higher rates of substance abuse, mental illness, health risk factors than in the general population (Solomon, 2008; Taxman, 2006). However, research on jails and jail inmates are scant with the exception of some studies on jail-based treatment in the early 1990s and some minimal literature

on the needs of jail detainees. Therefore, risk factors of adult recidivism summarized below are mostly from studies conducted among prison populations.

Some of the predictive risk factors of adult offender recidivism about which there is no disagreement in the literature include youthfulness, being men, criminal history, criminal associates, and early family factors including family criminality, lack of parental supervision and affection, conflict, and abuse (Gendreau, Little, Goggin, 1996). Other risk factors include criminal attitudes, antisocial personality, personal distress, interpersonal conflict, substance abuse, and arguably social class of origin (Gendreau et al.; Tangney, Mashek, & Stuewig, 2007). Further, other resource-related factors include unemployment, low education and income, and unstable housing (Gendreau et al.; Kyvsgaard, 1990; May, 1999; Nilsson, 2003). These risk factors are reflected in many needs/risks assessment tools, developed, implemented, and evaluated to predict risks of future criminal behavior of offenders. Based on the needs and risks gauged through the tools, correctional systems not only classify offenders in determining custody security level but also have offenders participate in programs and be assisted by social services addressing needs-based issues including substance abuse, education, job, physical and mental health, housing, and family relationships.

The risk factors have been classified as static versus dynamic. Static risk factors are viewed as constant and unchangeable, so they cannot provide any information helpful for risk reduction. On the contrary, dynamic risk factors are changeable, amenable to treatment and intervention (Andrews & Bonta, 1998). The simple dichotomous classificiation of risk factors being static versus dynamic, however, encountered a conceptual transition among correctional researchers in the last decade (Grann, Belfrage, & Tengstrom, 2000; Hanson & Harris, 2000; Quinsey, Coleman, Jones, & Altrows, 1997; Quinsey, Harris, Rice, & Cormier, 1998; Wormith,

2000; Zamble & Quinsey, 1997). Instead of dichotomous conceptualization of recidivism risk factors, researchers began to view them as distributed along a continuum, which can be divided into four categories according to the rate of change, the origin of change (i.e. within individuals versus environment), the change agent (intentional manipulation versus natural occurrence), and the degree of predictability.

At one end of the continuum lie completely static factors including age at first arrest, sex, and parental supervision in childhood. At the other end lie factors that can change rapidly even within hours or minutes. Unpredictable factors that can happen anytime unexpectedly belong to this category. The other two categories of factors in the middle are: the factors changing too slow to be intervened in and the factors changing slowly but having some room for treatment possibly leading to change in a reasonable time range. Criminal attitude and criminal associates are two factors corresponding to the latter category, "factors of intermediate variability" (Brown, 2002, p. 4). They are likely to remain unchanged for months or years if no treatment or intervention are provided (Hanson & Harrison, 2000; Quinsey et al., 1998), but appropriate and adequate intervention may cause changes within weeks or months. Given that the only group of risk factors that is stronger in changeability is unpredictable factors that can happen anytime in environment with no manipulative controllability, the risk factors that need to be attended to empirically should be the "factors of intermediate variability" (Brown, 2002, p. 4) where criminal attitude and associate are viewed to belong.

2.2   THEORETICAL PERSPECTIVES

Criminal attitude has been discussed theoretically and empirically as a significant risk factor for recidivism. Theoretical underpinnings are rich, supporting the effect of criminal attitude on recidivism. Theoretical discussions center around criminal behavior in general but there is no notional conflict because recidivism is apparently a criminal activity that applies to ex-offenders.

Antisocial attitude and cognition was first recognized as an important predictor for criminal behavior by Gluek and Gluek (1950). They base their theoretical argument on the psychodynamic perspective where antisocial or procriminal attitude is viewed as a primary reflection of a lack of socialization. Gluek and Gluek (1950) included the attitude and the cognition as factors that distinguish delinquents from non-delinquents, and described the two dispositions, attitude and cognition respectively, as "Attitudinally hostile, defiant, suspicious, stubborn, adventurous, unconventional, nonsubmissive to authority" and "Cognitively direct and concrete rather than symbolic, less methodical in problem-solving" (p. 281-282).

Control theory of Hirschi (1969) also posits antisocial attitude as one of the standards that distinguish law conformers and violators. Hirschi (1969) contends that belief in the validity of law operates as a "moral tie," a mechanism why individuals do not violate the law. It conversely indicates that the disbelief in the validity of law serves criminal behavior favorably. In addition to this dimension, two other attitudinal elements are also included in his measurement of the "moral ties," respect for authority and attitude toward school (school as a conventional institution). Andrews and Bonta (1998) evaluates that Hirschi's control theory "places an overemphasis on ties to convention, and an underemphasis on ties to crime" (p.113).

Meanwhile, in general theory of crime (Gottfredson & Hirschi, 1990), where Hirschi revisited the original theoretical argument of criminal behavior in collaboration with Gottfredson,

antisocial attitudes, values, and beliefs were not introduced in their theoretical elements, but empathy and egocentrism emerged as one of the central factors instead (Andrews & Bonta, 1998). However, another attitudinal factor was included, which was the devaluation of cognitive, academic, and manual skill. Devaluating skills that are necessary for a conventional social life has been regarded among researchers as a dimension representing antisocial attitude, and such disposition appears to operate as a tie to crime. General strain theory (Agnew, 1992, 1995) also brought in attitude dimensions as potential motives for criminal behavior, and these dimensions include (1) moral evaluations of crime (as in statements such as "theft is not that wrong" and "a hungry person has the right to steal") and (2) systematic review of the multiple potential rewards and cost.

Attitude is acknowledged as an important predictor for criminal behavior even from sociological fields in the form of subcultural theories, where criminal attitude is now externalized as properties of cultures (Andrews & Bonta, 1998). In turn, then, these external values and beliefs are internalized, which fits well with the proposition of differential association (Sutherland, 1947; Sutherland & Cressey, 1978) and social learning theory (Bandura, 1973, 1977). The postulation of these theories that antisocial attitude, values, and beliefs are learned is accordance with the process of externalization and internalization of criminal attitude as proposed in sociological subcultural theories. Sykes and Matza (1957) theorized that criminal activities are committed without guilt through verbalization of the procriminal beliefs, which has been called as techniques of neutralization, or rationalizations for law violations. The techniques of neutralization and rationalization can be utilized not only after but also before committing an offense. The techniques include: (1) denial of responsibility, (2) denial of injury, (3) denial of the victim, (4) condemnation of the condemners, and (5) appeal to higher loyalties.

Meanwhile, the concept of criminal thinking also emerged through seminal works of Yochelson and Samenow (1976, 1977) – criminal thinking theory. They posit that criminals have different thinking *processes* which pervade every aspect of their lives and are deemed wrong, and that any changes in criminal behavior can occur only when these maladaptive thinking patterns are altered. These thinking patterns perpetuate and maintain criminal activity. Walters (1990, 1995, 2002, 2003) expanded and revised these propositions, and developed what has become the most influential model of criminal thinking process that consists of eight cognitive patterns (Mandracchia, Morgan, Garos, & Garland, 2007): (1) mollification: rationalizing behavior by placing blame on external factors, (b) cutoff: quickly disregarding thoughts that deter from crime, (c) entitlement: permitting criminal behavior by a special privileged self-attribution, (d) power orientation: the need for utmost control over the environment and others, (e) sentimentality: doing something good to offset one's negative feelings about one's behavior, (f) superoptimism: confidence in one's ability to evade the typical negative outcome of crime, (g) cognitive indolence: using mental short cuts instead of using more developed and thoughtful mental strategies, and (h) discontinuity: lack of perseverance and reliability in both behavior and thinking (Walters, 2001).

Criminal attitude occupied a main place in explaining criminal behavior along with criminal associates in differential association theory (Sutherland, 1947). Differential association theory posits that criminal attitude is acquired through intimate communications with antisocial associates and the learned attitude leads to criminal behavior in particular situations where the attitude favorable to criminal acts wins that unfavorable to them. Favorability toward the criminal activity can be rephrased into expected reinforcement and punishment, that is, rewards and costs. It is also postulated that antisocial associates influence criminal behavior through a

partial mediation of antisocial attitude through processes of reinforcement of behaviors in particular situations. Simply stated, antisocial associates provide supports for antisocial behavior by their becoming reinforcement in themselves. Therefore, antisocial associates are regarded as another dimension of antisocial attitude over and above the transmitted attitude per se because antisocial associates are expected to provide reinforcement and rewards for conducting criminal behavior.

The perspective on the roles that reinforcement plays in a certain situation where criminal activity occurs, Andrews and Bonta (1998) states, fits well with the well-validated model addressing the relationship between attitude and behavior -- the theory of reasoned action (Ajzen & Fishbein, 1980). The theory of reasoned action (Ajzen & Fishbein, 1980) emphasizes the importance of behavioral intentions in human behavior. Individuals behave in concordance with their intentions, and these behavioral intentions are formed from attitudes favorable to the act, perceived social support for the act, and perceived barriers to the act. Translation of this theoretical proposition into criminal behavior should be that law violators commit offenses with intentions, which means they have favorable attitude toward violating the law (perhaps negative attitude toward the law, or disbelief of the validity of law), perceive support for the illegal activity (perhaps criminal associates), and do not see barriers to the offense.

Differential association theory (Sutherland, 1947) is also in line with the renowned social learning theory (Bandura, 1973, 1977) in that criminal attitude is learned through observations in the environment. The theory postulates that human behavior, including aggression specifically, is explained by continuous reciprocal interactions among cognitive, behavioral, and environment influences. From this view, criminal attitude and behavior is acquired through attention to, observation and retention of criminal associates' attitude and behavior, and ultimately reinforced

by criminal associates' support for the activity. Ultimately, Andrews and Bonta (1998) pointed the "big four" risk factors of criminal behavior after comprehensive review of prior literature, and the two of the "big four" are criminal attitude and criminal associates with the other two being criminal history and antisocial personality. Presenting various routes to involvement in criminal conduct, Andrews and Bonta (1998) suggest antisocial attitude and criminal associates as particularly strong risk factors.

Many primary theories in criminology and social psychology have acknowledged attitude as a major risk factor predicting criminal behavior and also explained why criminal attitude signals criminal behavior, mainly in close relation with criminal associates. Criminal attitude has been viewed from various aspects in these theories, including disbelief in the validity of law, disrespect for authority, negative attitude toward conventional institutions, devaluation of skills necessary for crime-free independent life, systematic review of the potential rewards and costs of criminal activity, neutralization (denial of injury), denial of responsibility (appeal to higher loyalties), and rationalization of crime (moral evaluation of crime, denial of the victim). Criminal attitude is certainly a construct that encompasses many different dimensions. The next section presents the characteristics of the comprehensive construct of criminal attitude.

2.3   CRIMINAL ATTITUDE: CONCEPT AND CHARACTERISTICS

Criminal attitude has been used interchangeably or together with values, beliefs, cognitions, orientation, and thinking styles. The adjectives used next to attitude, beliefs, and values are also diverse, albeit not completely different semantically, including antisocial, procriminal, immoral, and criminal. Not only in theories but also in empirical including psychometric studies on

criminal attitude scales, criminal attitude has been used as a multi-dimensional construct subsuming concepts including, but not limited to, neutralization and rationalization, attitude toward justice system, attitude toward violence, antisocial intent, criminal self-concept or identification with criminal others, and pride or shame in criminal activity. Concept and characteristics of criminal attitudes are described below, followed by the next section (2.4) summarizing different dimensions of criminal attitude as appearing in different scales.

Criminal attitude is a dynamic risk factor of "intermediate variability" (Andrews & Bonta, 1998; Brown, 2002, p.4). Dynamic risk factors are changeable in their nature, so changes occurring through interventions can positively affect ex-offender's post-release success. They can be defined as "ones in which assessments of change (re-tests) possess a level of predictive criterion validity that is incremental to the criterion validity of pretests" (Andrews 1990, p.31). It can be translated into statistical terms as re-assessed attitude predicts recidivism after initially assessed attitude has been partialled out, that is, controlled (Campbell & Kenny, 1999). Meanwhile, the changeability of the attitude was demonstrated by experiments (Andrews, 1980; Andrews, Young, Wormith, Searle, & Kouri, 1973). Prosocial contacts and structured discussion of law, crimes, and the role of criminal justice personnel between offenders and prosocial volunteers resulted in reduced criminal attitude among offenders in terms of the tolerance of law violation and identification with criminal others.

Criminal attitude is criminogenic. It is not only dynamic and changeable by treatment and intervention but also, more importantly from the perspective of recidivism prevention, directly related to criminal behavior. Changes brought by intervention lead directly to reduction of recidivism risks while non-criminogenic needs are "treatment targets that are not related to criminal behavior but require intervention nonetheless" (Brown, 1998). Criminal attitude is

critical because it is directly linked to one of the three essential components postulated in the risk-need-responsivity model – responsivity (Andrews, Bonta, & Hoge, 1990). The model delineates the principles of effective treatment programs for preventing recidivism of offenders. It posits that offenders at high risks should be first targeted to the most effectiveness (risk), and that treatment programs should accurately address offenders' needs (need), and finally that treatment programs become effective only when the target populations are ready to respond to the incoming positive influence (responsivity). Criminal attitude is criminogenic since it directly concerns the responsivity of target offenders.

Criminal attitude is multidimensional. Various conceptual dimensions have been defined, operationalized, and measured under the umbrella concept of criminal attitude. The terminology is also as diverse as dimensions contained in the construct. Multiple scales for criminal attitude exist, and each scale includes different dimensions. Furthermore, each dimension of attitude construct has shown different relationship patterns, in terms of the characteristics or the degree of associations, with various outcome measures among adult offenders – recidivism measured as supervision violation, rearrest, reconviction, and reincarceration (Mills & Kroner, 1997; Simourd & Olver, 2002) and prison misconducts (Kroner & Mills, 1998; Mills, Kroner, & Forth, 2002; Simourd & Olver, 2002). Next section presents various scales of criminal attitudes developed, validated, and used in recent decades. Each scale embraces multiple dimensions of attitude with substantial overlaps over each other. Some have theoretical underpinnings and others not (Simourd & Olver, 2002). Further, there are scales addressing the "how" dimension (attitude/thinking process) and others addressing "what" dimension (attitude/thinking content). This summary provides a synthetic idea of criminal attitude dimensions accepted among researchers of criminal attitude.

