

Thoughtfully Reflective Decision Making as a Mediator:
Examining the Indirect Effect of Self-Control on Delinquency

by

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ABSTRACT

Since Gottfredson and Hirschi proposed the general theory of crime, the direct link between self-control and delinquency has gained strong empirical support, and low self-control is now considered as a significant predictor of individual delinquent behaviors. However, the indirect link between self-control and delinquency still remains understudied. This study fills this void by introducing thoughtfully reflective decision making (TRDM), an important factor intimated by rational choice theory, as the mediator of the relationship between low self-control and delinquency. Using self-reported data from the city of Changzhi, China, this study finds that self-control is closely related to TRDM, low self-control is a significant predictor of general and non-violent delinquency, and TRDM does not mediate the effect of low self-control on delinquency. Findings from this study largely support the generalizability of self-control theory under the Chinese cultural environment, and also suggest that it might be fruitful to test other criminological theories in the Chinese context. The study's findings and their implications for theory and research are discussed.

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CHAPTER 1

INTRODUCTION

Since Gottfredson and Hirschi (1990) proposed a causal relationship between low self-control and crime, considerable research attention has been paid to the general theory of crime. A large body of empirical research has supported a direct link between self-control and delinquency, and some studies have found a significant effect of self-control on specific behaviors, such as academic dishonesty, white-collar crime, drug use and violent offending (Baron et al., 2007; Benson and Moore, 1992; Cochran et al., 1998; Evans et al., 1997; Grasmick et al., 1993; Longshore, 2004; Longshore et al. 1996; Pratt and Cullen, 2000). Moreover, research has also found that low self-control could cause many negative social outcomes, such as imprudent behaviors, low self-report survey response, low school performance, hopelessness, and low family involvement (Arneklev et al., 1993; Gibson et al., 2000; Piquero et al., 2000).

To this day, most existing studies have focused on the direct effect of self-control on crime and delinquency. Indirect routes of low self-control's influence on deviant behaviors, however, are underdeveloped both theoretically and empirically (Reisig and Pratt, 2011, p. 613). This is a significant oversight because a single theory may not explain the cause of delinquency thoroughly for the reason that there may be several potential factors influencing the outcomes through indirect approaches, and theory could be more powerful to predict delinquency by integrating the common parts from different causal relationships (Tittle, 2000, p. 88; see also Antonaccio and Tittle, 2008, p. 97; Longshore et al., 2004, p. 559).

Importantly, a few studies have investigated the mediating mechanism that links low self-control to crime and delinquency. For example, Piquero and Tibbetts (1996) examined the mediating effects of situational characteristics (e.g., moral beliefs, perceived sanction, situational shame, and perceived pleasure) on the relationship between low self-control and deviance. They found that perceived pleasure and situational shame mediated the effect of low self-control on delinquency. Meanwhile, findings of their study suggested that the model of indirect route between low self-control and delinquency was more complicated than the researchers originally thought (Piquero and Tibbetts, 1996, p. 505). In addition, Longshore and colleagues (2004) assessed whether moral belief and association with peers involved in substance use could be integrated to explain the link between low self-control and drug use, and the finding was positive. Overall, findings of these studies suggest that some factors, including moral belief, rational choice, situational characteristics, peer delinquency, and parenting, may mediate the effect of low self-control on crime and delinquency (Boyd and Higgins, 2006; Gibson and Wright, 2001; Longshore et al., 2004; Nagin and Paternoster, 1993; Piquero and Tibbetts, 1996).

Although studies mentioned above have significantly advanced scholarship, other potentially important mediators still need to be explored, such as factors pertaining to rational choice theory. Rational choice factors may play a significant role in mediating the link between low self-control and delinquency. Specifically, self-control could influence individual consciousness development and behavioral recognition (Gottfredson and Hirschi, 1990; Wilson and Hernstein, 1998), and individuals with underdeveloped consciousness may not achieve complete thoughtfully reflective decision making

(TRDM). According to Paternoster and Pogarsky (2009), TRDM describes an individual's tendency of accomplishing a comprehensive decision-making process before his actions. Paternoster and Pogarsky (2009) have established that individuals with higher level of TRDM are less likely to become involved in crime and delinquency (see also Paternoster et al., 2011). Given its theoretical and empirical significance and its link to self-control and delinquency, TRDM may mediate the relationship between self-control and delinquency, which, however, remains untested.

Against this backdrop, this study examines TRDM as a mediator between low self-control and delinquency. Using the survey data collected in Changzhi, China, this study aims to address the following questions. First, does self-control predict TRDM? Second, does low self-control exert a significant effect on youth delinquency in China, a cultural environment different from the United States? Third, does TRDM mediate the effect of low self-control on delinquency? Below I begin by discussing the relevant theoretical and empirical research and then develop a series of hypotheses derived from this work. After describing the data and measures, I present the findings and discuss the study's implications for theory and research.

CHAPTER 2

THEORETICAL BACKGROUND

Low Self-Control and Delinquency

In 1990, Gottfredson and Hirschi introduced the notion of self-control into criminology, and argued that self-control results from individual-level socialization and could be the main cause of crime and delinquency. According to Gottfredson and Hirschi (1990), the formation of self-control could be influenced by family environment, peer relationship, and personal experience, and an individual's self-control becomes stable at an early stage. In particular, they argued that individuals with low self-control could be impulsive, risk-taking, short-sighted, irritable, and bad-tempered, and they are more likely to engage in crime and delinquency to pursue immediate gratification (Gottfredson and Hirschi, 1990).

Many empirical studies have supported a direct link between low self-control and crime and delinquency (e.g., drug use, white-collar crime, and violent offending), and behaviors analogous to crime, such as academic dishonesty (Baron et al., 2007; Benson and Moore, 1992; Burton et al., 1999; Cochran et al., 1998; Evans et al., 1997; Grasmick et al., 1993; Hay, 2001; Longshore, 2004; Longshore et al. 1996; Pratt and Cullen, 2000). Additionally, research has also found that low self-control could lead to many other negative outcomes, such as aggressive behaviors, imprudent behaviors, personality disorder, hopelessness, low life quality, low self-report survey response, low school performance, and low family involvement (Arneklev et al. 1993; Evans et al., 1997; Gibson et al., 2000; Piquero et al., 2000; Polakowski, 1994).

Although previous empirical research focusing on the direct link between low self-control and delinquency is robust and abundant, factors from other criminological theories may mediate the link between low self-control and delinquency. For example, factors derived from rational choice theory may mediate the relationship between self-control and delinquency. This is because individuals with low self-control are more likely to perceive a lower risk level of punishment, gain more pleasure from criminal and delinquent behaviors, and fail to approach a comprehensive decision making process (Longshore et al., 2004; Piquero and Tibbetts, 1996). Overall, the relationship between self-control and delinquency may be more complicated than Gottfredson and Hirschi's assumption, and the indirect relationship between low self-control and delinquency remains understudied (Piquero and Tibbetts, 1996; Reisig and Pratt, 2011).

Thoughtfully Reflective Decision Making and Self-Control

Recently, Paternoster and Pogarsky (2009) introduced a notion of thoughtfully reflective decision making (TRDM) into criminology, which, according to the authors, described an individual's tendency of accomplishing a balanced and comprehensive decision making process before his actions. The comprehensive decision making process includes four components: deliberate information collection, thorough consideration of alternatives, choosing the best alternative, and retrospection of the solution. Individuals with high level of TRDM are those who have the characteristics of deliberation and carefulness, and are good at information collection and self-introspection (Paternoster and Pogarsky, 2009, p. 105). Consequently, TRDM is described as an efficient approach to make sound decisions. Moreover, Paternoster and Pogarsky (2009) find that individuals with high level of TRDM are less likely to engage in delinquency, drinking,

and illegal drug use. That said, TRDM is a relatively new idea for criminological theory and more empirical tests involving TRDM may be needed (Paternoster and Pogarsky, 2009, p. 122).

The importance of TRDM is derived from bringing the study of human agency back to the criminological field, because human agency is a vital factor in some criminological theories and has been separated from theoretical study for a long time (Paternoster and Pogarsky, 2009, p. 104; Paternoster et al., 2011, p. 4). Human agency, according to McCarthy (2002), is a critical procedure for intentional activities consistent with final goal, and decision making is an essential element of human agency. Since the first time introduced into criminology, human agency has been applied to several criminological theories, such as rational choice theory, social control theory, social learning theory, and routine activities theory (Nagin, 2007). However, investigations of human agency have been long isolated from the theoretical aspect, and the introduction of TRDM could be an opportunity to bring research of human agency back to the empirical world (Paternoster and Pogarsky, 2009, p. 106). The development of TRDM may be helpful to teach individuals to become good decision makers, and this implication may demonstrate the impact of human agency and bring researchers' attention back (Paternoster and Pogarsky, 2009, p. 111).

Although TRDM shares some overlap with self-control, it is different from self-control for several reasons. First, whereas TRDM only describes the decision making process, the content of self-control is very broad, which includes low cognitive skills, risk-taking, reckless behavior, and physical tendency (Paternoster and Pogarsky, 2009, p. 109). Second, whereas self-control theoretically becomes fixed at 10 years old and self-

control is a stable personal trait (Gottfredson and Hirschi, 1990), TRDM is dynamic and teachable, and the decision making process can be influenced by age, timing, and environment (Paternoster and Pogarsky, 2009, p. 110). Third, after empirically testing the correlation between TRDM and self-control, Paternoster and Pogarsky (2009, p. 111) established that TRDM is empirically distinct from self-control. In sum, TRDM is conceptually and empirically different from self-control (Paternoster and Pogarsky; 2009, p. 111; see also Paternoster et al., 2011).