2.4   CRIMINAL ATTITUDE: MEASUREMENT AND DIMENSIONS

Criminal thinking styles/processes (Yochelson and Samenow, 1976, 1977) were expanded and

revised by Walters (1990, 1995, 2002, 2003), and developed into what has become the most

influential model of criminal thinking process (Mandracchia et al., 2007). It consists of 32 items

of eight cognitive patterns: (1) mollification: rationalizing behavior by placing blame on external

factors, (2) cutoff: quickly disregarding thoughts that deter from crime, (3) entitlement:

permitting criminal behavior by a special privileged self-attribution, (4) power orientation: the

need for utmost control over the environment and others, (5) sentimentality: doing something

good to offset one's negative feelings about one's behavior, (6) superoptimism: confidence in

one's ability to evade the typical negative outcome of crime, (7) cognitive indolence: using

mental "short cuts" instead of using more developed and thoughtful mental strategies, and (8)

discontinuity: lack of perseverance and reliability in both behavior and thinking (Walters, 2001).

These eight patterns represent thinking *process* rather than thinking content (Simourd & Olver,

2002). The *Psychological Inventory of Criminal Thinking Styles* (PICTS) reflects the eight

aspects of thinking styles, and this instrument has been acknowledged as the most notable scale

for criminal thinking styles (Walters, 2001). Subsequently, it was expanded and improved by the

Measure of Offender Thinking Styles (MOTS; Mandracchia et al., 2007). The MOTS was

developed and validated with an additional dimension of noncriminal maladaptive thinking.

Tangney, Mashek, and Stuewig (2007) defined *criminogenic beliefs* in a very similar way

to criminal thinking styles, as "a distinct set of beliefs – (im)moral cognitions – that serve to

rationalize and perpetuate criminal activity" (p. 5). They developed the *Criminogenic Beliefs and*

Assumptions Scale (CBAS) to assess the criminogenic beliefs tapping on to the five dimensions:

(1) failure to accept responsibility (e.g. "Bad childhood experiences are partly to blame for my

current situation"), which seems to resemble the mollification in the PICTS, (2) notions of entitlement (e.g. "When I want something, I expect people to deliver"), which appear not identical to the PICTS' entitlement, but seems to be a mixture of entitlement and power orientation, (3) negative attitudes toward authority (e.g. "People in positions of authority generally take advantage of others"), (4) short-term orientation (e.g. "The future is unpredictable and there is no point planning for it"), which may be related to the PICTS' cognitive indolence and discontinuity, and (5) insensitivity to impact of crime (e.g. "A theft is all right as long as the victim is not physically injured"), which may overlap the PICTS' cutoff. Although the criminogenic beliefs overall have many conceptual dimensions in common with criminal thinking styles, it appears that the former is more focused on thinking processes and the latter partly on contents as well. The CBAS' uniqueness was claimed as its incorporation of restorative justice theory, especially in the fifth dimension of the scale, insensitivity to impact of crime (Tangney et al.).

Frequently used scales of criminal attitude in the last decade are *Criminal Sentiments Scale - Modified (CSS-M*; Shields & Simourd, 1991), *Pride In Delinquency* (PID; Shields & Whitehall, 1991), and *Measures of Criminal Attitudes and Associates* (MCAA; Mills & Kroner, 1999). Each scale is multi-item and multi-dimensional, and focused on attitude content, not processes. The CSS-M (Shield & Simourd) is the modified version of the original *Criminal Sentiment Scale* (CSS; Gendreau, Grant, Leipciger, & Collins, 1979). The modified scale, CSS-M, has the "same number, flavor of items, and subscales" after modifications such as wording clarification and scoring scheme alteration (Simourd & van de Ven, 1999, p. 93). 41 items are factored into three dimensions: (1) 25 items of the attitudes yoward the LCP, that is, the law (e.g. "pretty well all laws deserve our respect"), the court (e.g. "almost any jury can be fixed"), and

the police (e.g. "the police are honest"), (2) 10 items of the tolerance for law violations (TLV; e.g. "a hungry man has the right to steal"), and (3) 6 items of the identification with criminal others (ICO; e.g. "people who have broken the law have the same sorts of ideas about life as me"). The tolerance for law violations appears to measure the similar concept to neutralization (Sykes & Matza, 1957), rationalization or mollification (Walters, 2001), and responsibility avoidance (Tangney et al., 2007).

The *Pride In Delinquency Scale* (PID) was developed to complement the CSS-M (Shields & Whitehall, 1991). The PID assesses an individual's feeling of shame or pride about being involved in each of 10 kinds of criminal behaviors. Each behavior is assessed in terms of whether respondents would be proud or ashamed of committing the behavior. As Simourd and van de Ven (1999) stated, the CSS-M may relate to the "attitude toward behavior" component of the Azjen & Fishbein's (1980) attitude-behavior model, whereas the PID to the "subjective norm" component.

The *Measures of Criminal Attitudes and Associates* (MCAA) was developed to fill a gap in the literature, the absence of "a consistent self-report method of collecting and quantifying information on criminal associates," with the acknowledgement of the strong relationship among criminal associates, attitudes, and behavior (Mills, Kroner, & Hemmati, 2004, p. 720). This scale included criminal associates as a factor. Part A of this scale quantitatively assesses criminal associates of respondents (number of criminal friends), and Part B measures four dimensions of criminal attitudes. In Part A, respondents are asked to recall four adults with whom they spend the most of their free time, and to answer the degree of each of the four friends' criminal involvement based on the four following questions: (1) Has this person ever committed a crime; (2) Does this person have a criminal record; (3) Has this person ever been to jail; (4) Has this

person tried to involve you in a crime? Any friends who receive one or more yes to these four questions count into the respondent's criminal associate. Four dimensions of criminal attitudes measured in Part B of the MCAA are (1) 12 items of the tolerance toward violence (e.g. "It's all right to fight someone if they stole from you."), (2) 12 items of the entitlement (e.g. "Taking what is owed you is not really stealing" and "A lack of money should not stop you from getting what you want"), (3) 12 items of the antisocial intent (e.g. "I could see myself lying to the police" and "I would run a scam if I could get away with it"), and (4) 10 items of the associates (e.g. "I always feel welcome around criminal friends" and "Most of my friends don't have criminal records."). The last factor of associates is similar to the fifth factor of the CSS-M, the identification with criminal others (Mills et al.). Moreover, entitlement dimension sounds similar to the tolerance for law violations dimension of the CSS-M, and has been viewed as a criminal thinking style, especially mollification (Walters & White, 1989).

Various dimensions of the criminal attitude construct have been captured, conceptualized, and operationalized in different measurement scales, and many dimensions seem to have overlaps in concept. Even the dimensions assessing thinking processes as in the PICTS and the MOTS and those assessing contents as in other scales are overlapped in some part. As a conceptual synthesis, several unique dimensions of criminal attitude appear to have been studied: (1) Mollification, rationalization, and avoidance of responsibility, (2) cutoff and insensitivity to impact of crime, (3) entitlement, power orientation, and notions of entitlement, (4) sentimentality, (5) superoptimism and antisocial intent (6) cognitive indolence, discontinuity, and short-term orientation, (7) negative attitude toward authority, law, court, and police, (8) identification with criminal others and associates, and (9) expected negative and positive consequences of crimes. Although each of these dimensions has a different concept, they all measure a part of the

construct, criminal attitude, that is, attitudes supportive of criminal behavior. To reflect on this, Andrews and Bonta (1998) stated, "Some theorists speak of "behavioral intentions," others of "self-efficacy beliefs," the "algebraic solution" or "personal choice"; some use phrases such as "the balance of rewards and costs." It remains to be seen whether operational distinctions among assessments of these variables may be differentiated in construct validity studies. We expect not; the main problem for the field may be to settle on a common vocabulary" (p. 146). It is true that all these dimensions of criminal attitude should not diverge in predicting criminal behavior as Andrews and Bonta (1998) expected. However, what previous studies suggest is that different dimensions may have different predictive power for criminal behavior depending on diverse groups of offenders divided by race, age, and offense types as the following section summarizes.

2.5   PREVIOUS STUDIES IN DIVERSE OFFENDER GROUPS

Studies on the effect of criminal attitude on recidivism have mostly conducted in the form of psychometric studies where the criterion validity of criminal attitude scales was examined with the criterion being recidivism. Although study samples were relatively homogeneous, composed mostly of Canadian federal prison inmates, the findings are inconsistent not only in the primary relationship between attitude and recidivism (main effect) but also in the relationship patterns according to certain grouping variables including offense types (interaction effect). Recent studies are summarized, followed by the next section stating the limitations of previous studies and the contributions where this study counteracts the limitations.

Simourd and van de Ven (1999) reported in their two-wave study with unspecified follow-up period among 141 federal adult male inmates with 58% being White (81 person-based

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violent versus 54 property-based nonviolent offenders) that the CSS-M was significantly correlated with recidivism – rearrest and reincarceration[1] among violent offenders. Among nonviolent offenders, in contrast, the PID was successful in recidivism prediction. Findings from multivariate regression with rearrest as the outcome variable also indicated that the CSS-M has the stronger ability to predict recidivism among violent offenders than the PID, and vice versa among nonviolent offenders. Further, they also made a postdiction of the number of prior convictions, incarcerations, institutional misconducts, and different offense types, and reported that prior criminal records were also more strongly correlated with the CSS-M among violent offenders while they being so with the PID among nonviolent offenders. In addition, nonviolent offenders had higher criminal attitudes than violent offenders while age was not related with attitudes.

Mills and Kroner (1997) divided the violent offender group into sex offenders (n = 65) and general violent offenders (n = 65) among male federal inmates in Canada with over 90% of the sample being White. The follow-up period ranged from 1 to 1,147 days with the mean of 16 months. They measured criminal attitude with the CSS, and in both sex- and violent offender groups, no CSS dimensions as well as the CSS total score were correlated with recidivism measured by rearrest on new charges and parole violations. In postdiction analysis where prior convictions and incarcerations were correlated with the CSS dimensions, in contrast, the CSS dimensions showed strong correlations with prior incarcerations among sex offenders. However, prior convictions were related only with ICO (identification with criminal others) dimension. Among general violent offenders, the only correlation pair with statistical significance was between the ICO and prior convictions. In addition, sex offenders had a lower score of criminal attitude than violent offenders. In a subsequent study by the authors (Kroner & Mills, 1998), they

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[1] Reconviction and parole violation were not predicted with statistical significance.

reframed the factor structure of the CSS into a two-factor solution through principal component analysis with factor 1 and factor 2 converged into the concept of, respectively, the contempt for criminal justice personnel and the disrespect for conventional law. The restructuring was speculated to have occurred according to response patterns of items (true-keyed versus false-keyed items). Prediction of recidivism was not different from their previous study where the original structure of the CSS was used – no CSS dimensions were correlated with rearrest on new charges. One finding to note is that age was significantly correlated with the factor 1 (r = .20). Older participants scored higher in the contempt for criminal justice system in discordance with Simourd and van de Ven (1999) where age was not related to attitude (CSS-M) in any offender groups (violent and nonviolent).

Simourd and Olver (2002) correlated the CSS-M with recidivism measures including supervision violation, rearrest, violent rearrest, reconviction, and reincarceration among 207[2] Canadian adult male inmates in federal custody of medium-security. 59% of the total sample was White and 91% repeat offender, and mostly sentenced for violent offenses with the distinction between sex- and general violent offenders being unclear. The CSS-M was additionally modified through exploratory and confirmatory factor analysis. The modified CSS-M was significantly correlated with recidivism except reconviction. The LCP (attitude toward law, court, and police) dimension was significantly correlated with all recidivism measures except reconviction, the TLV (tolerance of law violation) dimension was so except supervision violation and reconviction,

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[2] Total sample size was 381, and the number available for recidivism analysis was limited to 207 subjects for various reasons including many being still in custody.

and the ISO was correlated with all (including postdictive analysis of total number of prior convictions and different offenses) but violent rearrest and reconviction[3].

Mills et al. (2004) followed up 144 adult male inmates in Canadian federal institutions with the follow-up period ranging from 1 to 1,525 days ($M = 610$). About 80% of the sample was White. The correlation analysis and the Receiver Operating Characteristics (ROC) analysis with Area Under the Curve (AUC) were conducted to examine the relationship between criminal attitude measured by the MCAA and recidivism measured by new charges. Violent and general recidivism was measured separately with general recidivism including all recidivism. Findings suggest that all dimensions of the MCAA are correlated with both general and violent recidivism except that the dimension of the tolerance toward violence is correlated only with violent recidivism. Authors stated that asssociates dimension is most strongly related to both general and violent recidivism, but it is based merely on comparisons of correlation coefficients. In further logistic analysis to examine whether the MCAA explains recidivism over and above the General Statistical Information on Recidivism, which is an actuarial instrument encompassing vast areas of risk factors to predict recidivism, the dimension of the tolerance toward violence added the explained variance of violent recidivism over the GSIR. However, none of the MCAA dimensions were successful in this aspect for predicting general recidivism.

While most studies on criminal attitude are conducted in Canada, Tangney et al. (2007) examined psychological risk factors in explaining 1-year post-release recidivism among US jail inmates. Criminogenic beliefs assessed at release were reported to be significantly related to recidivism measured by self-report of detected and undetected crimes. In addition, criminogenic

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[3] The LCP dimension was broken down into two factors based on exploratory and confirmatory factor analysis: (1) General Criminal Sentiments and (2) Adversarial Law Beliefs. The TLV dimension was renamed into Criminal Subcultural Beliefs and the ICO into Criminal Self-Concept after reduction of items based on factor analysis.

beliefs at intake predicted official reports of inmate misconducts. The analysis method was not specified. They also reported that some inmates showed increased level of criminogenic beliefs at release compared to intake as a result of 'prisonization' while others presented a decrease.