Nonetheless, self-control and TRDM may be closely linked, and self-control may affect TRDM. According to Gottfredson and Hirschi (1990), individuals with low self-control may fail to recognize the potential cost of their decisions and perceive a higher reward to commit crime and delinquency, and this cognitive bias will influence their intention and behavior. Similarly, self-control could positively affect individual development of consciousness, and individuals with underdeveloped consciousness may not conduct a complete thinking process and make an appropriate decision (Wilson and Hernstein, 1998). In other words, self-control may influence an individual's decision making process through dominating the development process of individual consciousness (see also Nagin and Paternoster, 1993).

Yet, more work needs to be done to separate the notion of TRDM from self-control, and causal links between TRDM, self-control, and delinquency may need to be explored both theoretically and empirically (Paternoster and Pogarsky, 2009). For example, prior research has only tested the direct link between TRDM and delinquency, which is far from enough to investigate TRDM thoroughly (Paternoster and Pogarsky, 2009; Paternoster et al., 2011). Overall, this study aims to further explore the link between self-

control, TRDM, and delinquency by assessing if there is a mediating effect of TRDM on the link between low self-control and delinquency.

Testing Theories in a Different Cultural Context

Cultural context may affect how a theory fares, especially in “nations that have experienced very different kinds of economic and social histories” (Tittle and Botchkovar, 2005, p. 705). Most empirical research testing criminological theories conducted thus far have used data collected in the United States or other western-oriented nations, partially because data that can be used to analyze delinquency under different cultural context are limited (Liu, 2008, p. 145; Zhang et al., 2008, p. 130). This “limited coverage of the range of possible cultural contexts” may render the generality claim of any theory ambiguous (Tittle and Botchkovar, 2005, p.706). As a result, further studies may be needed to test existing criminological theories in nations whose economic, cultural and social background is different from western countries.

Importantly, findings from previous studies have suggested that criminological theories developed in the United States may be tested under different cultural conditions, but some specific contexts may need to be reviewed and adjusted (Friday et al., 2005; Zhang et al., 2008). For example, a chronic offender used in a longitudinal study in Wuhan, China is defined as a repeat offender, and this definition is different from its most common definition used in U.S. studies, which is one accumulating five or more contacts with the police (Friday et al., 2003, p. 109).

China is the most populous country in the world, but crime statistics in China remains understudied and limited (Pyrooz and Decker, 2013, p. 266). To address this issue, some studies have used self-report data collected in China to study crime and

delinquency. For example, Greenberger et al. (2000) examined youth delinquency under three different cultures: Los Angeles area; Seoul, South Korea; and Tianjin, China, and found that even under different cultural conditions, adolescents share the same perception model of family members, peers, and neighborhoods. Wei et al. (2004) found that compared with Brisbane (Australia) children, Shanghai (China) children's delinquency rate is low because of less leisure time and more restricted control. In addition, Zhang et al. (2007) used self-report data collected in Tianjin, China to identify determinants of four types of crime reporting—that is, robbery, assault, household burglary, and personal theft in urban China. Consistent with research using data collected in western culture, findings from Zhang et al. (2007) suggested that offense seriousness was the most powerful predictor for crime reporting, whereas demographic and neighborhood variables did not influence crime reporting. Most recently, Pyrooz and Decker (2012) used the survey data collected in Changzhi, China, the same survey data that will be used in this study, and examined the link between delinquency and gang involvement in China. Their findings not only supported the relationship between delinquency and gang involvement, but also indicated that criminological theories may be generalized under diverse research environments.

Hypotheses

The above observations give rise to a series of hypotheses about the link between self-control, TRDM, and delinquency in the Chinese context. Thus, I propose the following hypotheses.

Hypothesis 1: Self-control will be positively related to TRDM.

Hypothesis 2: Self-control will be negatively associated with youth delinquency.

Hypothesis 3: TRDM will mediate the effect of low self-control on youth delinquency.

CHAPTER 3

DATA AND METHOD

Data

The survey data were collected from students in Changzhi, China in December 2009. The city of Changzhi is located in the Middle East part of China, and it has fertile land source for agricultural activities and rich mineral resources for industrial development. As indicated by Pyrooz and Decker (2012, p. 257), Changzhi not only possesses an abundant historical background, but also serves as a transportation center combining both features of industrial economy and agricultural economy, which endows the city with a more diversified population and in turn a more varying sample of youth for this study.

Samples of this survey include six schools, consisting of one college, two high schools, one comprehensive school with both college students and vocational students, and two vocational schools. The aim of this selection strategy is to maximize the differences of personal life experiences among respondents. It is worth noting that the respondents of the survey may be older than typical school survey respondents in the United States. The older respondents may be particularly appropriate for this study for at least two reasons. First, respondents at this older age range may be more likely to have a formed TRDM due to their maturity (Paternoster and Pogarsky, 2009, p. 110). Second, the rate of adolescents' involvement in delinquency in China is lower than that in the United States (Greenberger et al., 2000, p. 382), and using a younger group to study delinquency in China may lead to little variation in delinquency. Because, according to Moffitt's (1993) age-crime curve, age range from 15 to 20 is the peak that individuals may commit delinquency, using an older age range (i.e., 15 to 20 years old) could enable

researchers to observe more frequent delinquency involvement and in turn more variation in the dependent variables.

The survey includes 235 questions, and all questions are translated from English to Chinese by a Changzhi native, and a Chinese native performed back translation. Questions include demographic characteristics and cover several aspects of students' life experience, such as self-evaluation (self-control, self-efficacy, and TRDM), gang involvement, family and parenting characteristics, attitude toward school, peer pressure, and violent and non-violent delinquency experience. There were 2,500 in-school questionnaires administered to students, and 2,245 were returned. Overall, these survey data may offer a unique opportunity to advance both the literature of youth delinquency in China and the generalization of criminological theories that have been developed and tested in the U.S. context, to China, a country that has its distinct social, cultural and economic histories.

Dependent Variables

In this study, I examine three outcomes: general delinquency, non-violent delinquency, and violent delinquency. I use general delinquency to capture and investigate an overall delinquency involvement among Chinese youth. Then, I divide general delinquency into non-violent delinquency and violent delinquency. Comparing the distinct influence of these two variables could be beneficial to studying the individual differences on delinquency specialization, which may generate several practical and theoretical implications (Osgood and Schreck, 2007, p. 274).

To measure general delinquency, respondents are asked how often during the past 12 months they: 1) skipped classes without an excuse, 2) lied about their age to get into

some place or to buy something, 3) avoided paying for something such as movies, bus or subway rides, 4) purposely damaged or destroyed property that did not belong to them, 5) carried a hidden weapon for protection, 6) illegally spray painted a wall or building, 7) stole or tried to steal something worth less than RMB50 (approximately 10 US dollars), 8) stole or tried to steal something worth more than RMB50 (approximately 10 US dollars), 9) went into or tried to go into a building to steal something, 10) stole or tried to steal a motor vehicle, 11) hit someone with the idea of hurting them, 12) attacked someone with a weapon, 13) used a weapon or force to get money or things from people, and 14) was involved in “gang fights”. Responses were coded 0=never, 1=once or twice, 2=3-5 times, 3=6-10 times, and 4=more than 10 times, and general delinquency is the sum of responses to these 14 questions. The range of general delinquency is from 0 to 56 which specifies how often respondents report to have conducted these delinquent acts during past 12 months (Cronbach’s alpha= .90).

I then divide general delinquency into non-violent delinquency and violent delinquency. Similar to Pyrooz and Decker (2012, p. 269-270), non-violent items includes nine questions that do not have any violent behaviors and weapon involvement, and this variable is the sum of responses to these nine questions (Cronbach’s alpha= .84). Violent items consists of five questions about violent behaviors, such as using weapon for protection, hitting, attacking, fight, and robbery with weapon or force. I add these five responses to construct violent delinquency (Cronbach’s alpha= .86).

Independent Variables

Low self-control contains 11 statements which can be tracked back to the self-control scale that Tangney et al. (2004) established. Consistent with Gottfredson and Hirschi’s

(1990) proposition of self-control, measurement of self-control includes 13 questions, and consists of individual habits, emotion, impulsivity, and work attitude. Because of the unexpected performance of two items relating to self-discipline, they are removed from the construction of self-control (Pyrooz and Decker, 2012, p.259). Responses to each statement are 1=always, 2=sometimes, 3=usually, 4=most of the time, and 5=never. After I add responses to the 11 statements, the range of individual self-control is from 11 to 55. A higher score on this variable indicates a lower level of self-control (Cronbach's $\alpha = .71$). Thus, I expect low self-control to be positively related to the three delinquency outcomes.

Similar to Paternoster and Pogarsky (2009, p.116), the index of TRDM includes respondents' agreement to four statements. These statements include, "when you have a problem to solve, one of the first things you do is get as many facts about the problem as possible;" "when you are attempting to find a solution to a problem, you usually try to think of as many different approaches to the problem as possible;" "when making decisions, you generally use a systematic method for judging and comparing alternatives;" and "after carrying out a solution to a problem, you usually try to analyze what went right and what went wrong." The response to each question ranges from 1=strongly agree to 5=strongly disagree. After summing up responses to these four questions, the range of TRDM is from 4 to 20 (Cronbach's $\alpha = .80$). TRDM is coded such that the higher the score, the lower level of TRDM an individual has. Thus, I expect respondents' level of TRDM to be positively associated with delinquency.