2.6   ADVANCEMENT OF THIS STUDY FOR LIMITATIONS OF PREVIOUS STUDIES

There are a few limitations and implications that previous studies suggest, and this study reflects on the limitations and makes improvement methodologically as well as substantively. Following is point-by-point description of the limitations of prior studies and improvement made in this study. First, the prediction of recidivism by criminal attitude has mostly been conducted through correlation analysis. Multivariate (logistic) regressions were employed only when incremental explanation of attitudinal measures in recidivism over and above general actuarial instrument was examined (e.g. Mills et al., 2004; Simourd & van de Ven, 1999). Furthermore, the comparison of predictive or postdictive ability of attitude measures (CSS-M or PID) or of varying dimensions of a scale was made based on absolute comparison of correlation coefficients or their statistical significance (e.g. Simourd & van de Ven, 1999). The significance of differences in correlation coefficients should be determined by separate statistical calculation. This study conducts multivariate logistic regression to predict recidivism by criminal attitude and further plans to perform the general structural equation modeling (GSEM) to examine the longitudinal model involving criminal attitude, criminal associates, and recidivism.

Second, the moderator analysis is hardly found in prior literature. Higher criminal attitude was reported among nonviolent than violent offenders (Simourd & van de Ven, 1999) and

among general violent than sex offenders (Mills & Kroner, 1997), but no information is available on differential prediction of recidivism by criminal attitude depending on different groups according to offense types, age, and race. Such information will contribute to the improved prediction and prevention of recidivism among different groups of offenders. In fact, let alone moderator analysis, the majority of studies did not even report the information regarding sample composition. According to the meta-analysis of 32 studies on the association between criminal attitudes and criminal behavior, including prison misconduct and recidivism as broadly defined to encompass technical parole violations, arrests, charges, and reconvictions, 59% of the studies did not report offender's age and 72% ethnic origin (Law, 1998). Mills and Kroner (1997) implied the possibility of moderating effect in operation, stating "the CSS does not predict recidivism among the homogeneous criminal population represented by federal incarcerates" (p.404). Although he recommended applying the CSS to different, more heterogeneous populations than the federal inmates, diversity already present in federal inmates, in terms of race and age, may first need to be considered for moderator analysis. In their study, over 90% of the sample was White male. This study addresses this missing information and conduct moderator analysis, albeit from exploratory perspective, by including interaction terms between criminal attitude and grouping variables in multivariate logistic regression and also performing the multi-sample structural equation modeling (MSES) for the longitudinal model of criminal attitude, criminal associates, and recidivism. Age, race, and offense type (violent vs. nonviolent) will be entered as moderators.

Third, prior studies have either a cross-sectional or a two-wave longitudinal design. Given that the attitude is a dynamic variable supposed to change, and that the change should be meaningfully related to recidivism (Andrews & Bonta, 1998; Brown, 2002), the effect of

criminal attitude needs to be examined in an at least three-wave longitudinal design so that any changes in attitude between Time 1and Time 2 can be reflected in the prediction of recidivism measured at Time 3. This study plans to perform three-wave longitudinal analysis with variables assessed at 30-45 days post-release (Time 1), six to eight months after Time 1 interview (Time 2), and six to eight months after Time 2 interview (Time 3). Criminal attitude at Time 1 will be controlled in a model where attitude at Time 2 predicts recidivism so that attitude change can be considered in recidivism prediction.

Fourth, previous two-wave studies assessed criminal attitude mostly at intake rather than at release or at immediate post-release with the outcome – recidivism – being measured at Time 2. That is, Time 1 assessment was done at intake into institution. The issue is that attitude can change while offenders are incarcerated. Differential association theory (Sutherland, 1947; Sutherland & Cressey, 1978) postulates that criminal attitudes are learned through interactive communications with criminal others, and studies showed that incarceration provided a vast preponderance of opportunities and processes for criminal learning (e.g. Buehler, Patterson, & Furniss, 1966). On the other hand, Tangney et al. (2007) suggested that exposure to jail programs in jail custody may bring the effect of reduction in criminal attitude. Therefore, criminal attitude assessed at intake is very likely different from the attitude at release or at immediate post-release regardless of the direction of change. While attitude at intake should be useful in predicting institutional misconducts and planning for services and treatment provided in custody, attitude at release or at immediate post-release should be useful for predicting recidivism and planning for community-based services and supervision. Mills and Kroner (1997) reflects that their finding of less potent predictive ability of attitude scales may be partly attributed to the assessment period

of the attitude variable, measured at intake. This study uses the initial attitude variable measured at Time 1 – immediate (about a month) post-release.

Fifth, most prior studies have been conducted with federal inmate samples in Canada, and the majority of the sample consists of White male inmates. Federally incarcerated populations in Canada are mostly convicted with serious offenses with two or more years of sentences (Simourd & Olver, 2002). In the same vein, study samples mostly consist of violent and sex offenders, and nonviolent offenders have rarely been studied. This study is able to diversify samples in this line of research. Participants of this study are composed of jail ex-inmates in the US, and both violent and nonviolent offenders. The sample is also equally distributed on race (Black vs. White).

Sixth, findings diverge according to recidivism measures employed in studies. Criminal attitudes (CSS-M and PID) were correlated with rearrest and reincarceration but not with reconviction (Mills et al., 2004; Mills & Kroner, 1997; Simourd & Olver, 2002; Simourd & van de Ven, 1999). Parole violations are related to criminal attitude in some studies but not in others, depending on dimensions of attitude (Mills & Kroner, 1997; Simourd & Olver, 2002). Further, violent rearrest was not predicted by "measures of generic criminal attitudes," that is, the CSS-M and the PID (Simourd and van de Ven, 1999, p. 93), but a dimension specifically measuring attitudes toward violence, that is, "tolerance toward violence" in the MCAA, was related to violent recidivism (Mills et al., 2004). Attitude-recidivism relationships vary according to measures of recidivism as well as dimensions of attitude variable. Since this study measures recidivism as rearrest to jail, future studies with diversified recidivism measurements are needed.

2.7   JUSTIFICATION OF TWO ADDITIONAL ATTITUDE DIMENSIONS

This study introduces two additional dimensions of criminal attitude. One is named *autosuggestion* measured from a single indicator, *"If you thought you could do it without getting caught, how likely is it that you would commit a crime in the next six months?"* This dimension may have a conceptual portion overlapping with antisocial intent of the MCAA, but is not to be equated with it because this question, unlike items for antisocial intent of the MCAA, does not necessarily ask about the intention, but the likelihood of the reoffending. One's positive response may indicate his/her intention, but simultaneously it can indicate his/her mere expectation. If not intention, the positive expectation may be incurred from his/her perception of inability to control the outcome. Perception of control over outcomes is a major determinant of motivation and performance (See Stipek & Weisz, 1981, for a review). Participants may expect their future failure based on their perception that they do not have the ability to control over situations and circumstances leading to the failure, reoffending. The perception may arise from self-disappointment/loss of self-efficacy and/or expected circumstantial pressure. It should be a limitation of the indicator that the distinction between the two different implications cannot be made. However, it warrants the investigation of its relationship to recidivism in either case, whether the indicator measures the antisocial intent or it also contains and is able to measure the perceived uncontrollability. In the former case, it is worthwhile for other reasons that make this study significant such as studying important factors among jail inmates and exploring moderations by grouping variables using a rigorous statistical method with longitudinal data. In the latter case, in addition to the list that makes significance, it is also worth examination because this dimension has not been considered in predicting criminal behavior. Whatever the reason for

anticipating future criminal activity may be, this question measures the likelihood that participants gauges as for their future crime.

The other dimension of criminal attitude in this study is the attitude toward community-based services. Other entities with which offenders have direct relationships and should be involved – police, court, and law, have been studied as objects of offenders' attitude in relation to recidivism. However, community-based services have not received attention in research among ex-inmates. This dimension is of importance especially among jail ex-inmates since rehabilitation efforts to assist jail inmates in reintegration need to be exerted mostly by community service organizations. As a matter of fact, the majority of jail inmates are already clients of social service agencies in the community (Solomon, 2008). Therefore, it makes sense that treatment and rehabilitation approach should be seamlessly accomplished from community to jail and from jail to community by community-based services. Simply put, community-based services are entities that are closely associated with reintegration of jail ex-inmates, and much more so than prison counterparts. Therefore, attitudes that jail ex-inmates have toward community-based services make a critical dimension of their criminal attitudes.

2.8   SUMMARY

Criminal attitude is a dynamic risk factor of "intermediated variability" (Brown, 2002, p. 4) and has been substantiated theoretically and empirically as an important predictor of criminal behavior, including recidivism. Since the first recognition of its importance by Gluek and Gluek (1950), criminal attitude has been employed as a central concept in control theory (Hirschi, 1969), general theory of crime (Gottfredson & Hirschi, 1990), and even in sociological theories

such as general strain theory (Agnew, 1992, 1995) and subcultural theories (Sykes & Matza, 1957). Differential association theory (Sutherland, 1947; Sutherland & Cressey, 1978) emphasizes criminal attitude in close relation with criminal associates, positing that criminal associates become not only a source of learning criminal attitude but also a reinforcement and a motive for criminal activity. This theoretical argument fits well with the well-validated social psychological theories, the theory of reasoned action (Ajzen & Fishbein, 1980) and the social learning theory (Bandura, 1973, 1977). Ultimately, Andrews and Bonta (1998) stressed criminal attitude and criminal associates as the two of the "big four" predictors for criminal behavior.

The criminal attitude has been used as a multi-dimensional construct in theories as well as in empirical studies, subsuming many concepts including, but not limited to, neutralization and rationalization, attitude toward justice system, attitude toward violence, antisocial intent, criminal self-concept or identification with criminal others, and pride or shame in criminal activity. Terminology is inconsistent, and criminal, procriminal, and antisocial attitude, cognition, and orientations have been used in various studies. Criminal attitude scales embrace multiple dimensions with substantial overlaps over each other. Some have theoretical underpinnings and others not (Simourd & Olver, 2002), and some address the "how" dimension (attitude/thinking process) and others "what" dimension (attitude/thinking content). Based on a conceptual synthesis, however, several unique dimensions appear to have been captured: (1) Mollification, rationalization, and avoidance of responsibility, (2) cutoff and insensitivity to impact of crime, (3) entitlement, power orientation, and notions of entitlement, (4) sentimentality, (5) superoptimism and antisocial intent, (6) cognitive indolence, discontinuity, and short-term orientation, (7) negative attitude toward authority, law, court, and police, (8) identification with criminal others, associates, and (9) expected negative and positive consequences of crimes. Although each of

these dimensions has a different concept, they all measure a part of the construct, criminal attitude, that is, attitudes supportive of criminal behavior.

Studies on the effect of criminal attitude on recidivism have mostly conducted in the form of psychometric studies where the criterion validity of criminal attitude scales was examined with the criterion being recidivism. Even though study samples were relatively homogeneous, composed mostly of Canadian federal prison inmates, the findings are inconsistent not only in the primary relationship between attitude and recidivism (main effect) but also in the relationship patterns according to certain grouping variables including offense types (interaction effect). Review of previous studies revealed their limitations, on which this study will make improvements both methodologically and substantively (See section 2.6). This study uses two criminal attitude variables: (1) autosuggestion conceptualized ex-offender's expectation of their future crime, and (2) attitude toward community-based services. The former is assumed to be able to measure ex-inmates' expectation of future crime based on self-disappointment and perceived uncontrollability over the outcome, the departure from criminal behavior. They expect their failure as a result of losing the motivation to change. The latter is regarded as a new important dimension of criminal attitude, particularly among jail ex-inmates because of the fact that most rehabilitative efforts for jail inmates, treatment and programs, need to be made by community-based services because jail stays are usually short, more so in comparison to prison stays.

3.0   METHODOLOGY

3.1   DATA

The data source of this study is the evaluation project of the Allegheny County Jail Collaborative.[4] Allegheny County Jail (ACJ in the following) is an urban detention and incarceration facility in Pittsburgh located in a south western region of Pennsylvania State (Allegheny County Bureau of Corrections, 2007). During 2006, admissions totaled 21,000 and often housed more than 2,000 inmates a day. ACJ implemented the ACJ Collaborative under which various social service providers and government agencies, including the Allegheny County Department of Human Services (DHS) and the Allegheny County Health Department (ACHD), as well as Allegheny County Jail combine their services, both in-jail and community-based, and provide them to (ex-) inmates in a non-duplicative integrative way with the goal to promote reintegration and reduce recidivism. The dataset to be analyzed for this study was collected as a part of its evaluation project to document and evaluate ex-inmates' reintegration process and outcome, ultimately recidivism.

Recruitment of participants began in early 2005 and was completed as of June 1, 2007. Participants who had contacted the research team with interest, based on the information given on flyers, made their participation decision voluntarily after a follow-up orientation session. Selection criteria for participant's eligibility were twofold: (1) Inmates' scheduled release date

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[4] This project was conducted by the School of Social Work University of Pittsburgh (PI: Dr. Hide Yamatani).

after at least 45 days of confinement; (2) whether they would be residing in Pittsburgh area after release. Participants enrolled in the study by signing a consent form were contacted after release. Each participant was to be interviewed post-release three times at a maximum. The first post-release interview took place between 30 to 45 days after release (Time 1). A second interview was conducted between six to eight months after release (Time 2), and a third and final post-release interview was conducted six to eight months after the second interview (Time 3). Since the recruitment continued until June 1, 2007 and interviews of enrolled subjects were terminated on June 30 of the same year, some participants could not have the full time span for all three interviews (right censored). It is mostly because of right censoring originated from study procedure, not participants' attrition, that the substantial number of participants has not completed all three interviews. As Table 1 shows, of 301 participants in total, 76 (25.2%) participants were interviewed at Time 1 and Time 2 only and 69 (22.9%) only at Time 1.

3.2   STUDY SAMPLE

The final study sample was determined based on several standards as described below. As a consequence, the final sample consists of 216 participants.

The longitudinal aspect of the data analysis requires two or more interview points. It is ideal to have data from three interview points for the longitudinal property to be complete in this study because three focal variables – criminal attitudes, criminal associates, and recidivism -- are to be measured at different time points. However, only 41.9% ($n = 126$) of the total participants retain the data from three time points mostly for the reason of right censoring as stated above. Table 1 presents the number and the percentage of each group of participants with different

availability of data based on interview periods. About a third ($n = 101$) of the participants were interviewed at two time points only: 25.2% ($n = 76$) at Time 1 and Time 2; 7.3% ($n = 22$) at Time 1 and Time 3; 1.0% ($n = 3$) at Time 2 and Time 3. About a quarter participants were interviewed only one time after release: 22.9% ($n = 69$) at Time 1 and 1.7% ($n = 5$) at Time 2.

Table 1. Data structure: Availability per interview period

			Data Availability	At jail at T1	At jail at T2	At jail at T3	Study Sample	Final Sample[2]
T	1 2 3		126 (41.9)	0	2	14	126	125
T	1 2		76 (25.2)	1	23	-	75[1]	70
T	1	3	22 (7.3)	0	-	9	22	21
T	2 3		3 (1.0)	-	0	0	Excluded	-
T	1		69 (22.9)	18	-	-	Excluded	-
T	2		5 (1.7)	-	3	-	Excluded	-
T		3	0 (0.0)	-	-	-	-	-
	Total		301	19	28	23	223	216

[1] One person whose Time 1 interview took place at jail was excluded from the sample due to the IRB prohibition of the use of data collected at jail.
[2] The final sample of 216 was generated by excluding six cases with recidivism measure missing plus one case with race information missing.

Data were analyzed longitudinally among participants interviewed at two time points as well by examining pairs of relationships. Criminal associates measured at Time 2 were regressed on criminal attitude of Time 1, and criminal attitude at Time 2 was regressed on criminal associates at Time 1. Moreover, criminal attitude and criminal associates measured at Time 1 were entered to predict recidivism over Time 2 and Time 3. However, twice-interviewed participants with Time 1 data missing ($n = 3$), that is, those with Time 2 and Time 3 data only, was excluded from the analyses. In order to examine the effect of attitude at release or immediately following release, it is important to measure attitude at time as proximal to release

as possible because of its nature to change over time (Mills et al., 2004). Since this study aims to provide information on the possible effect that attitude treatment provided in jail or in community at immediate post-release on future criminal offending, it is important to have the attitude variable measured at Time 1, immediate post-release.

Participants interviewed only at one point could not be included in analyses even cross-sectionally because it should lead to a significant bias in findings for the following reason. Among the 74 individuals with a single interview, 28.4% ($n = 21$) had the interview in the jail setting as a result of their rearrest. Analysis of the data collected from jail was prohibited by the IRB, and therefore cross-sectional analyses of those 21 participants are not to be conducted. Deletion of such data – single time data collected at the jail – equals to the deletion of almost the half of the recidivists among single time interviewees, which would result in a biased estimation of the effects. Additionally, a participant whose first interview at Time 1 occurred at jail will also be dropped from the study because of the IRB prohibition of data use collected in jail.

In sum, three participants, interviewed at Time 2 and Time 3 (in the fourth row of Table 1), were deleted since attitude at Time 1 was not available. The other 74 participants (in the fifth and the sixth rows of Table 1) were eradicated from the study sample since they only have the information from a single time interview, either Time 1 or Time 2, and IRB regulation would bring an estimation bias as explained previously. Consequently, the first three rows of Table 1 represent the sample of this study. Among the 224 available cases, a single participant whose interview took place at jail at Time 1 was excluded because attitude at Time 1, a focal variable, was unable to be analyzed due to the IRB regulation. Finally, six cases with recidivism variable missing and one with race information missing (a total of seven) were also excluded, resulting in the final sample to be 216 (See Section 3.6.4 on page 69 for other variables with missing cases).

3.3 VARIABLES

3.3.1 Recidivism

This study measured the first recidivism after release from two indicators. Participants were asked at each interview period to answer *yes* or *no* to the question, *"Have you been back to jail since a member of our team met with you in jail for the Consent/Locator Form interview?"* Individuals with a positive response were counted as recidivists at each time point. The other indicator is whether individuals were at jail or in the community at each interview point. Individuals interviewed at jail were also recorded as recidivists for each time point in addition to those who reported to have been back to jail since release.

Recidivism at Time 2 includes (1) individuals at jail at Time 2 ($n = 25$) and (2) individuals who reported to have been back to jail between Time 1 and Time 2 ($n = 37$). Participants with a *yes* response both at Time 1 and Time 2 were determined as to their time of reoffending by comparing their reported recent release date and Time 1 interview date. The occurrence of the Time 1 interview prior to recent release means that their recidivism had happened between interviews at Time 1 and Time 2, and those whose recidivism happened between Time 1 and Time 2 were counted as recidivists at Time 2. Recidivism at Time 3 was calculated in the same way. It includes (1) individuals at jail at Time 3 ($n = 23$) and (2) individuals who have been to jail anytime between Time 1 and Time 3 ($n = 35$). Recidivists at Time 3, defined as individuals who went back to jail any time between Time 1 and Time 3, should include those who have returned to the jail by Time 2 although their Time 3 data are not available (as presented in the second row of Table 2). Accordingly, as shown in the second and the third column of Table 2, the recidivism rate as of Time 2 and Time 3, respectively, was 32.3%

($n = 62$) and 43.1% ($n = 93$).[5] Recidivism rate at Time 2 (second column of Table 2) is likely to be underestimated because recidivism records as of Time 2 are not known for those participants who were not interviewed at Time 2.

Table 2. Recidivism rate ($N = 216$)

	T2 recidivism[1]	T3 (or T0) recidivism[2]	T3 recidivism[3]
T 1 2 3 ($n = 125$)	22.1% ($n = 27$)	37.6% ($n = 47$)	20% ($n = 19$)
T 1 2 ($n = 70$)	50.0% ($n = 35$)	50.0% ($n = 35$)	-
T 1 3 ($n = 21$)	-	52.4% ($n = 11$)	-
Total ($N = 216$)	32.3% ($n = 62$)	43.1% ($n = 93$)	20% ($n = 19$)

[1] Occurrence between T1 and T2
[2] Occurrence between T1 and T3: This recidivism measure was used as the outcome variable predicted by factors at Time 1. This was named as T0 recidivism, indicating that it was measured over Time 2 and Time 3.
[3] Occurrence between T2 and T3

In regard to recidivism at Time 3, the necessity to distinguish recidivism that occurred between Time 2 and Time 3 from recidivism between Time 1 and Time 3 arises only for participants with three interviews, and they are the only group that makes the distinction possible. At the same time, these are also the only group of participants that makes it possible to conduct the three time point longitudinal analysis. For the longitudinal analysis with three time points to be possible, participants need to have survived until Time 2 and any recidivism should occur between Time 2 and Time 3. Since Time 1 and Time 2 should measure predictors of recidivism – criminal attitude and criminal associates, inclusion of recidivists as of Time 2 would violate the validity of the analysis regressing recidivism as a final outcome on the two predictors (one as an IV and the other as a mediator). Among individuals interviewed at three time points ($n = 125$),

[5] Missing cases account for 4.0% ($n = 8$) for Time 2 recidivism and 1.4% ($n = 2$) for Time 3 recidivism.

the number of those who had not recidivated until Time 2 was 95. The recidivism rate among these participants was 20% ($n = 19$), which is likely to be underestimated because such recidivists are not known among participants with only two interviews.

3.3.2   Criminal attitude

Criminal attitude was assessed in two measurements. First, criminal attitude conceptualized as *autosuggestion* was measured by a single indicator. Responses to the question, *"If you thought you could do it without getting caught, how likely is it that you would commit a crime in the next six months?"* were coded on a 4-point Likert scale: *Very likely '1,' Likely '2,' Unlikely '3,' and Very unlikely '4.'* This variable was considered as continuous overall, but it was also entered as an ordinal variable in analysis as determined appropriate and necessary. It was reverse-coded so that higher scores indicated stronger criminal autosuggestion, and ranged from 1 to 4. This item is originally from the scale of Intention to Commit Crime/Use Drugs that has four items (Paternoster, 1983). The original scale asks two questions for each area of crime and drugs with two different assumptions – not being caught and being arrested for it. The Urban Institute used this scale to examine reentry processes of ex-prisoners (Visher, La Vigne, & Travis, 2004), and the ACJ Collaborative evaluation project adopted only the two items of the intention for crime and drugs with the 'not being caught' assumption. This study used the question on the intention to commit crimes. When used as the 4-item scale, the means, as measured in prison, were significantly different across ex-offender groups divided according to (un)employment and (non)reported substance abuse (Visher et al.). The predictive ability of this single indicator in terms of the relationship magnitude is expected to parallel multiple-item attitude scales. Meta-analytic results reported that "Predictive potency did not differ between assessment methods

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employing a single indicator versus those using multiple indicators simultaneously" (Law, 1998, p. 45).

The second measure of criminal attitude is an attitude toward community-based services (CBS attitude in the following), measured by 12 items. They were assessed on a 4-point Likert scale ranging from *strongly agree (1) to strongly disagree (4).*Two items were reverse-coded so that a higher score indicates a more negative attitude toward community-based services. Items include *"Community-based services and programs will help you stay out of jail," "Community-based services and programs seem trustworthy,"* and *"Community-based services and programs doesn't listen to you."* Table 3 shows 12 items of the scale.

Table 3. Items of the scale for the attitude toward community-based services (CBS attitude)

1	Community based services and programs have been helpful with your transition back to the community.
2	Community based services and programs will help you stay out of jail.
3	Community based services and programs will help you stay drug free.
4	Community based services and programs will help you stay crime free.
5	Community based services and programs seem trustworthy.
6	Community based services and programs provide you correct information.
7	Community based services and programs act like they are too busy to help you (R).
8	Community based services and programs treat you with respect.
9	Community based services and programs act professionally.
10	Community based services and programs don't listen to you (R).
11	Community based services and programs give me encouragement.
12	Community based services and programs were understanding of my problems.

Note. (R) indicates that the item was reverse-coded.

The ACJ Collaborative evaluation project on which this study is based, adopted this scale from the Urban Institute's project on prisoner reentry. The instrument used for the project was,

"in large part, developed from existing surveys, articles, and reports" and finalized after being reviewed and improved by a panel of 17 experts (Visher et al., 2004, p. 14). Scale information including reliability was not available from the corresponding study, but the Cronbach's alpha in this study was .92 and .93 at Time 1 and Time 2, respectively. The mean score was obtained among seven non-missing items out of the total 12. Cases that have less than seven valid items were recorded as missing for the final variable. As a result, 23.6% ($n = 51$) at Time 1 and 32.4% ($n = 70$) at Time 2 came out missing.

3.3.3 Criminal associates

Criminal associates were measured based on the following seven different questions: (1) whether anyone with whom participants are living has ever been in jail, (2) whether participants have had contact with someone they met in jail in the last 30 days, (3) whether participants are a gang member, how many of a participant's close friends (4) have ever been in jail, (5) are a gang member, (6) can he hang out with and know that he won't get in trouble, (7) are currently employed. The number of questions where participants reported their involvement with criminal associates was counted and used as the indicator for the criminal associates. Namely, *yes* responses were counted for the first three questions, and the other four questions were transformed to be dichotomous indicating whether they have friends with each item of history or characteristics. Question numbered (6) and (7) above were reverse-coded for consistency with other questions so that *yes* response indicated one more item of criminal involvement. The variable can theoretically range from 0 to 7, and it actually ranged from 0 to 5 at Time and 0 to 4 at Time 2. The ACJ Collaborative evaluation project on which this study is based, adopted scales and measures from the Urban Institute's project on prisoner reentry. The instrument used for the

project was, "in large part, developed from existing surveys, articles, and reports" and finalized

after being reviewed and improved by a panel of 17 experts (Visher et al., 2004, p. 14). This

scale of criminal associates was created by the author merely by aggregating separate questions

that may compose a measurement of criminal associates. However, this measure contains a few

questions (especially last two questions) that indirectly touch criminal associates as well as

others that directly measure the variable.

3.3.4 Diverse group variables

One of the specific aims of this study concerns the differential relationship patterns between

criminal attitude, criminal associates, and recidivism across different groups of race, age, and

offense type.

The dichotomous variable of race is distributed to an almost equal number: 109 Black

(50.5%) and 107 White men (49.5%). The ratio between Black and White ex-inmates of the

study sample reflects the reality of racial disparity in jail incarceration and matches the actual

demographic distribution of the jail's inmate population.

Offense type (violent vs. nonviolent) is a dichotomous variable indicating whether

participants were convicted of violent or nonviolent offense for the latest term in jail. Violent

offense includes robbery (person), assault, homicide, rape, abuse, terroristic threat, PFA violation,

and arson, and nonviolent offense includes robbery (business), burglary, theft, weapon

possession, forgery, fraud, drug dealing/possession, driving related offenses such as DUI,

parole/probation violation, unauthorized use of motor vehicle, receiving stolen property, fleeing

and eluding, escape, disorderly conduct, defiant trespass, failure to pay child support, promoting

prostitution, criminal conspiracy, and family division. Participants convicted of one or more

violent offenses were categorized into the violent offender group (coded '1') and those with no conviction of violent offense belonged to the nonviolent offender group (coded '0'). Violent offenders consisted of 22.1% ($n = 42$) while nonviolent offenders 77.9% ($n = 148$).

Finally, age was a continuous variable, reported by participants at Time 1.

3.3.5   Control variables

Two control variables were selected based on their association to recidivism as suggested by literature. Criminal history is a continuous variable from the question, *"How many times have you been sentenced to jail in the past 5 years?"* It ranged from 1 to 10. Sentence length for the latest offense was measured from the question, *"How long were you sentenced for your last offense?"* The variable is continuous, ranging from 1 to 156 months (5 years).