Control Variables

To ensure the relationship I observe from self-control, TRDM, and delinquency is not spurious, I control for a range of variables that may be related to self-control, TRDM, and delinquency. First, I control for parental attachment, parental monitoring, school attachment, school performance, and moral belief because they play important roles in Hirschi's (1969) social bond theory. Similar to Burt et al. (2006, p. 367) and Pyrooz and Decker (2012, p. 259), parental attachment is operationalized by responses to seven questions that asked respondents' agreement with the following statements, "when you go someplace, you leave a note for your parents or call them to tell them where you are," "you know how to get in touch with your parents if they are not at home," "you can talk to your parents about anything," "your parents make you feel trusted," "you would like to be kind of person your mother is," "you would like to be the kind of person your father is," and "you depend upon your parents for advice and guidance." The scale of responses to each question is from 1=strongly disagree/never to 5=strongly agree/always, and I add all responses to construct parental attachment which ranges from 7 to 35 (Cronbach's alpha= .74). Parental monitoring is an index including four items measuring respondents' agreement to the statements that "your parents know where you are when you are not at home or at school" and "your parents know who you are with if you are not at home," and the frequency of the following questions: "how often does your primary caregiver know how well you are doing in school" and "how often does your primary caregiver now if you do something wrong." After I sum up four responses (Cronbach's alpha= .74), a higher score indicates stronger parental monitoring. School attachment consists of 10 questions asking about respondents' attitude toward such statements as "homework is a waste of time" and "you usually finish your homework." Responses range from

1=strongly disagree to 5=strongly agree, and I add all responses to these 10 questions (Cronbach's alpha= .76). School performance is constructed by respondents' self-reported academic performance on three subjects—Chinese, Math, and English, and the scale of each item is from 1=poor to 5=excellent. This variable is the sum of these 3 items (Cronbach's alpha= .57). Moral belief is based on 16 items asking how wrong respondents think a range of deviant behaviors are, such as “cheating on school tests” and “using drugs.” The scale is from 1=not wrong at all to 5=very wrong, and a higher score indicates a higher level of moral belief (Cronbach's alpha= .91).

I also include several factors derived from other criminological theories, such as differential association theory and General Strain Theory, in the analysis model. I control peer delinquency, which is comprised of 15 questions that ask respondents to report their close friends' delinquent behaviors, such as using a weapon, like a club, knife, or gun, in a fight, running away from home, smoking, and drinking. The scale of responses is from 1=none to 5=all of them, and all responses are added to build peer delinquency (Cronbach's alpha= .91). I also include victimization, which is consisted of three items that measure respondents' victimization experience during past 12 months, including general injury, serious injury, and robbery. The range is from 0=never to 4=more than 10 times, and I add all responses to construct the victimization variable (Cronbach's alpha= .78). I construct a scale of stressful life events by summing up eight dichotomous items indicating respondents' stress of life, such as death or illness of parents and relatives, broken family, and parental addiction (Cronbach's alpha= .49).

Other control variables focus on demographic variables, including age (in years), gender (1=male, 0=female), residential area (1=rural, 0=urban) and family income.

Family income is the sum of the respondents' father income and mother income, which is measured separately (1=below RMB 500, which equals approximately 80 US dollars, to 7=over RMB 5,000, which equals approximately 800 US dollars). Table 1 presents the means and standard deviations for all variables of this study.

Insert table 1 here

Analytic Strategy

Of the 2,245 respondents, 135 respondents fail to provide a valid value on the dependent variables, and are subsequently excluded from the analyses. A further inspection of the survey data indicate that 29 percent have missing values on one or more independent or control variables included in the analyses. To address the missing data problem, I apply multiple imputation (MI), because MI has been evaluated as efficient, accurate, and convenient (Allison, 2001, p. 81). In particular, I use the ICE command in Stata to perform MI because it has been widely used to manage missing data, and it is a reliable function in Stata 12.0 (Allison, 2001; Barnard and Rubin, 1999; Rubin, 1996).

Again, multiple imputation is accomplished in Stata 12.0 (StataCorp, College Station, TX). I specify each imputation model for each question to ensure that each response to the question is imputed by other related questions. For example, each question of low self-control is imputed by using all other ten questions of low self-control. I perform 10 imputations. I only keep Han respondents for the analyses, because more than 98 percent of respondents are Han ethnicity, and Han ethnicity and minority respondents may differ in many ways. After multiple imputation, the final number of respondents included for the analyses is 2,099.

Analyses begin with reporting the means and standard deviations of all the study variables (see Table 1). Then I employ ordinary least-squares (OLS) regression to examine whether self-control is a significant predictor of TRDM. Doing so could also provide a foundation to separate TRDM from self-control. Then, because the three dependent variables are all count variables, positively skewed, non-negative, and over-dispersed, I employ negative binomial regressions to detect the direct effect of low self-control on general delinquency, non-violent delinquency, and violent delinquency. Compared with OLS regression, negative binomial regression is more appropriate for current models as an extension of Poisson regression (DeLisi et al., 2013, p. 136). It is not only because the variance exceeds the mean in current models, but also for the reason that negative binomial regression is less restrictive than Poisson regression for the influence of unobserved heterogeneity (Drury and DeLisi, 2011, p. 136; King and Sutton, 2013, p. 881; Walters, 2007 p. 1661). At this step, I include all control variables, but do not include TRDM. Last, I add TRDM into these three negative binomial regression models to investigate whether TRDM exerts a mediating impact on the link between low self-control and delinquency. All analyses are conducted in Stata 12.0 (StataCorp, College Station, TX).