3.4   ORIGINAL PLAN OF THE ANALYSIS

This study aimed to test (1) the direct effect of criminal attitude at Time 1 on recidivism over Time 2 and 3 (Hypothesis 1), and further (2) the path model as shown in Figure 1 below (Hypothesis 2 through 6). The path diagram presents the study model that hypothesized the longitudinal, reciprocal, relationships between criminal attitude and criminal associates (Hypothesis 2 and 3), and their effect on recidivism as the final outcome (Hypothesis 4). Anticipations are that the variables of criminal attitude at Time 1 will be positively related with criminal associates at Time 2, that criminal associates at Time 1 with the variables of attitude at Time 2, and that those of criminal attitude and associates will be longitudinally related with

recidivism over Time 2 and Time 3. Finally, it was also hypothesized that criminal associates at Time 2 would partially mediate the effect of criminal attitude at Time 1 on recidivism at Time 3 (Hypothesis 5) and that criminal attitude at Time 2 be a partial mediator between criminal associates at Time 1 and recidivism at Time 3 (Hypothesis 6).
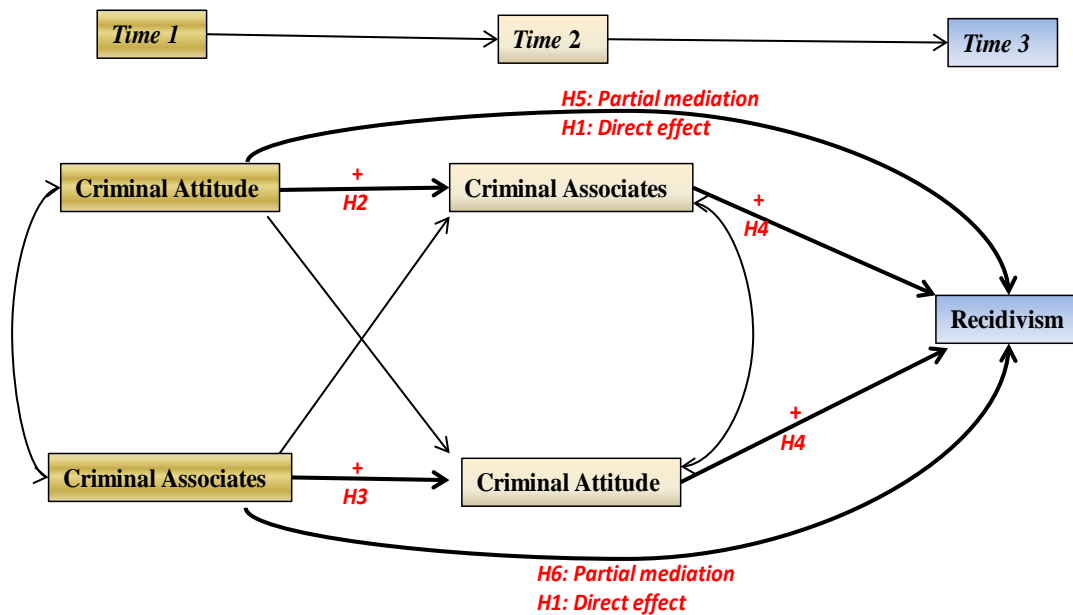
Figure 1. Original study model

Hypothesis 1 on the direct effect of criminal attitude at Time 1 on recidivism was to be tested through logistic regression analysis using PASW 18 (new name for SPSS). Further, exploratory analyses of interaction effects of the attitude and grouping variables were also to be performed by including the interaction terms of the product of corresponding two variables. Hypotheses 2 through 6 was to be tested through the structural equation modeling (SEM) examining the path model shown in Figure 1, using EQS 6.1. Partial mediations were to be tested by effect decomposition by confirming the statistical significance of total, indirect, and direct

effects. The exploration of differences across groups was also to be performed through the multi-sample SEM.

However, as substantiated in following sections, the original study model needed appropriate revisions. The basis of this judgment will follow after delineating the characteristics of the sample including descriptive statistics and bivariate correlations between study variables.

3.5   CHARACTERISTICS OF THE SAMPLE

3.5.1   Descriptive statistics

The sample consists of almost equal numbers of Black ($n = 109$) and White ($n = 107$) ex-inmates. Over three quarters were jailed for nonviolent offenses ($n = 148, 77.9\%$), and younger (cut off of 29 years old) individuals comprise about a third of the sample ($n = 75, 34.7\%$). Only about a quarter reported at Time 1 that it would be likely that they would commit another crime within 6 months if they could be sure of not being caught ($n = 45, 23.2\%$), and the rest evaluated it as being unlikely. At Time 2, the percentage of individuals who reported the likelihood dropped by about 4%. Over 40% of the sample had positive attitude toward the community-based services at Time 1 and Time 2, and about 30% reported their negative attitude. Data also showed that all respondents of the attitude toward community-based services had used at least one type of services in community. Recidivism rate was 43.1% ($n = 93$), indicating that 43% of the sample, after their first interview of 30 days post-release, had been back to jail as of Time 2 or Time 3.

Study variables of interval or ratio scales were examined for normal distribution and transformed as needed. Log transformation was successful to achieve the normality for variables

of criminal history, sentence length, criminal autosuggestion at Time 1 and Time 2. Z-scores for

skewness and kurtosis, obtained by dividing each statistic by standard error, were screened not to

exceed an absolute value of 3.29.

Table 4. Descriptive statistics: Overall sample ($N = 216$) [1]

	N	%	Missing (%)	M	SD
Categorical variables					
Race					
Black	109	50.5			
White	107	49.5			
Total	216	100.0	-		
Offense type					
Violent	42	22.1			
Nonviolent	148	77.9			
Total	190	100.0	26 (12.0)		
Age[2]					
29 or younger	75	34.7			
30 or older	141	65.3			
Total	216	100.0	-		
Autosuggestion (T1)[3]					
Very unlikely	95	49.0			
Unlikely	54	27.8			
Likely	23	11.9			
Very likely	22	11.3			
Total	194	100.0	22 (10.2)		
Autosuggestion (T2)[3]					
Very unlikely	80	46.8			
Unlikely	58	33.9			
Likely	20	11.7			
Very likely	13	7.6			
Total	171	100.0	45 (20.8)		
CBS attitude (T1)[4]					
Positive	68	41.2			
Medium	49	29.7			
Negative	48	29.1			
Total	165	100.0	51 (23.6)		

CBS attitude (T2) [4]					
Positive	66	45.2			
Medium	35	24.0			
Negative	45	30.8			
Total	146	100.0	70 (32.4)		
Recidivism[5]					
Yes	93	43.1			
No	123	56.9			
Total	216	100.0	-		
Continuous variables					
Age	216		-	35.66	10.09
Criminal history	195		21 (9.7)	2.08	1.41
LG_history[6]				.24	.24
Sentence length	173		43 (19.9)	11.25	13.26
LG_slength[6]				.93	.32
Autosuggestion (T1)	194		22 (10.2)	1.86	1.02
LG_AS[6] (T1)				.21	.22
Autosuggestion (T2)	171		45 (20.8)	1.80	.92
LG_AS[6] (T2)				.20	.21
CBS attitude (T1)	165		51 (23.6)	1.91	.53
CBS attitude (T2)	146		70 (32.4)	1.90	.61
Associates (T1)	216		-	1.56	1.09
Associates (T2)	216		-	1.63	.97

[1] Cases with "recidivism" variable missing ($n = 6$) and "race" missing ($n = 1$) were deleted from the sample for final analysis, which resulted in the final sample of 216 cases.
[2] Dichotomously coded variable of age (29 or younger versus 30 or older)
[3] Autosuggestion in the form of categorical variable
[4] The interval measure of the CBS attitude was categorized into three levels. The ranges of the raw scores for each category are: 1 – 1.99 (Positive), 2 (Medium), and 2.01 or higher (Negative).
[5] Measured over Time 2 and Time 3
[6] Transformed for normal distribution: LG that precedes each variable name indicates that values were transformed through log transformation.

The means of the two attitude variables – criminal autosuggestion and the CBS attitude were within a similar range. The means of the autosuggestion were 1.86 (T1) and 1.80 (T2) with the *SD* of 1.02 and .92 respectively, and those of the CBS attitude were 1.91 (T1) and 1.90 (T2)

with the *SD* of .53 and .61. The mean scores of attitude did not appear to change from Time 1 to

Time 2. The mean of the criminal associates was 1.56 (T1) and 1.63 (T2) with the *SD* of 1.09

(T1) and .97 (T2). The criminal associates did not change much, either. The sample had about

two previous incarcerations in jail (*M* = 2.08, *SD* = 1.41), and the mean of the sentence length for

the latest term was about 11 months (*M* = 11.25, *SD* = 13.26). The average age was 36 with the

SD of 10.09.

Table 5. Descriptive statistics for diverse ex-inmate groups: Continuous variables [*M (SD)*]

	Race		Offense Type		Age	
	Black (*n* = 109)	White (*n* = 107)	Violent (*n* = 42)	Nonviolent (*n* = 148)	Age < 30 (*n* = 75)	Age=>30 (*n* = 141)
Age	38.42*** (10.34)	32.85 (9.04)	33.83 (9.55)	36.00 (10.35)	24.71 (2.74)	41.49*** (7.34)
Criminal history	1.95 (1.27)	2.21 (1.54)	1.77 (.90)	2.21* (1.55)	1.99 (1.50)	2.13 (1.36)
LG_history[1]	.22 (.24)	.27 (.25)	.20 (.20)	.26 (.25)	.22 (.25)	.26 (.24)
Sentence length	12.49 (17.58)	9.99 (6.29)	11.23 (7.80)	11.52 (15.09)	9.98 (6.24)	11.84 (15.47)
LG_slength[1]	.95 (.34)	.91 (.31)	.95 (.32)	.93 (.32)	.91 (.20)	.94 (.33)
Autosuggestion (T1)	1.89 (.96)	1.82 (1.09)	1.94 (1.01)	1.87 (1.07)	1.69 (1.00)	1.94 (1.03)
LG_AS[1] (T1)	.22 (.21)	.19 (.23)	.24 (.22)	.21 (.23)	.17 (.22)	.23+ (.22)
Autosuggestion (T2)	1.70 (.86)	1.89 (.97)	1.62 (.85)	1.84 (.96)	1.85 (.88)	1.78 (.95)
LG_AS[1] (T2)	.18 (.20)	.22 (.21)	.16 (.20)	.21 (.21)	.22 (.20)	.20 (.21)
CBS attitude (T1)	1.98 (.56)	1.85 (.51)	1.84 (.60)	1.88 (.52)	1.88 (.51)	1.93 (.55)
CBS attitude (T2)	1.90 (.68)	1.90 (.52)	2.05 (.72)	1.85 (.60)	1.76 (.50)	1.95+ (.64)
Associates (T1)	1.52 (1.03)	1.61 (1.15)	1.57 (1.13)	1.58 (1.09)	1.73 (1.21)	1.48 (1.01)

| Associates (T2) | 1.62 | 1.64 | 1.62 | 1.68 | 1.65 | 1.62 |
| | (.96) | (.99) | (.99) | (.95) | (.86) | (1.03) |

[1] Transformed for normal distribution: LG that precedes each variable name indicates that values were transformed through log transformation.

The means and the *SD*s for variables of interval and ratio scales are shown in Table 5 for each group of ex-inmates according to their race, offense type, and age. Criminal history, sentence length, and the autosuggestion were transformed through log transformation to achieve the normal distribution. T-tests were performed using the original data to examine the mean differences between groups for each variable. Black individuals in the sample were older by about 6 years than White counterparts [t (214) = -4.212, $p < .001$]. Nonviolent ex-inmates had the longer history of being jailed than ex-inmates with violent offenses [t (107.5) = 2.258, $p < .05$]. Meanwhile, the older group of ex-inmates had stronger criminal autosuggestion measured at Time 1 [t (192) = 1.793, $p = .08$] and more negative attitude toward community-based services measured at Time 2 [t (144) = 1.688, $p = .09$) than younger counterparts though with marginal statistical significance.

Using the original data, the percentage distribution was also examined for categorical variables for each ex-inmate group divided by race, violent offense, and age as presented in Table 6. Chi-square analyses were performed to investigate any statistical differences. Three observations of significant differences were found. As suggested previously (see Table 5), more Black individuals belong to the older group [x^2 (1, $N = 216$) = 13.49, $p < .001$]. White ex-inmates tended to report their likelihood of future offense in a more extreme way [x^2 (3, $N = 194$) = 6.89, $p = .08$]. 54.6% of White ex-inmates responded "very unlikely" compared to 43.3% of Black individuals, and 14.4% of Whites, compared to 8.2% of Black ex-inmates said "very likely." Higher percentage of Black individuals responded in a more moderate way, "unlikely" or "likely,"

than White counterparts. Lastly, higher percentage of White ex-inmates held positive attitude toward the community-based services than among Black counterparts [x^2 (2, $N = 165$) = 6.22, $p < .05$]. 50% of the White ex-inmates reported their positive attitude compared to 32% among Black individuals.

Table 6. Descriptive statistics for diverse ex-inmate groups: Categorical variables [n (%)]

	Race		Offense Type		Age	
	Black ($n = 109$)	White ($n = 107$)	Violent ($n = 42$)	Nonviolent ($n = 148$)	Age < 30 ($n = 75$)	Age=>30 ($n = 141$)
Race					***	
Black	-	-	19 (45.2)	76 (51.4)	50 (66.7)	84 (59.6)
White	-	-	23 (54.8)	72 (48.6)	25 (33.3)	57 (40.4)
Offense type						
Violent	19 (20.0)	23 (24.2)	-	-	17 (24.6)	25 (20.7)
Nonviolent	76 (80.0)	72 (75.8)	-	-	52 (75.4)	96 (79.3)
Age	***					
29 or younger	25 (22.9)	50 (46.7)	17 (40.5)	52 (35.1)	-	-
30 or older	84 (77.1)	57 (53.3)	25 (59.5)	96 (64.9)	-	-
Autosuggestion (T1)	+					
Very unlikely	42 (43.3)	53 (54.6)	14 (38.9)	69 (51.5)	38 (58.5)	57 (44.2)
Unlikely	32 (33.0)	22 (22.7)	15 (41.7)	31 (23.1)	16 (21.3)	38 (29.5)
Likely	15 (15.5)	8 (8.2)	2 (5.6)	17 (12.7)	4 (5.3)	19 (14.7)
Very likely	8 (8.2)	14 (14.4)	5 (13.9)	17 (12.7)	7 (9.3)	15 (11.6)
Autosuggestion (T2)						
Very unlikely	41 (51.3)	39 (42.9)	19 (55.9)	53 (45.7)	22 (40.7)	58 (49.6)
Unlikely	26 (32.5)	32 (35.2)	11 (32.4)	38 (32.8)	21 (38.9)	37 (31.6)
Likely	9 (11.3)	11 (12.1)	2 (5.9)	15 (12.9)	8 (14.8)	12 (10.3)
Very likely	4 (5.0)	9 (9.9)	2 (5.9)	10 (8.6)	3 (5.6)	10 (8.5)
CBS attitude (T1)	*					
Positive	25 (31.6)	43 (50.0)	14 (43.8)	51 (45.1)	26 (42.6)	42 (40.4)
Medium	29 (36.7)	20 (23.3)	12 (37.5)	29 (25.7)	16 (26.2)	33 (31.7)
Negative	25 (31.6)	23 (26.7)	6 (18.8)	33 (29.2)	19 (31.1)	29 (27.9)
CBS attitude (T2)						
Positive	35 (47.3)	31 (43.1)	10 (40.0)	51 (49.5)	22 (53.7)	44 (41.9)

Medium	17 (23.0)	18 (25.0)	4 (16.0)	24 (23.3)	11 (26.8)	24 (22.9)
Negative	22 (29.7)	23 (31.9)	11 (44.0)	28 (27.2)	8 (19.5)	37 (35.2)
Recidivism[1]						
Yes	44 (40.4)	49 (45.8)	26 (61.9)	64 (43.2)	27 (36.0)	66 (46.8)
No	65 (59.6)	58 (54.2)	16 (38.1)	84 (56.8)	48 (64.0)	75 (53.2)

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

[1] Measured over Time 2 and Time 3

3.5.2 Bivariate correlations

Variables of criminal attitude did not present either longitudinal or cross-sectional correlations with criminal associates. As shown in Table 7, no Time 1 attitude variables – autosuggestion and attitude toward community-based services (CBS attitude in the following), were related with the Time 2 associates variable. With marginal significance, however, criminal associates at Time 1 were positively correlated with the CBS attitude at Time 2 ($r = .160$, $p = .054$).

Recidivism was correlated longitudinally with marginal significance with higher number of criminal associates at Time 1 ($r = .133$, $p = .051$), and cross-sectionally with negative CBS attitude ($r = .201$, $p < .05$) and higher number ($r = .260$, $p < .001$) of criminal associates. In addition, autosuggestion was positively correlated with CBS attitude cross-sectionally at Time 2 ($r = .291$, $p < .01$). Variables of criminal associates over time – Time 1 and Time 2 were correlated each other in overall and all subsample groups with the Pearson's r ranging from .29 (Black, $p < .01$) to .46 (White, $p < .001$).

In addition, older age was related to stronger autosuggestion of future offending at Time 1 ($r = .180$, $p < .05$), and less criminal connection at Time 2 ($r = -.143$, $p < .05$).

Table 7. Pearson's *r* bivariate correlations (Overall sample)

Variables	Age	Black	Violent	S.Length	C.History	AS T1	AS T2	CBS T1	CBS T2	Assoc T1	Assoc T2
Age	1										
Black	.28***	1									
Violent	-.09	-.05	1								
S.Length	.10	.06	.02	1							
C.History	.04	-.09	-.11	.09	1						
AS T1	.18*	.06	.05	.03	.05	1					
AS T2	-.13+	-.10	-.01	-.14	.02	-.10	1				
CBS T1	.10	.12	-.03	.05	-.08	.12	.14	1			
CBS T2	-.00	-.00	.12	-.04	.10	-.03	.29**	.03	1		
Assoc T1	-.08	-.04	-.00	.02	-.01	.05	.11	-.06	.16+	1	
Assoc T2	-.14*	-.01	-.03	-.03	.02	.06	.11	-.03	.02	.38***	1
Recidivism	.01	-.06	-.04	-.12	.21**	.05	.07	-.05	.20*	.13+	.26***

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

Note. Original dataset was used, and normality-transformed variables were used for non-normally distributed variables – sentence length, criminal history, and autosuggestion. 'S. Length' and 'C. History' indicate "sentence length" for the latest term and "criminal history." AS,' 'CBS,' and 'Assoc' indicate "autosuggestion," "CBS attitude," and "criminal associates," respectively. T1 and T2 indicate Time 1 and Time 2.

Table 8. Pearson's *r* bivariate correlations (Separate analysis by age)

Variables	Age	Black	Violent	S.Length	C.History	AS T1	AS T2	CBS T1	CBS T2	Assoc T1	Assoc T2	Recidivism
Age	1	.21*	-.10	.12	-.07	.17+	-.14	.12	-.17+	.01	-.23**	-.14
Black	-.22+	1	-.04	.07	-.07	.13	-.10	.14	-.05	-.10	-.06	-.13
Violent	-.06	-.05	1	.01	-.18+	.03	-.10	-.08	.16	-.07	-.05	.02
S.Length	.14	-.01	.04	1	-.04	-.00	-.14	.10	-.12	.05	-.04	-.11
C.History	.07	-.21+	.02	.36*	1	-.00	-.03	-.05	.14	.07	.01	.23**
AS T1	-.05	-.17	.09	.10	.10	1	-.16+	.13	-.19+	-.01	.05	.08
AS T2	-.16	-.05	-.12	-.12	.17	.09	1	.21+	.31**	.01	.07	.06
CBS T1	.03	.05	.06	-.09	-.12	.08	-.01	1	-.02	-.11	-.02	-.01
CBS T2	-.14	-.02	-.04	.19	-.16	.47**	.26	.28	1	.20*	.03	.24*
Assoc T1	.08	.13	.07	-.04	-.09	.19	.29*	.01	.14	1	.41***	.22**
Assoc T2	-.22+	.12	.03	.03	.05	.12	.21	-.05	-.06	.36**	1	.29**
Recidivism	-.09	.00	-.14	-.17	.15	-.05	.11	-.14	.02	.03	.21+	1

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

Note. Below diagonal is the younger subsample (29 or younger) and above diagonal is the older group (30 or over). Original dataset was used, and normality-transformed variables were used for non-normally distributed variables – sentence length, criminal history, and autosuggestion. 'S. Length' and 'C. History' indicate "sentence length" for the latest term and "criminal history." AS,' 'CBS,' and 'Assoc' indicate "autosuggestion," "CBS attitude," and "criminal associates," respectively. T1 and T2 indicate Time 1 and Time 2.

When the sample was broken down into two groups by age -- 29 or younger versus 30 or older, the correlational pattern showed some differences according to the age group. As shown in Table 8, the significant relationships between older age and stronger autosuggestion at Time 1 (r = .172, p = .051) / less criminal associates at Time 2 (r = -.226, p < .01), suggested in the entire sample, emerged only in the subsample group of age 30 or older. In the younger group, age was not correlated with autosuggestion, but negative relationship with criminal associates at Time 2 was held true albeit with marginal significance (r = -.221, p = .06). Similarities between the entire and the older sample were also found in significant correlations between the two attitude variables at Time 2 (r = .305, p < .01). However, criminal autosuggestion variables at Time 1 and Time 2 were negatively correlated in the older group (r = -.16, p = .08). The only longitudinal correlation with statistical significance was between the number of criminal associates at Time 1 and CBS attitude at Time 2 (r = .20, p < .05), which was marginally significant in the entire sample as well (r = .160, p = .054). Meanwhile, recidivism was correlated with negative CBS attitude at Time 2 (r = .237, p < .05) and higher number of criminal associates both at Time 1 (r = .221, p < .01) and Time 2 (r = .288, p < .01).

Younger subsample also presented a longitudinal significant correlation between attitude and associates variables. Higher number of criminal associates at Time 1 was significantly correlated with stronger autosuggestion of future offending at Time 2 (r = .288, p < .05). However, no variables showed a significant correlation with recidivism among younger individuals. In addition, a significant correlation between the two attitude variables was found between autosuggestion at Time 1 and CBS attitude at Time 2 (r = .467, p < .01).

Table 9. Pearson's *r* bivariate correlations (Separate analysis by race)

Variables	Age	Violent	S.Length	C.History	AS T1	AS T2	CBS T1	CBS T2	Assoc T1	Assoc T2	Recidivism
Age	1	-.01	.16	-.00	.06	-.10	-.03	.06	-.02	-.05	.11
Violent	-.14	1	.07	.03	.10	-.13	.16	.03	-.00	.07	-.12
S.Length	.03	-.03	1	.14	.06	-.09	.06	.16	.01	.05	$-.20^{+}$
C.History	.14	-.27*	.06	1	.11	.04	-.08	.19	-.04	.07	$.17^{+}$
AS T1	.28**	.00	-.02	-.00	1	-.03	.17	.04	.02	.02	.11
AS T2	-.11	-.08	-.17	-.03	-.17	1	.11	.07	.14	.08	.00
CBS T1	.15	$-.23^{+}$	.03	-.04	.06	.20	1	.11	-.14	.05	.02
CBS T2	-.04	.20	-.18	.03	-.09	.49***	-.03	1	$.23^{+}$	-.08	$.22^{+}$
Assoc T1	-.12	-.01	.04	.02	.08	.07	.00	.11	1	.46***	.15
Assoc T2	-.24*	-.13	-.08	-.04	.11	.13	-.11	.09	.29**	1	.25**
Recidivism	-.05	.03	-.05	.24*	-.01	.14	-.11	.19	.11	.27**	1

*** *p* < .001. ** *p* < .01. * *p* < .05. ^{+}p < .10

Note. Below diagonal is the Black group and above diagonal is the White group. Original dataset was used, and normality-transformed variables were used for non-normally distributed variables – sentence length, criminal history, and autosuggestion. 'S. Length' and 'C. History' indicate "sentence length" for the latest term and "criminal history." AS,' 'CBS,' and 'Assoc' indicate "autosuggestion," "CBS attitude," and "criminal associates," respectively. T1 and T2 indicate Time 1 and Time 2.

Correlation patterns were also different across racial groups. Only among Black ex-inmates, age presented similar patterns of correlations with autosuggestion and criminal associates to those observed in the older sub-sample and the entire sample. As Table 9 shows, in the Black sub-sample, older age was correlated with stronger criminal autosuggestion at Time 1 ($r = .278$, $p < .01$) and lower number of criminal associates at Time 2 ($r = -.235$, $p < .05$).

There were no significant longitudinal correlations observed in both racial groups. Recidivism had cross-sectional correlations with higher number of criminal associates (T2) in both groups at $p < .01$ level. Recidivism was also correlated with the CBS attitude at Time 2 among White ex-inmates with marginal significance ($r = .219$, $p = .07$). In Black group, at Time 2, stronger autosuggestion was correlated with negative CBS attitude ($r = .493$, $p < .001$). Beyond these, no significant correlations were observed.

Table 10. Pearson's *r* bivariate correlations (Separate analysis by offense type)

Variables	Age	Black	S.Length	C.History	AS T1	AS T2	CBS T1	CBS T2	Assoc T1	Assoc T2	Recidivism
Age	1	.32***	.10	.07	.20*	-.20*	.10	-.05	-.00	-.14	-.01
Black	.16	1	.05	-.02	.13	-.10	.22*	-.06	-.03	.05	-.11
S.Length	.10	-.07	1	.01	-.03	-.19$^+$	.04	-.07	.10	-.04	-.14
C.History	-.14	-.48**	.29$^+$	1	-.05	-.03	-.10	.08	-.05	-01	.19*
AS T1	.17	.01	.25	.34*	1	-.08	.25*	-.06	.02	.06	-.03
AS T2	-.09	-.03	.00	.17	-.15	1	.16	.35**	.00	.14	.08
CBS T1	.02	-.23	.15	.04	-.08	-.06	1	.13	.04	.01	-.06
CBS T2	.03	.18	-.04	.18	.09	.06	-.51*	1	.15	.08	.26**
Assoc T1	-.33*	-.04	-.28$^+$	.19	-.04	.51**	-.12	.34	1	.37***	.10
Assoc T2	-.27$^+$	-.19	.10	.11	.03	.08	.11	-.17	.31*	1	.24**
Recidivism	.18	.08	.06	.11	.13	.06	.04	.12	.13	.16	1

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

Note. Below diagonal is the violent subsample and above diagonal is the nonviolent group. Original dataset was used, and normality-transformed variables were used for non-normally distributed variables – sentence length, criminal history, and autosuggestion. 'S. Length' and 'C. History' indicate "sentence length" for the latest term and "criminal history." AS,' 'CBS,' and 'Assoc' indicate "autosuggestion," "CBS attitude," and "criminal associates," respectively. T1 and T2 indicate Time 1 and Time 2.

Different correlation patterns were also observed between the two groups of violent and nonviolent ex-inmates. As Table 10 shows, in the nonviolent subsample, older age was correlated with stronger criminal autosuggestion at Time 1 ($r = .203$, $p < .05$), and in the violent group, older age was related with lower number of criminal associates at Time 1 ($r = -.330$, $p < .05$). An interesting finding among nonviolent ex-inmates was that the older age was correlated with stronger criminal autosuggestion at Time 1 ($r = .203$, $p < .05$), but with weaker criminal autosuggestion at Time 2 ($r = -.202$, $p < .05$). In addition, Black ex-inmates bore significantly more negative attitude toward community-based services measured at Time 1 than White counterparts in the nonviolent subgroup ($r = .223$, $p < .05$), which was the only significant racial difference observed in its correlations with focal study variables in all study samples.

While longitudinal correlations with statistical significance between independent and mediating variables (variables of criminal attitude and criminal associates) were found in the violent group, significant correlations with the dependent variable (recidivism) existed in the nonviolent group, only cross-sectionally. The higher number criminal associates at Time 1 was correlated with stronger criminal autosuggestion at Time 2 among violent ex-inmates ($r = .514$, $p < .01$), but recidivism presented no significant correlations. Meanwhile, recidivism had positive correlations of statistical significance among nonviolent ex-inmates with the CBS attitude ($r = .255$, $p < .01$) and the number of criminal associates ($r = .242$, $p < .01$) at Time 2.

In addition, criminal autosuggestion and negative CBS attitude was positively correlated in cross-sectional terms both at Time 1 ($r = .246$, $p < .05$) and Time 2 ($r = .345$, $p < .01$) among nonviolent ex-inmates. An interesting observation was found in the violent group that CBS attitude at Time 1 and that at Time 2 was negatively correlated at $r = -.512$ ($p < .05$).