CHAPTER 4

RESULTS

Table 2 demonstrates the effects of low self-control and other control variables on TRDM. Different from Paternoster and Pogarsky (2009), who only used one question to measure respondents' level of self-control, current research uses 11 items to operationalize respondents' self-control. Recall that self-control and TRDM are coded such that the higher the scores, the lower levels of self-control and TRDM respondents have. Thus, I expect a positive relationship between self-control and TRDM. Indeed, inspection of the regression model in table 2 indicates that low self-control is positively and significantly related to low TRDM. The regression coefficient of low self-control is .10, suggesting that with one unit increase of low self-control, the respondent's score of low TRDM will increase by .10, net of all the control variables.

Insert table 2 here

Moreover, the coefficients of parental monitoring, school attachment, moral belief, victimization experience, stressful life events, age, and gender are statistically significant and negative, and these variables also play an important role in explaining the construction of an individual's TRDM. In contrast, the effects of parental attachment, school performance, peer delinquency, rural residence, and family income are not statistically significant in this model. Table 2 also reports that the R square is .18, indicating that only 18 percent of the variance of TRDM is explained by this model.

Insert table 3 here

Table 3 presents results of negative binomial regression models predicting general delinquency, non-violent delinquency, and violent delinquency, without including TRDM.

The effect of low self-control is statistically significant for general delinquency and non-violent delinquency. The coefficients of self-control indicate that with one unit increment in low self-control, the scores of respondents' reported general delinquency and non-violent delinquency will increase by .02 and .03. Thus, respondents with lower level of self-control are more likely to be engaged in general delinquency and non-violent delinquency. However, the coefficient of low self-control is not statistically significant for violent delinquency. In the discussion and conclusion, I will discuss the finding in more detail.

Insert table 4 here

In table 4, I add TRDM in the models of general delinquency, non-violent delinquency, and violent delinquency, and assess if TRDM mediates the effects of low self-control on these three delinquent outcomes. Turning first to general delinquency, the coefficients of low self-control are the same with and without TRDM (see table 3 and table 4), thus including TRDM does not influence the effect of low self-control on general delinquency. Moreover, table 4 suggests that the coefficient of TRDM is not statistically significant in the model of general delinquency, which is contrary to Paternoster and Pogarsky's (2009) finding. In the discussion and conclusion, I will provide possible explanations for this non-significant finding regarding TRDM. Moving on to non-violent delinquency, the comparison of table 3 and table 4 indicates that TRDM does not mediate the relationship between low self-control and non-violent delinquency. In addition, TRDM does not have a statistically significant effect on non-violent delinquency. At last, inspection of violent delinquency model in table 4 indicates

that the effects of low self-control and TRDM on violent delinquency are not statistically significant.

It is worth noting that other significant predictors emerged from table 3 and table 4. In particular, moral belief, peer delinquency, victimization experience, stressful life events, and gender are consistently significant predictors across the models of general delinquency, non-violent delinquency, and violent delinquency. In addition, the impacts of school attachment and family income are statistically significant in the models of general delinquency and non-violent delinquency, but not violent delinquency. Whereas parental monitoring is only statistically significant in the models of non-violent delinquency, the effect of school performance is only statistically significant in the models of violent delinquency.

CHAPTER 5

DISCUSSION AND CONCLUSION

Since Gottfredson and Hirschi (1990) proposed the general theory of crime, the direct effect of low self-control on delinquency and crime has been well-established by a number of empirical studies (see, e.g., Pratt and Cullen, 2000; Holtfreter et al., 2010). However, the indirect approach of self-control to delinquency and crime remain relatively understudied (Piquero and Tibbetts, 1996, p. 505; Reisig and Pratt, 2011, p. 613). This is a significant oversight because the influence of self-control on delinquency may be more complicated than the original proposition, and there may be both direct and indirect link between low self-control and delinquency (Piquero and Tibbetts, 1996, p. 505; Reisig and Pratt, 2011, p. 613). In addition, although Gottfredson and Hirschi (1990) argued that self-control theory can be applied in all cultural contexts (Tittle and Botchkovar, 2005, p. 704), generalizability of this theory needs to be tested under different circumstances. For example, low self-control may not have the same effect in China as in the United States (Wang et al., 2002).

To fill this void, this study focuses on the indirect impact of low self-control on delinquency, and adds TRDM—an innovative idea developed by Paternoster and Pogarsky (2009) from rational choice theory—to assess if the effect of low self-control on delinquency is mediated by TRDM. To this end, I used self-report data from Changzhi, China to examine the possibility that low self-control could lead to delinquency under a different cultural circumstance, and tested the generalizability of self-control theory. Then, I examined the mediating effect of TRDM on the relationship between low self-control and delinquency. Specifically, this study tested three hypotheses. First, I

anticipated that low self-control would lead to low TRDM. Second, I expected that low self-control would increase individual engagement with general delinquency, non-violent delinquency and violent delinquency. Third, I anticipated that TRDM would mediate the effect of low self-control on youth delinquency.