3.5.3 Exclusion of control variables

Control variables – criminal history and sentence length for the latest term, were decided not to be included in analyses due to the lack of statistical significance in bivariate correlations with the independent and the dependent variables as presented in Tables 7 through 10. For example, as Table 10 shows, criminal history was correlated with autosuggestion at Time 1 (r = .341, $p < .05$) and criminal associates at Time 1 in the violent sample, but its relationship with recidivism was not of statistical significance. Likewise, while recidivism was correlated with criminal history in overall, older, Black, and nonviolent sample [r = .213 ($p < .01$), .234 ($p < .01$), .244 ($p < .05$), .192, ($p < .05$)], independent variables were not. Meanwhile, the variable of sentence length did not present significant relationships with any variables including independent and dependent variables. Accordingly, two possible control variables were excluded from models since there was no indication that they may cause spuriousness in relationships between variables in analyses.

3.6   REVISED HYPOTHESES AND ANALYSES

3.6.1   Breakdown of the original model

The model of this study was not to be supported by the data. The specific aim of this study was to test the path model (See Figure 1) on page 47 that hypothesized the longitudinal, reciprocal relationships between criminal attitude and criminal associates, and their effect on recidivism as the final outcome. Anticipations were that the variables of criminal attitude at Time 1 were

positively related with criminal associates at Time 2, that criminal associates at Time 1 with the variables of attitude at Time 2, and that those of criminal attitude and associates were longitudinally related with recidivism over Time 2 and Time 3.

As Tables 7 through 10 presented, however, the bivariate correlations did neither accord to these expectations in the entire as well as each subsample, nor emerged consistently across groups. For example, variables of criminal attitude did not present longitudinal correlations with the criminal associates variable as well as recidivism. Although criminal associates were correlated with recidivism in overall sample and other subgroups, the variables of attitude were not with criminal associates. In addition, while longitudinal correlations with statistical significance between criminal associates at Time 1 and criminal autosuggestion at Time 2 were found in the younger and the violent group, autosuggestion was not correlated with recidivism in any groups. Even the cross-sectional relationships among the independent, mediating, and the dependent variables were not either consistent or complete.

With the unexpected absence of bivariate correlations among focal study variables, the analyses were conducted to examine the variable relationships step by step instead of examining the whole path model. Hypotheses 1 through 3, shown in Figure 1, were retained, but the analyses were performed separately for each hypothesis. Given the inconsistency in relationships across diverse groups, analyses were conducted in each group after in the overall sample. Hypothesis 4 was to be examined by analyses for Hypotheses 1 and 2 since the path model is invalid. Hypotheses 5 and 6 that were to examine the partial mediation were dropped because variables do not form the three variable relationships for the reasons stated above. In the following section are stated the new hypotheses with revised wording and numbering.

3.6.2   Revised hypotheses

Hypothesis 1

<u>Hypothesis 1.1</u>: Criminal attitude (autosuggestion) at Time 1 will increase the likelihood of

recidivism over Time 2 and Time 3 with criminal associates at Time 1 controlled.

<u>Hypothesis 1.2</u>: Criminal attitude (CBS attitude) at Time 1 will increase the likelihood of

recidivism over Time 2 and Time 3 with criminal associates at Time 1 controlled.
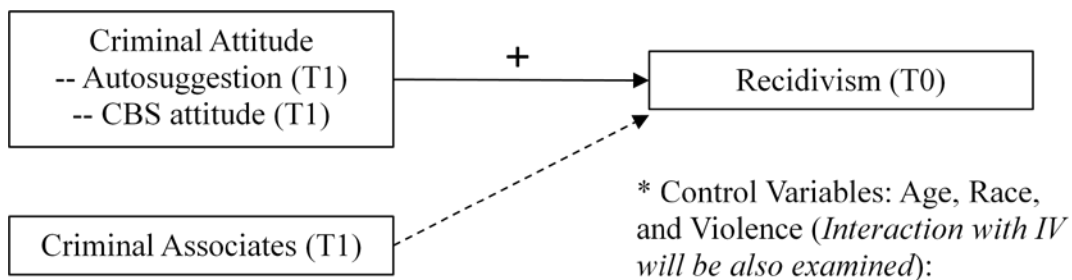
Figure 2. Diagram of Hypothesis 1

Hypothesis 2

<u>Hypothesis 2.1</u>: Criminal associates at Time 1 will increase the likelihood of recidivism over

Time 2 and Time 3 with criminal attitude (autosuggestion) at Time 1 controlled.

<u>Hypothesis 2.2</u>: Criminal associates at Time 1 will increase the likelihood of recidivism over

Time 2 and Time 3 with criminal attitude (CBS attitude) at Time 1 controlled.
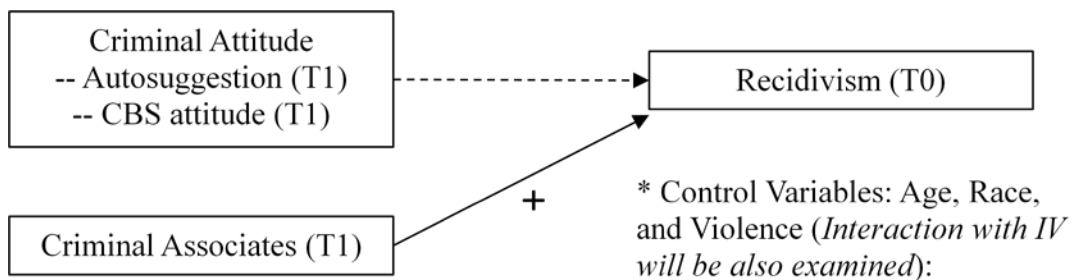
Figure 3. Diagram of Hypothesis 2

Hypothesis 3

Hypothesis 3.1: Criminal attitude (autosuggestion) at Time 1 will be positively related to

criminal associates at Time 2 with the criminal associates at Time 1 controlled.

Hypothesis 3.2: Criminal attitude (CBS attitude) at Time 1 will be positively related to criminal

associates at Time 2 with the criminal associates at Time 1 controlled.
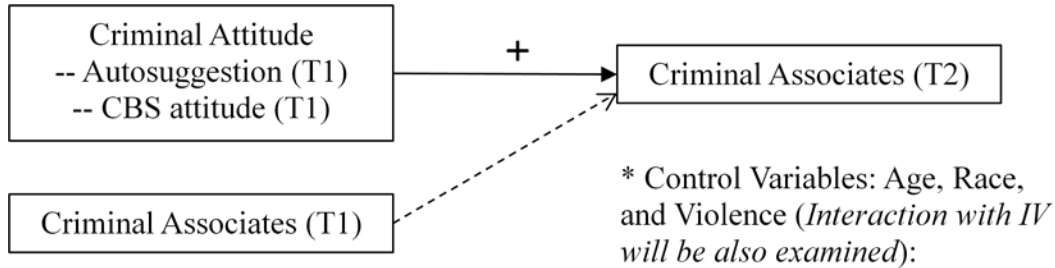
Figure 4. Diagram of Hypothesis 3

Hypothesis 4

Hypothesis 4.1: Criminal associates at Time 1 will be positively related to criminal attitude

(autosuggestion) at Time 2 with the criminal attitude (autosuggestion) at Time 1 controlled.

Hypothesis 4.2: Criminal associates at Time 1 will be positively related to criminal attitude (CBS

attitude) at Time 2 with the criminal attitude (CBS attitude) at Time 1 controlled.
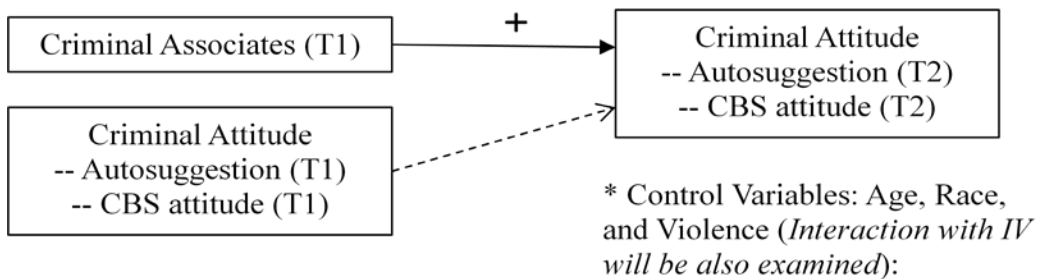
Figure 5. Diagram of Hypothesis 4

3.6.3 Revised analytic procedures

Hypotheses 1 and 2 were tested by logistic regression analysis with the dependent variable, recidivism (T0), being dichotomous. The effect of criminal attitude (autosuggestion and CBS attitude) and criminal associates at Time 1 on the likelihood of recidivism over Time 2 and 3 was examined with age, race, and offense type held constant. Hypothesis 1 was focused on variables of criminal attitude as predictors, and Hypothesis 2 on criminal associates. In next models, the interaction that each independent variable has with age, race, and offense type was investigated in an exploratory manner. Significant interaction effects were further examined by testing the hypotheses in each group split by age cutoff (29 years), race (Black vs. White), and offense type (violent vs. nonviolent).

Hypotheses 3 and 4, positing the reciprocal relationships between criminal attitude and criminal associates, were tested by multivariate OLS regression analysis. In Hypothesis 3, criminal associates at Time 2 were the dependent variable predicted by criminal attitude at Time 1 (autosuggestion and CBS attitude) with the criminal associates at Time 1 held constant. In Hypothesis 4, the dependent variable was criminal attitude at Time 2 (autosuggestion and CBS attitude), predicted by criminal associates at Time 1. As in Hypotheses 1 and 2, the interaction that each independent variable has with age, race, and offense type was investigated in an exploratory manner in following models. Also, these interaction effects were further examined by testing the hypotheses in each group split by age cutoff (29 years), race (Black vs. White), and offense type.

3.6.4   Multiple imputation: Handling missing data

The amount of missing on the study variables ranged 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 Imputation (MI) was performed to obtain unbiased estimates under the assumption of MAR, *missing at random.* According to Rubin (1976), the MAR mechanism refers to the case where missingness of a certain variable may be related to a measured variable, but not to the underlying values of the missing variable. MAR is not testable, but MI procedure produce unbiased estimates under the MAR assumption. Analyses were performed using the five complete datasets created through the MI procedure, and the resulting five estimates were averaged to provide an unbiased pooled estimate. MI requires the data to be multivariate normal, but there is evidence that MI performs well under substantial violations of the assumption (Graham & Schafer, 1999). PASW 18 (formerly, SPSS) was used to perform the MI throughout the analytic process.

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 ($\beta = .245$, Exp(β) = 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

<div align="center">69</div>

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)
Time 1 Predictors						
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
Interaction effects						
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 ($\beta = .267$, Exp(β) = 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.

	Very unlikely	Unlikely	Likely	Very likely
29 or younger	0.36	0.4	0.48	0.16
30 or older	0.42	0.49	0.49	0.55
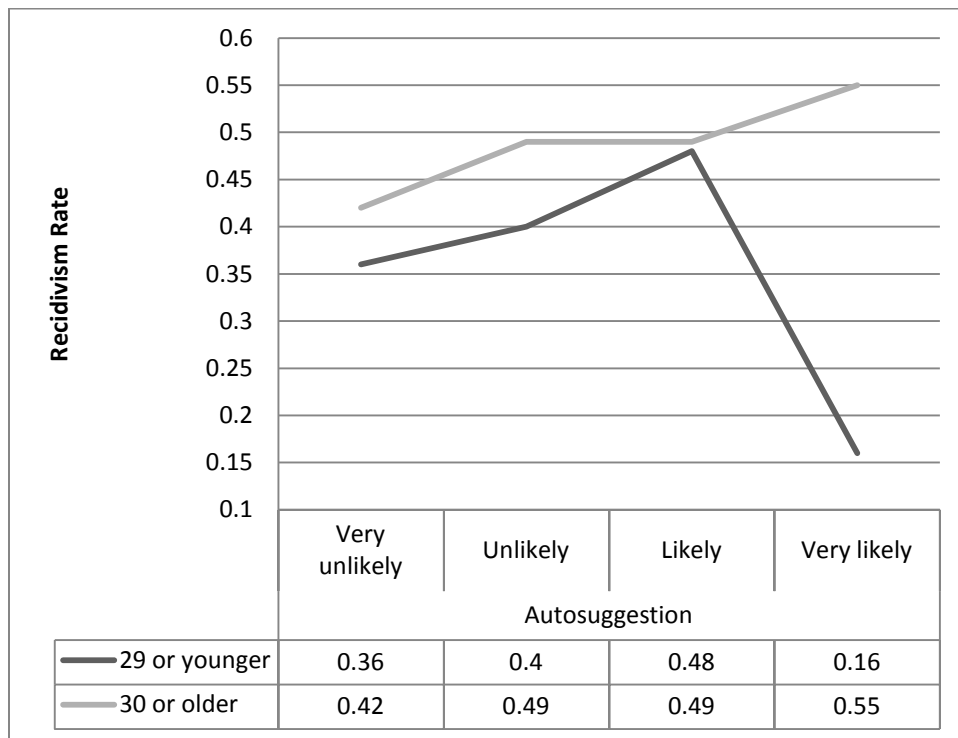
Figure 6. Interaction effect of autosuggestion and age on recidivism

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 ($\beta = .472$, Exp(β) = 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 subgroups[1]

	β (SE)	Exp(β)	β (SE)	Exp(β)
By age	Age <= 29 (*n* = 75)		Age > 29 (*n* = 141)	
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	
By race	Black (*n* = 109)		White (*n* = 107)	
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	
By offense type	Violent (*n* = 48.8)		Nonviolent (*n* = 167.2)	
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 ($\beta = .254$, $Exp(\beta) = 1.29$). 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 ($\beta = .293$, $Exp(\beta) = 1.34$). 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 ($x^2 = 19.11$) to .19 ($x^2 = 12.52$) 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)
Time 1 Predictors						
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
Interaction effects						
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.