Four main findings emerged from this study. First, low self-control and TRDM are closely related, and low self-control is a significant predictor of low TRDM. Thus, hypothesis 1 is supported. Second, low self-control is a strong predictor of general delinquency and non-violent delinquency among Chinese youth, but the effect of low self-control on violent delinquency does not follow the expectation. Thus, hypothesis 2 is partially supported. Third, because the impact of low self-control remains the same in the models with and without TRDM, this study fails to find support for hypothesis 3—that is, TRDM would mediate the effect of low self-control on youth delinquency. Fourth, the significant effects of some variables based on the survey data, such as parental monitoring, school attachment, school performance, moral belief, peer delinquency, victimization, stressful life events, gender, and family income, are consistent with findings from research conducted in the United States.

Before turning to the implications of this study, two findings bear discussion. First, similar to Pyrooz and Decker (2012), I find that low self-control is not significantly related to violent delinquency among Chinese youth. Violent delinquency may be a more complicated combination of the willingness from human agency and the influence of social environment (Lynam et al., 2000, p. 571). As such, cultural, structural, and situational factors, which are not considered in Gottfredson and Hirschi's theoretical argument (Piquero et al., 2005, p. 67), may play more important roles in affecting violent

delinquency in the Chinese context. Specifically, in the Chinese cultural context, an individual's views about violent delinquency may be different from his counterpart in the United States, and the relationship between self-control and violent delinquency may be conditioned by different cultural environments.

Second, contrary to findings from Paternoster and colleagues (2009, 2011), I find that TRDM is not significantly related to any of the delinquency outcomes. Why? I speculate that findings from Paternoster and colleagues (2009, 2011) might be a result of measurement error because they only used one item to measure self-control. I have used 11-item to measure respondents' self-control in this study, and self-control is a significant predictor of TRDM. Because of the link between self-control and TRDM, I speculate that the effect of TRDM may be reduced to non-significance when self-control is better operationalized and measured, which is what I observed in this study. Future research may want to continue to investigate the effect of TRDM on delinquency, and the link between self-control, TRDM, and delinquency.

Several theory and research implications emerge from this study. First, findings of the relationship between low self-control and TRDM are accordant with Paternoster and Pogarsky's (2009) finding. Establishing this relationship is helpful to the process of separating TRDM from self-control. However, R square of the OLS regression model predicting TRDM is only 18 percent, indicating that over 80 percent of TRDM remains unexplained. TRDM is a dynamic personal characteristic, and it can be taught from one person to another (Paternoster and Pogarsky, 2009, p. 110). As a result, individual level of TRDM may be influenced by social circumstance, and the origin of TRDM may be complicated (see also Pratt, 2012, p. 64). In addition, outcomes from negative binomial

regression models predicting delinquency suggest that the effects of low self-control and TRDM on delinquency are different. The differential effect of low self-control and TRDM on youth delinquency in turn may indicate that TRDM is empirically different from self-control, which follows Paternoster and Pogarsky's (2009) expectation.

Second, although findings from this study fail to support the mediating effect of TRDM on the link between low self-control and delinquency, future research may focus on other revisions of the link between self-control, TRDM, and delinquency. TRDM is dynamic and the mechanism of TRDM still needs to be explored, such as how TRDM is taught to individuals and how social environment influences individual TRDM. If researchers could learn more about TRDM as a separate concept of self-control and study how it is formed, they may help improve an individual's TRDM, which in turn may have positive outcomes. For example, individual decision making process may be better optimized and individuals could approach a more successful social life.

Third, this study provides partial support for self-control theory under the Chinese cultural environment, and it also suggests that it might be fruitful to test other criminological theories in the Chinese context. In particular, the significant effect of low self-control on general delinquency and non-violent delinquency follows the theory's expectation, which supports the generalization of self-control theory to China, a cultural environment different from the United States. Moreover, the significant and consistent effect of peer delinquency, victimization, stressful life events, and moral belief affirm the probability of assessing social control theory, social learning theory, and general strain theory among Chinese youth. The influence of variables from social control theory and general strain theory has broadened the possibility of testing other criminological theories

using self-report data from China. Future research that test criminological theories under a different cultural environment not only could contribute to the generalization of the theories, but also could be beneficial to acquaint more about the crime statistics in China (Pyrooz and Decker, 2012, p. 269).

There is also a limitation of this study. Although cross-sectional data may be helpful to examine the influence of self-control and the mediating effect of TRDM on the relationship between low self-control and youth delinquency, longitudinal data may be needed to advance a better understanding of the mechanism of TRDM because longitudinal data may provide us more valuable information regarding the formation of TRDM. For example, longitudinal data could be beneficial to investigating the conditioning impact of variables which could influence each other, such as, parental attachment and peer delinquency. If a researcher only uses cross-sectional data to study the mediating effect of TRDM on self-control and delinquency, influences of these interplay variables on the development of TRDM may not be observed (Gibson et al., 2000, p. 122). Consequently, further research using longitudinal data may provide a more dynamic and complete evaluation of TRDM and its potential mediating effect on the relationship between self-control and delinquency.