	Positive	Middle	Negative
White	0.43	0.30	0.62
Black	0.47	0.42	0.32
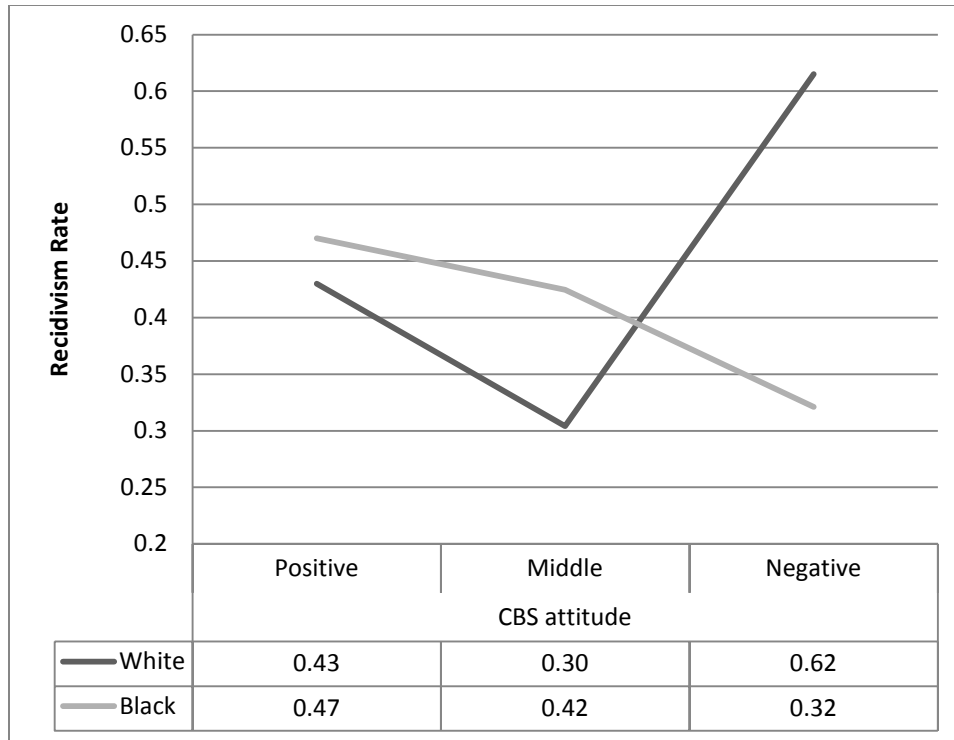
Figure 7. Interaction effect of CBS attitude and race on recidivism

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 ($\beta = .496$, Exp(β) = 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 subgroups[1]

	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 R^2 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	
	b (SE)	t	b (SE)	t
Time 1 Predictors				
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***
Interaction effects				
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	
F 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 subgroups [1]

	b (SE)	t	b (SE)	t
By race	Black ($n = 109$)		White ($n = 107$)	
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	
F range[4]	F (4, 104) = 4.78** – 5.55***		F (4, 102) = 7.12** – 7.62***	
By age	Age <= 29 ($n = 75$)		Age > 29 ($n = 141$)	
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	
F range[4]	F (5, 69) = 3.35** – 3.39**		F (5, 135) = 7.76***– 8.07***	
By offense type	Violent ($n = 46.2$)		Nonviolent ($n = 167.8$)	
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	
F range[4]	F (4, 37-45) = 1.67 – 2.49[+]		F (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 R^2 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
Time 1 Predictors				
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***
Interaction effects				
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 subgroups [1]

	b (SE)	t	b (SE)	t
By race	Black ($n = 109$)		White ($n = 107$)	
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	
F range[4]	F (4, 104) = 4.69** – 5.94***		F (4, 102) = 7.51***– 7.80***	
By age	Age <= 29 ($n = 75$)		Age > 29 ($n = 141$)	
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	
F range[4]	F (5, 69) = 3.36** – 3.41**		F (5, 135) = 7.63***– 7.96***	
By offense type	Violent ($n = 45.8$)		Nonviolent ($n = 168.2$)	
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	
F range[4]	F (4, 39-46) = 1.88 – 3.07*		F (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 R^2 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	
	b (SE)	t	b (SE)	t
Time 1 Predictors				
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
Interaction effects				
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	
F 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.

	0	1	2-3	4+
Violent	1.36	1.57	1.85	4
Nonviolent	1.95	1.86	1.84	2.11
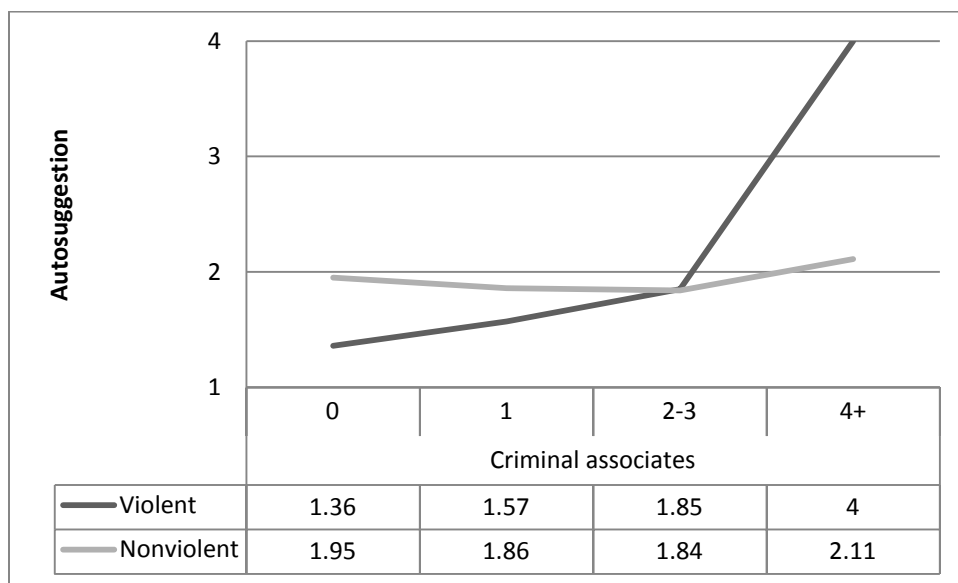
Figure 8. Criminal associates and offense type on autosuggestion

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

autosuggestion at Time 2. In subgroup analyses as well, criminal autosuggestion at Time 1 was

not related to the same variable measured at Time 2 in any groups.

Table 20. Regression of criminal autosuggestion (T2) on criminal associates (T1) with criminal autosuggestion (T1) controlled – Model 11, by subgroups [1]

	b (SE)	t	b (SE)	t
By offense type	Violent ($n = 47.2$)		Nonviolent ($n = 168.8$)	
Age	.001 (.003)	.329	-.002 (.002)	-1.485
Black	.001 (.068)	.018	-.008 (.034)	-.229
Autosuggestion[2]	-.075 (.135)	-.557	-.043 (.072)	-.597
Cass[3]	.080 (.026)	3.061**	-.005 (.017)	-.324
Constant	.047 (.125)	.374	.329 (.068)	4.865***
Adjusted R^2 range [4]	.109 – .187		.004 – .013	
F range[4]	F (4, 37-45) = 2.47$^+$ – 3.47*		F (4, 161-169) = .77 – 1.57	
By age	Age <= 29 ($n = 75$)		Age > 29 ($n = 141$)	
Age	-.008 (.009)	-.911	-.004 (.003)	-1.640
Black	-.024 (.052)	-.461	-.002 (.037)	-.059
Violence	-.033 (.053)	-.612	-.044 (.045)	-.975
Autosuggestion[2]	.026 (.110)	.234	-.104 (.083)	-1.262
Cass[3]	.036 (.019)	1.902$^+$	-.004 (.019)	-.230
Constant	.369 (.225)	1.644	.415 (.107)	3.870***
Adjusted R^2 range [4]	.002 – .023		.004 – .023	
F range[4]	F (5, 69) = .80 – 1.35		F (5, 135) = 1.12 – 1.65	
By race	Black ($n = 109$)		White ($n = 107$)	
Age	-.002 (.002)	-1.131	-.002 (.002)	-.973
Violence	-.025 (.058)	-.427	-.043 (.049)	-.870
Autosuggestion[2]	-.101 (.096)	-1.045	-.006 (.088)	-.073
Cass[3]	.004 (.020)	.205	.020 (.019)	1.062
Constant	.309 (.087)	3.555***	.271 (.086)	3.149**
Adjusted R^2 range [4]	.000 – .021		.000– .010	
F range[4]	F (4, 104) = .53– 1.58		F (4, 102) = .63 – 1.26	

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

[1] Pooled statistics are reported based on five imputed datasets generated by multiple imputations.
[2] Normality-transformed scale by log transformation was used both the dependent variable at Time 2 and the predictor at Time 1. Multinomial regression with the categorical variable of autosuggestion did not yield different findings.
[3] 'Cass' indicates "criminal associates."
[4] Statistics of R^2 and F of each model are reported in ranges based on five imputed datasets.

4.2.4 CBS attitude at Time 2 as a factor of criminal associates at Time 1 (H4.2)

Criminal associates at Time 1 was positively associated with the CBS attitude in the entire sample as shown in Model 13 ($b = .086, p < .05$) of Table 21. One more connection with criminal associates at Time 1 led to .09 increases in scores of the CBS attitude whose higher score means more negative attitude. Model 14 examined the interaction effects between criminal associates and grouping variables to find no interactions. The CBS attitude at Time 1 was not related to the CBS attitude at Time 2 in either Model 13 or Model 14.

Table 21. Regression of the attitude toward community-based services (T2) on criminal associates (T1) with the attitude toward community-based services (T1) controlled – Hypothesis 4.2 ($N = 216$) [1]

	Model 13		Model 14	
	b (SE)	t	b (SE)	t
Time 1 Predictors				
Age	-.001 (.005)	-.210	-.003 (.007)	-.440
Black	-.018 (.087)	-.209	-.023 (.079)	-.130
Violence	.144 (.143)	1.008	-.102 (.218)	-.469
CBS [2]	.051 (.114)	.450	.054 (.113)	.479
Cass [3]	.086 (.042)	2.062*	-.189 (.240)	-.786
Interaction effects				
Cass*Age	-	-	.002 (.004)	.549
Cass*Black	-	-	.000 (.101)	.003
Cass*Violence	-	-	.163 (.128)	1.280
Constant	1.708 (.241)	7.075***	1.841 (.330)	5.571***
Adjusted R^2 range [4]	.001 – .038		.011– .074	
F range [4]	$F (5, 210) = 1.05 – 2.70*$		$F (8, 207) = 1.29 – 3.14**$	

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

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

[2] 'CBS' indicates "CBS attitude," the attitude toward community-based services. The 3-level categorical variable of the CBS attitude was also examined by multinomial regression analysis, but the findings did not differ.

[3] 'Cass' indicates "criminal associates."

The effect of criminal associates (T1) on the CBS attitude (T2) was examined for each subgroup by race, age, and offense type. As shown in Table 22, criminal associates at Time 1 were positively related to the CBS attitude at Time 2 in the White, the older, and the violent group while they were not related in the other groups. One more connection with criminal associates at Time 1 led to .11, .12, and .20 increases in scores of the CBS attitude, respectively for the White, the older, and the violent ex-inmates, which means the increases of negativeness of the attitude. In addition, Black ex-inmates with violent offenses were estimated with marginal significance to have .32 more negative CBS attitude than nonviolent Black ex-inmates. The variables of the CBS attitude were not related each other over time in any subgroups.

In summary (Hypothesis 4), more criminal associates at Time 1 were related to more negative CBS attitude at Time 2 in the overall sample and in subgroups of the White, the older, and the violent ex-inmates. However, criminal associates at Time1 did not have a main effect on criminal autosuggestion at Time 2, but a significant interaction with violent offense was found. The positive relationship between criminal associates at Time 1 and criminal autosuggestion at Time 2 was statistically significant only among the violent and the younger ex-inmates. In addition, both the variables of autosuggestion and those of the CBS attitude were not related each other over time.

Table 22. Regression of the CBS attitude (T2) on criminal associates (T1) with the CBS attitude (T1) controlled – Model 13, by subgroups [1]

	b (SE)	t	b (SE)	t
By race	Black (n = 109)		White (n = 107)	
Age	-.002 (.007)	-.243	-.002 (.006)	-.263
Violence	.319 (.183)	1.742^+	.059 (.148)	.400
CBS[2]	.096 (.141)	.681	.112 (.142)	.784
Cass[3]	.089 (.037)	1.321	.114 (.049)	2.332*
Constant	1.588 (.428)	3.711**	1.603 (.365)	4.387***
Adjusted R^2 range [4]	.018 – .073		.012 – .073	
F range[4]	F (4, 104) = 1.50 – 3.13*		F (4, 102) = 1.32 – 3.10*	
By age	Age <= 29 (n = 75)		Age > 29 (n = 141)	
Age	-.032 (.032)	-1.021	-.011 (.007)	-1.467
Black	-.132 (.161)	-.822	.002 (.114)	.017
Violence	.111 (.206)	.541	.213 (.140)	1.522
CBS [2]	.207 (.203)	1.022	.049 (.121)	.409
Cass [3]	.109 (.070)	1.546	.119 (.055)	2.158*
Constant	2.149 (.965)	2.227*	2.083 (.398)	5.240***
Adjusted R^2 range [4]	.028 – .147		.011 – .077	
F range[4]	F (5, 69) = .99 – 3.54**		F (5, 135) = 1.30 – 3.33**	
By offense type	Violent (n = 45.8)		Nonviolent (n = 168.2)	
Age	.005 (.012)	.425	-.002 (.005)	-.429
Black	.143 (.223)	.640	-.100 (.104)	-.959
CBS [2]	-.096 (.217)	-.441	.173 (.117)	1.477
Cass [3]	.204 (.088)	2.314*	.074 (.050)	1.501
Constant	1.703 (.719)	2.368*	1.571 (.304)	5.174***
Adjusted R^2 range [4]	.029 – .125		.000 – .046	
F range[4]	F (4, 39-46) = 1.37 – 2.64*		F (4, 160-167) = .99 – 3.04*	

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

[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: Multinomial regression analysis using the three-level categorical form of the variable generated no different findings.

[3] 'Cass' indicates "criminal associates."

[4] Statistics of R^2 and F of each model are reported in ranges based on five imputed datasets.

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

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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

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[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, particulary "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 Theraputic 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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