In conclusion, this study suggests that self-control and TRDM are closely related and largely supports the generalizability of self-control theory under Chinese cultural environment. It also suggests that it might be fruitful to test other criminological theories in the Chinese context. However, this study fails to find the mediating effect of TRDM on the relationship between self-control and delinquency. Future research may need to

map more versions of the relationship among self-control, TRDM, and delinquency, such as moderating effect.

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Table 1

Descriptive Statistics for the Study Variables

Variables	Mean	S.D.
Dependent variables		
General delinquency	2.17	4.92
Non-violent delinquency	1.57	3.34
Violent delinquency	.59	1.90
Independent variables		
Low self-control	26.83	5.48
TRDM	9.56	2.90
Control variables		
Parental attachment	21.97	5.45
Parental monitoring	12.51	3.50
School attachment	34.06	5.70
School performance	8.76	2.27
Moral belief	72.06	8.71
Peer delinquency	21.24	7.38
Victimization	2.34	1.10
Stressful life	1.15	1.23
Age	17.46	2.18
Male	.59	.49
Rural Resident	.62	.48
Family income	5.11	2.20

Note: S.D. standard deviation.

Table 2

Ordinary Least Squares Regression Model Predicting TRDM

Variables	TRDM	
	b	SE
Low self-control	.10**	.01
Parental attachment	-.01	.01
Parental monitoring	-.06**	.02
School attachment	-.09**	.01
School performance	-.05	.02
Moral belief	-.01*	.01
Peer delinquency	.00	.01
Victimization	.26**	.05
Stressful life	-.10*	.04
Age	-.06*	.03
Male	-.47**	.12
Rural resident	.03	.13
Family income	.01	.03
Intercept	14.49**	1.02
R ²		.18

Note: b = unstandardized coefficient, SE = standard error.

* p < .05 ** p < .01, N = 2,099.

Table 3

Negative Binomial Regression Models without TRDM Predicting General Delinquency, Non-violent Delinquency, and Violent Delinquency

Variables	General delinquency		Non-violent delinquency		Violent delinquency	
	b	SE	b	SE	b	SE
Low self-control	.02**	.01	.03**	.01	-.01	.01
Parental attachment	.00	.00	.00	.01	-.01	.01
Parental monitoring	-.01	.01	-.02*	.01	.02	.02
School attachment	-.01*	.01	-.01**	.01	-.01	.01
School performance	-.02	.01	-.01	.01	-.06*	.02
Moral belief	-.03**	.00	-.03**	.02	-.05**	.01
Peer delinquency	.05**	.00	.04**	.00	.08**	.01
Victimization	.15**	.02	.12**	.02	.21**	.04
Stressful life	.10**	.02	.09**	.02	.12**	.04
Age	.00	.02	.02	.02	-.06	.04
Male	.40**	.06	.30**	.07	.84**	.13
Rural resident	.04	.06	.01	.06	.13	.11
Family income	.05**	.01	.05**	.01	.04	.02
Intercept	1.64**	.56	.91	.58	2.00	1.10
Log likelihood	-36405.09		-32548.27		-16487.49	

Note: b = unstandardized coefficient, SE = standard error.

* $p < .05$ ** $p < .01$, $N = 2,099$.

Table 4

Negative Binomial Regression Models with TRDM Predicting General Delinquency, Non-violent Delinquency, and Violent Delinquency

Variables	General delinquency		Non-violent delinquency		Violent delinquency	
	b	SE	b	SE	b	SE
Low self-control	.02**	.01	.03**	.01	-.01	.01
TRDM	-.01	.01	-.01	.01	-.01	.02
Parental attachment	-.01	.01	.00	.01	-.01	.01
Parental monitoring	-.01	.01	-.02*	.01	.02	.02
School attachment	-.01**	.01	-.01**	.01	-.01	.01
School performance	-.02	.01	-.01	.01	-.06*	.02
Moral belief	-.03**	.02	-.03**	.00	-.05**	.01
Peer delinquency	.05**	.00	.04**	.00	.08**	.01
Victimization	.15**	.02	.12**	.02	.22**	.04
Stressful life	.09**	.02	.09**	.02	.12**	.04
Age	.00	.02	.02	.02	-.06	.04
Male	.39**	.06	.30**	.07	.83**	.13
Rural resident	.04	.06	.01	.06	.13	.11
Family income	.05**	.01	.05**	.01	.04	.02
Intercept	1.80**	.58	1.06	.60	2.29	1.17
Log likelihood	-36381.25		-32527.11		-16475.08	

Note: b = unstandardized coefficient, SE = standard error.

* $p < .05$ ** $p < .01$, N = 2,099.